

**FoodMed**

# **My Food – My Medicine**

[www.food-med.eu](http://www.food-med.eu)



## **EDUCATIONAL HANDBOOK**

**Project number:**

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**Lifelong  
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This guide is one of the main products in the international project "FoodMed" (project number 539464-LLP-1-2013-1-BG-GRUNDTVIG-GMP), specially developed to serve all those who are interested in healthy eating. The aim of the project is to encourage people to consume organic food. Educational units of this book emphasize on the benefits of organic farming in the context of a healthy diet.

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## CONTENTS

|   |            |
|---|------------|
| <i>Description of the Project.....</i>  | <i>3</i>   |
| <i>An Introduction to Healthy Diet.....</i>                                   | <i>8</i>   |
| <i>Tomatoes and Healthy Diet.....</i>   | <i>45</i>  |
| <i>Healthy Eating and Bulgarian Sour Milk.....</i>                            | <i>66</i>  |
| <i>Dried Fruits and Healthy Diet.....</i>                                     | <i>82</i>  |
| <i>Wine.....</i>  | <i>102</i> |
| <i>Olive oil.....</i>   | <i>121</i> |
| <i>Honey.....</i>   | <i>145</i> |
| <i>Nutrition during Adolescence.....</i>                                      | <i>169</i> |
| <i>Healthy diet for children – childhood obesity.....</i>                     | <i>197</i> |
| <i>Eatable Gardens - cultivate your own herbs.....</i>                        | <i>229</i> |
| <i>How to stay healthy ... With Grandma Remedies.....</i>                     | <i>249</i> |
| <i>How to Eat Healthy ... With Traditional Cuisine from<br/>Alentejo.....</i> | <i>267</i> |

## **DESCRIPTION OF THE PROJECT**

The project aims the dissemination of knowledge concerning a healthy diet among adults that live in cities. We plan to develop educational material about organic diet, small scale organic cultivation in the city and traditional cuisine. Free seminars on these subjects will also take place. The educational material will be on line (e-learning platform) available to the public. The basic idea of the project (as its title demonstrates) is the advice of Hippocrates that food must be our medicine, thus a healthy diet is the basis of a good life. We wish to disseminate the knowledge that will motivate the consumers to eat healthy and to regain control over their food. The project answers the challenges of healthy nutrition in the cities in the midst of the economic crisis. The partners have worked together in the past, in projects aiming mainly at teaching and promoting organic cultivation and agricultural tourism to the farmers and now wish to cooperate again, targeting this time mainly the consumers that live in cities, as well as any other interested party. The educational material will be available in all the languages of the partnership (BG, EL, ES, IT, PT) and in English.

The main outcomes of the project are the website and the e-learning platform that will contain the educational material (both in 6 languages), the seminars and the Info Day that will take place in all the countries involved.

The educational material will be suitable both for classroom environment and for autonomous - distance learning.

### ***AIMS***

The main objectives of the project are:

- The enrichment of the training materials for adults in regards to organic farming and benefits from consumption of organic food
- Making training material adequate for adults as well as user friendly
- Making the material accessible to everyone
- The enrichment of the Electronic European Agricultural Network – a network between Centres that are engaged in the education of farmers and in education of adults in above mentioned subjects
- Supporting efficient communication between farmers, educational institutions and everyone interested in issues related to organic farming and healthy nutrition
- Promoting the joint outcomes of previous programmes not only in EU countries that have been involved in these project but also in new ones

### ***INOVATIONS***

The first innovation of our project is the creation and the effort to establish a standard for the development of agricultural education programmes, and for the promotion of the lifelong adult learning and training on issues related to organic farming and consumption of organic food, through distance and open learning.

Another innovative aspect of the project is the creation of a pioneer and dynamic Educational Community. The dynamic character of the product is mirrored both in the continuous renewal of the material and –even more- in the potential given to the participating



institutions to add their own informative and educational material to the initial product, based on the standard we will have created. Thus, the same people that were in the beginning of the project the “target group” are transformed –during and after the project- to its creators.

Each institution will be motivated to translate the programmes of the others in order to enrich its own material and to motivate the others to translate and promote its own programmes. Nonetheless, the access to the project’s material will be gradually controlled, so as to ensure reciprocity.

## ***PEDAGOGICAL AND DIDACTICAL APPROACHES***

The way by which the adults are learning is different to that of younger people. This parameter will be the guiding line for the selection of the pedagogical approach and the teaching methods we will adopt for the development of the products.

In specific, adults enter education with given intentions and already fixed learning models. This is why they are learning mainly through the solving of problems. This is even more valid for the farmers who have never been to professional schools, as they learned how to cultivate along with their parents and other relatives.

The method of *constructive learning* can be used both as part of self-teaching and independently, in the form of cooperation between the learners, in the consignment of essays and problems.

## ***TARGET GROUPS***

The target groups of the project FOODMED are the following:

General target groups:

- Adults interested in issues of organic/healthy nutrition
- City residents

Specific target groups:

- Students of the participant institutions
- Trainers in the partner’ institutions
- Consumers’ associations
- Adult training centers
- Parents of minors and pregnant women
- Teachers of primary and secondary education that teach lessons related to environmental awareness and nutrition

All target groups may also be divided into two categories depending on the time relevant for involving them:

- The short term target groups – groups being of interest to the project within its duration; this means mainly institutions / persons involved in participating in seminars provided within the FOODMED project.
- Long term target groups – groups being of project interest after the project finishes.

## ***ADDED VALUE***

During the last decade in Europe, there was a positive turn towards a healthier living and the concern for a cleaner and sustainable environment. The economic crisis is currently jeopardising this effort, both at a national and at a European level. Even at a personal level, many individuals tend to believe that a healthy lifestyle is a luxury, that the consumption of organic products is more expensive than it is worth it and that the concerns for a sustainable environment are not a priority at this stage. The main goal of the proposal is to create training material that will inform the audience that a healthy living and the better control over food is more significant than ever and that the above concerns are not a luxury but a need.

Another matter that our proposal wishes to address is the value of agriculture. The residents of big cities tend to lose their contact with the cultivation procedure and they do not understand the effort one must put in producing food. One of the aims of the project is to show –through the simply cultivation lessons to be developed- that producing food is simple, but it requires an effort that makes the participants re-value their food.

The project aims at promoting the traditional recipes and the local food consumption, which incorporates the wisdom and the lessons of many generations about the healthy diet.

The project addresses EU political priorities as the knowledge of how to obtain optimum physical health is part of the social competences (key competences of lifelong learning), the sustainable environment is part of the ENVIRONMENT 2020 priorities and the promotion of organic agriculture (here obtained through the enhancement of organic products' consumption) is one of EU's goal. Finally, the promotion of traditional recipes is also part of the EUs goal, as it was shown with the adoption of the A7-0286/2012 report of the European Parliament on promoting the "tastes of Europe".

## ***RESULTS***

The project team will ensure the following:

1. Development of standart in healthy nutrition for adults education.
2. Educational materials concern healthy nutrition in 6 european languages.
3. Wesite and on-line forum.
4. Videos about healthy foods.

## ***FINANCIAL SUPPORT***

This project has been funded by programme „LLP-GRUNTVIG” (75%) and own co-financing (25%).

## ***PARTNERSHIP***

The project team consist 5 partners from Bulgaria, Spain, Greece, Portugal and Italy. There is a good mixture of them because some partners are university and the others are institution for adults' education. All of them have got a rich experience in national and international educational and research programs.

### **Partner 1. AGRICULTURAL UNIVERSITY- PLOVDIV, BULGARIA**

Ever since its establishment in 1945, the Agricultural University – Plovdiv has been spreading knowledge, treasuring and enriching the traditions of Bulgarian agriculture. It has strengthened its positions as a national centre of agricultural science and education in

Bulgaria. The alumni of the Agricultural University – Plovdiv amount to over 22 000 agriculturists, engineers, ecologists and economists, more than 1900 of them being foreign citizens.

The Agricultural University offers high quality European training for the Bachelor, Master and PhD degrees.

#### **Partner 2. UPM UNIVERSIDAD POLITECNICA DE MADRID, SPAIN**

Universidad Politecnica de Madrid (UPM), is recognized one of the best among all Polytechnic Universities in Europe. Its High School of Agriculture develops and carries out professional training in education, tuition, research on agriculture and wide participation on European programmes." (see, [www.upm.es](http://www.upm.es)).

The UPM celebrated its 25<sup>th</sup> anniversary in 1996, although the majority of its High Schools are over hundreds of years old, and they were founded in the 18<sup>th</sup> and 19<sup>th</sup> centuries. Each of them maintained its independence until being grouped together forming the actual UPM.

The Agriculture High School was founded in 1845 at Aranjuez, close to Madrid. Around two thousand students are in this School. Within this High School the Department of Agricultural Economics and Social Sciences of UPM offers contemporary university programmes in areas of agriculture and economy, such as agro-economics, management, modern agricultural production and marketing, etc, as well as research and survey. It participates in many national, European and Transnational programmes (TEMPUS, LEONARDO, SOCRATES, ATHENS, etc).

#### **Partner 3. BRITISH HELLENIC COLLEGE /BHC/, GREECE**

British Hellenic College was founded in 1989 and offers British higher education to students in Greece.

Today it offers 7 undergraduate and 2 postgraduate courses, in cooperation with the University of Glyndwr.

BHC has participated in many international programmes, in the fields of teaching Modern Greek as foreign language (through the Hellenic Language School "Alexander the Great") and Organic Agriculture and Agricultural Tourism (through its affiliated Company European Educational and Development Association).

Since 1989, BHC has created a modern educational institution, with laboratories, up to date library and Curricula and –most importantly – an excellent educational system and a dynamic group of teachers and staff.

#### **Partner 4. UNIVERSIDADE DE EVORA – CEFAGE, PORTUGAL**

The University of Évora is organized in 4 Schools: Arts, Sciences and Technology, Social Sciences and Nursing and offers 33 undergraduate and 41 postgraduate degrees.

Research and Development (R&D) covers several scientific areas through a network of 14 Research Units, all of them submitted to international evaluation, under the coordination of the Institute for Research and Advanced Studies. R&D aims at enhancing knowledge transfer to society at large, thus contributing to its development and sustainability. To meet this end, research activities are grounded on both a multi-disciplinary and inter-departmental basis and on specific programmes and projects, taking advantage of the synergies generated by the interaction among different areas.

The main R&D areas are: Agronomy and Biodiversity; Geophysics, Environment and Landscaping; Materials and Surface Science; Economics and Business Studies; Computer Sciences and Software Interoperability; Social and Political Sciences, History, History of Art,

Science and Cultures; Applied Mathematics; Education; Linguistics and Literature; Elderly Healthcare.

Most of the 150 running R&D projects are developed through national and international partnerships, funded by the FP7, the European Social Fund, the National Science Foundation as well as by private sponsorship.

#### **Partner 5. TRAINING 2000, ITALY**

**TRAINING 2000 is a Vocational Training Organization**, which operates mainly in the Marche Region in activities of Adult Education and Training (LLP - continuous and permanent education), consulting and promotion of Innovative Technologies in companies, training of trainers in ICT in education. Since 1994, Training 2000 organizes Vocational training courses in the areas of ICT, English language for unemployed people and staff in companies, integration of socially disadvantaged groups and seniors, sustainable environment, new methodologies in teaching and learning (blended-learning). Training 2000 is a "Certified centre for training" in the Marche region, it operates in regime of Quality and cooperates in Regional and European networks of different actors: CNA Association of seniors (6000 members) , Employment Offices, Trade Unions, Associations of SMEs, Public offices (Province of Pesaro and Urbino, Marche Region), University of Macerata, University of Bremen, University of Utrecht, University school of Lugano (SUPSI), University of Ancona, private and public institutions in the social sector, Associations active in the mountain community of Pesaro and Urbino, Association of immigrants.

Training 2000 analyses the social aspects of society, training needs in terms of new competences in the regional community, promote gender/age/generational equality, organize international folklore festivals (in the last four years), evaluates new occupation profiles and development of new curricula; executes vocational training courses apt to requalification and re-skilling of youths and adults in our major economic sectors: fine mechanics, textile and fashion, agriculture. In the few last years, most of the work is connected to projects promoting ICT and motivation in learning for youth, disadvantaged groups and elderly (requalification of people over 50) via social media and multimedia tools (non-formal, informal learning). Training 2000 is responsible for carrying out apprenticeship training courses in the Province of Pesaro and Urbino. Since 2002 it promotes new methodologies for training in adult's education and e-learning / web 2.0 tools. At the International level, Training 2000 takes part in the following LLP programs: Leonardo da Vinci, Socrates Grundtvig 1-2-3 and CULTURA.

## Teaching Unity

### AN INTRODUCTION TO HEALTHY DIET



## **Table of contents**

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. Energy requirements and consumption**

#### **3.2 Acquaintance with the nutrients**

#### **3.3. Diet tips for good health**

### **4. Put into practice**

#### **4.1. Greek (Mediterranean) Diet**

#### **4.2. Biological or organic foods**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>AN INTRODUCTION TO HEALTHY DIET</b>  |
| <b>Area</b>  | Healthy nutrition   |
| <b>Main Target Audience</b>  | <p>The end users of the module are:</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Teachers of primary and secondary education that teach lessons related to environmental awareness and nutrition</li> </ul>   |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand the following:</p> <ul style="list-style-type: none"> <li>● Energy requirements and consumption</li> <li>● Acquaintance with the nutrients</li> <li>● Diet tips for good health</li> <li>● Greek (Mediterranean) Diet</li> <li>● Are organic products safer than conventional?</li> <li>● Are Organic products more nutritious than conventional?</li> </ul>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>24 hours of theoretical training</p>   |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <ul style="list-style-type: none"> <li>● Understand which are the characteristics of the basic foods</li> <li>● Know what are the energy requirements for a healthy life</li> <li>● Organize your diet so that you use the right variety of food</li> <li>● Understand the basic elements of Mediterranean diet and how it affects positively longevity</li> <li>● Understand the advantages of organic products</li> </ul> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <ul style="list-style-type: none"> <li>● knowledge of the nutritional characteristics of main foods;</li> <li>● how to organize a balanced diet;</li> <li>be able to evaluate organic versus conventional food.</li> </ul>   |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>- Face to face teaching</li> <li>- Online learning</li> <li>- Suggestion of additional websources and bibliography</li> </ul>   |

## 1. Abstract

This unit is structured into two main sections: (1) Characteristics of healthy diet and suitable foods and (2) Traditional mediteranian diet and production of organic foods.

In the first section the basic knowledge of energy requirements per gender and age are presented. All nutrients and their main functions are desribed. It gives several tips for healthy diet. The second section consists on a technology of organic cultivation and the presentation of Mediteranian cuisine and its health benefits.

**Key words:** nutrition, energy intake, energy consumption, Mediterranean diet, balanced diet, organic food, vitamins, minerals, lipids, carbohydrates, fatty acids

## 2. Introduction

Nutrition science investigates the relation between food intake and physiological functions of living organisms. It also studies organism's requirements in nutrients in order to produce energy, to maintain life, to grow and reproduce. The aim of the science of nutrition is:

- the improvement of the physical and mental health,
- the achievement of longevity and
- the prevention of chronic diseases such as cardiovascular disease, hypertension, diabetes mellitus, hyperlipidemia and cancer.

This handbook is an introduction unit, to present some basic nutrition concepts and give general advice for a balanced diet. The concepts are introduced in the simplest and most understandable way possible and often without the use of very strict definitions in order to be easily understood by an average reader.

In the first and second chapter the concepts of energy intake and consumption are presented while the reader gets also acquainted with the nutrients and their role in the organism. In the third chapter a reference is made to the food groups, their role and the frequency of their consumption. Then, in the fourth chapter the characteristics and benefits of the greek mediterranean diet are presented. Finally, in the fifth chapter a reference is made to organic foods and comparison with the respective conventional, due to the increasing interest of the public for organic food during the recent years.

The adoption of good dietary habits is important for all age groups. A balanced healthy diet ensures adequate nutrients, improves health indicators, helps in the prevention of chronic diseases, and provides wellness, toning and better physical and mental health.



# Section I

## 3. Core contents

### 3.1. Energy requirements and consumption

The organism must cover the energy needs of all its cells through nutrition (food and beverages). The energy received from food is called **energy intake** and is usually measured in calories (cal). The calorie is the unit of thermal-energy and represents the energy required to raise the temperature of one cubic centimeter of water from 14.5 °C to 15,5 ° C. Because food usually gives thousands of calories per gram, the unit most used is the multiple of the calorie, the kilocalorie (kcal), which in everyday life sometimes is known as calorie (cal).

On the other hand, the energy which the organism consumes for its various functions is called **energy consumption**. When we eat, what matters is not only the food quality but also the quantity. If we want to maintain our body weight, energy intake should be equal to the energy expenditure (energy balance). Table 1.1 shows the variations in energy requirements according to age, gender and level of physical activity:

**Table 1.1**

| Energy requirements in calories per gender and age, and depending on the level of physical activity |                 |                               |           |           |
|---|-----------------|-------------------------------|-----------|-----------|
|   |                 | Level of physical activity ** |           |           |
| Gender  | Age*<br>(years) | Low                           | Moderate  | Intense   |
| Children <sup>1</sup><br>(girls & boys)   | 2-3             | 1000-1200                     | 1000-1400 | 1000-1400 |
| Girls-Women <sup>1</sup>  | 4-8             | 1200-1400                     | 1400-1600 | 1400-1800 |
|   | 9-13            | 1400-1600                     | 1600-2000 | 1800-2200 |
|   | 14-18           | 1800                          | 2000      | 2400      |
|   | 19-30           | 1800-2000                     | 2000-2200 | 2400      |
|   | 31-50           | 1800                          | 2000      | 2200      |
|   | 51+             | 1600                          | 1800      | 2000-2200 |
| Boys-Men <sup>1</sup>   | 4-8             | 1200-1400                     | 1400-1600 | 1600-2000 |
|   | 9-13            | 1600-2000                     | 1800-2200 | 2000-2600 |
|   | 14-18           | 2000-2400                     | 2400-2800 | 2800-3200 |
|   | 19-30           | 2400-2600                     | 2600-2800 | 3000      |
|   | 31-50           | 2200-2400                     | 2400-2600 | 2800-3000 |
|   | 51+             | 2000-2200                     | 2200-2400 | 2400-2800 |

<sup>1</sup> The calories are calculated based on the average height and average weight. For adults, the average man is 1,78 m and 70 kg and the average female is 1,62 m and 57 kg. For

*children average height and weight differ.*

*\* Children and teenagers need more calories as age increases while adults need fewer calories as age increases.*

*\*\* Low means lifestyle that includes physical activity associated with typical daily activities (stairs, errands, etc.). Moderate means physical activity equivalent to walking about 2,5-5 km / day, and intense to walking more than 5 km / day.*

Source: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.

Man takes energy and nutrients from food. Carbohydrates, lipids and proteins are the nutrients which can produce energy. Alcohol produces energy as well.

### **3.2. Acquaintance with the nutrients**

Foods consist of nutrients. Adequate nutrient intake is necessary for both maintenance and growth of the organism. Nutrients are classified into six major categories: carbohydrates, proteins, lipids, vitamins, minerals and water. Each of these components has its own special role in the performance of bodily functions and all together are essential for the health and well being of the organism.

#### **1.2.1. Carbohydrates**

Carbohydrates are the main dietary source of energy. The average person gets from carbohydrates about half of its total energy intake. They are divided into simple and complex carbohydrates.



### 3.2.1.a. Simple carbohydrates

*Simple carbohydrates* (or sugars) include various sugars and especially:

- glucose, which is contained in honey and fruits,
- the fructose contained in honey, fruits and vegetables,
- the sucrose which is our common sugar and
- lactose, the milk sugar.

### 3.2.1.b. Complex carbohydrates

*Complex carbohydrates* include:

- Starch, the main complex carbohydrate that we take from bread, cereals, potatoes, rice, corn, pasta and legumes.
- Glycogen, which we find only in animal tissues and mainly in the liver.
- Fiber(or dietary fiber) which is the 'non-digestible' carbohydrates, that do not undergo the process of digestion and go directly to the colon, stimulating its mobility and reducing the occurrence of constipation . The fiber contained abundant in fruits, vegetables and whole grains , does not provide energy to the organism as other carbohydrates , but its intake has been associated with the diminution of cholesterol levels and the reduction of the risk of colon cancer .



*Glucose derived from the digestion of carbohydrate foods is the main energy substrate (ie “fuel”) of brain cells*

### 3.2.2. Lipids



The lipids (or fats) constitute about one third of total energy intake in the diet of an average person (30-40%). Lipids are important components of our diet and when consumed in moderation and in the right proportion they offer many benefits to our organism:

- They are the primary form of energy storage in the organism.
- They are a structural component of cell membranes (of all cells).
- They insulate and protect organs.
- They are substances from which many important biological molecules originate such as steroid hormones (eg, testosterone, estrogen) and vitamin D.
- They carry the fat-soluble vitamins A, D, E and K
- They supply the organism with the essential fatty acids that it can not synthesize itself.
- They participate in the form of bile salts (bile components) in the digestive process.

The group of lipids mainly found in foods are triglycerides. The free fatty acids are structural components of triglycerides and, depending on their chemical structure are divided into: saturated, mono-unsaturated and poly-unsaturated. In most food the lipids we meet are mixtures of the above three categories, while one of them dominates.

#### 3.2.2.a. Saturated fatty acids

**Saturated** fatty acids are found mainly in animal foods such as meat, milk, cheese, yogurt, butter, margarine and their high intake is associated with an increase of 'bad' cholesterol and the appearance of cardiovascular diseases.



#### 3.2.2.b. Monounsaturated fatty acids

Olive oil is the main source of mono-unsaturated fatty acids which reduce the levels of "bad" cholesterol, without affecting the "good" cholesterol. Also, *mono-unsaturated* fatty acids are contained in almonds, avocado and peanuts.



#### 3.2.2.c. Poly-unsaturated fatty acids

The *poly-unsaturated* fatty acids contain the *essential omega-3* and *omega-6 fatty acids*, which can not be synthesized by the organism and must get them through food. Fish, seafood and vegetable oils (such as corn oil, soybean oil, walnuts, linseed) are rich sources of polyunsaturated fatty acids (exceptions are palm oil, cocoa butter and coconut oil containing saturated fat) and the meat, liver, lard and fat in eggs (omega-6). The omega-3 and omega-6 fatty acids are essential for nervous system development in fetuses and infants, help the defense of the organism and improve cardiovascular risk factors.

#### 3.2.2.d. Trans fatty acids

*Trans fatty acids* that are produced from poly-unsaturated fats are found in some margarines, in fried foods or packaged foods rich in fat. These fatty acids increase the 'bad' and reduce the 'good' cholesterol.

### 3.2.3. Proteins

Proteins constitute vital nutrients for the organism, participating in many of its functions and being necessary for the development and reconstruction of body tissues. The building blocks of proteins are amino acids. Twenty-one (21) different amino acids are being used by our

body in all possible combinations for the synthesis of proteins. The biological role of the proteins may be:

- **Structural:** Proteins are structural components of all tissues, like the skin and muscles (e.g. collagen).
- **Regulatory:** The proteins regulate the water and acid base (maintenance of the acidity of body fluids at a *constant* level) balance in the blood (e.g. stable blood pH. PH is an "indicator" that shows how much acidic or alkaline a solution or a substance is).
- **Transport:** The proteins act as carriers of various substances and molecules in blood and body fluids (e.g., lipoproteins, transferrin, etc.)

They are also involved in hormonal, enzymatic and immune functions of the organism.



### 3.2.3.a. Biological value of proteins

Nine of the amino acids found in the tissues, are **necessary**, that is they are not synthesized by our organism and must be obtained from food. The content of essential amino acids in proteins determines their biological value. Proteins containing the essential amino acids in sufficient quantities and in the right proportion are of **high biological value** and are those that come from animal sources such as meat, fish, eggs, milk and other dairy products. In contrast, the proteins of plant origin (eg legumes, grains, nuts, vegetables) have **low biological value**, but this does not mean they are not important for our diet. By combining two low biological value proteins we can have a high biological value protein, such as meals that combine cereal with legumes (eg fakoryzo:lentils and rice) or cereals with nuts.

*The biological value of proteins is determined by their content of essential amino acids.*

In case of limited food intake (malnutrition) and in certain diseases (cancer, AIDS, renal failure, burn) the body proteins are degraded to produce energy. Inadequate protein intake results in muscle loss, growth limitation, suppression of the immune system (failure of healing, susceptibility to infections), the appearance of edema and of fatty infiltration of the liver.

### 3.2.4. Vitamins



Vitamins are a group of organic compounds that are needed in very small quantities by the organism and are not synthesized by the body in sufficient quantities to meet its physiological functions (maintenance, growth, reproduction, etc.). They are natural constituents of foods and in case of absence or insufficient intake they cause specific failure syndromes and health disorders. Vitamins are divided into ***fat soluble*** and ***water soluble***. The first category includes the vitamins A, D, E and K, while all the rest (C, B1 (thiamine), B2 (riboflavin), B3 (niacin), folic acid, B6 (pyridoxine), B12 (cobalamin), biotin, pantothenic acid) are water soluble vitamins. The fat soluble *vitamins* depend on lipids in the diet for their storage and transport and are easily stored in the tissues, while the water soluble ones are not. The exception is vitamin K, which although is fat soluble is stored in a very small extent, as well as vitamin B12, which, although water soluble, is stored to some extent in the tissues.

### 3.2.5. Minerals

Minerals (often referred to as metals) are a large group of micronutrients, most of which are essential for the organism, participating in many of its functions. Inadequate intake of these components may lead to impaired concentration and cause malfunctions in the tissues. They are distinguished to ***main mineral elements*** (calcium, phosphorus, sodium, potassium, sulfur, chlorine and magnesium) and ***trace elements*** (iron, zinc, iodine (non-metal element), selenium, copper, manganese, fluorine, chromium, molybdenum, silicon, cobalt) . The main minerals are so characterized because the nutritional requirement for each of them is greater (> 100 mg / day) compared to the trace elements (<100 mg / day).

The following **table 1** refers to the main dietary sources of vitamins and main minerals and trace elements, their basic biological functions and as well disorders that accompany their inadequate intake.



**Table 1**

| Nutrient                                      | Dietary sources   | Biological functions-<br>role   | Disorders due<br>to insufficient<br>intake   |
|---|---|---|--|
| <b>Vitamin A<br/>or retinol</b>               | Liver, fishoil, egg, butter,<br>dairy products, carrot,<br>cayenne pepper, spinach,<br>broccoli, tomato                     | Proper function of the<br>immune system, visual<br>function, bone<br>elongation, healthy<br>skin, gene regulation   | Blurred vision, dry<br>eyes, <i>skin tissue</i><br>keratinization, diarrhea,<br>immune system<br>depression,<br>impaired development,<br>reproductive<br>dysfunction |
| <b>Vitamin D</b>                              | Liver, egg, breakfast<br>cereals, margarine, milk,<br>'oily' fish such as salmon  | Maintenance of calcium<br>and phosphorus levels<br>in the blood,<br>maintenance of bone<br>mass- osteoporosis<br>prevention   | Rickets in children,<br>osteomalacia (bone<br>pain and muscle<br>weakness) in adults   |
| <b>Vitamin E</b>                              | Almonds, sunflower<br>seeds, peanuts,<br>sunflower oil, corn oil<br>and other vegetable oils,<br>avocado                    | Antioxidant activity,<br>protection of cell<br>membranes  | Nervous system<br>disorders (rare)   |
| <b>Vitamin K</b>                              | Spinach, broccoli,<br>cabbage, vegetable oils<br>(mainly soybean oil),<br>chestnuts, egg, meat,<br>liver, dairy products    | Essential factor in<br>blood coagulation,<br>bone composition   | Inability of coagulation   |
| <b>Vitamin C<br/>or<br/>ascorbic<br/>acid</b> | Kiwi, orange, lemon,<br>grapefruit, strawberries,<br>mango, papaya, peppers,<br>Brussels sprouts,<br>broccoli, sweet potato | Antioxidant activity,<br>contribution to the<br>synthesis of collagen,<br>carnitine and certain<br>hormones, increase of<br>iron absorption in the<br>intestine, immune<br>function | Scurvy (weakness,<br>fatigue, bleeding gums,<br>failure of wound<br>healing)   |



|  |   |   |   |
|--|---|---|---|
| <b>Vitamin B<sub>1</sub><br/>or thiamine</b>   | Bread, whole grains and fortified cereals, nuts, legumes, pork, liver, yeast, sunflower seeds                       | Energy metabolism, neuronal function through synthesis of neurotransmitters   | Beri-Beri (heart failure or nerve disorders), encephalopathy<br>Wernicke (confusion and paralysis of eye muscles in chronic alcoholics) , Korsakoff syndrome (memory loss-psychosis-apathy) |
| <b>Vitamin B<sub>2</sub><br/>or riboflavin</b> | Eggs, milk and dairy products, liver, mushrooms, fortified cereals, green leafy vegetables (spinach, broccoli)      | Cellular energy production, participation in the metabolism of fats   | Oral disorders  |
| <b>Vitamin B<br/>or niacin</b>                 | Beef, pork, chicken, egg, milk, fish, nuts  | Energy metabolism, fatty acid synthesis   | Pellagra (dermatitis, diarrhea, confusion and disorientation)   |
| <b>Folic acid</b>                              | Brussels sprouts, spinach, broccoli, cabbage, cauliflower, beans, peas, potatoes, legumes, citrus fruits, offal     | Necessary for the synthesis of proteins, DNA and for nervous system function  | Megaloblastic anemia  |
| <b>Vitamin B<sub>6</sub></b>                   | Meat, fish, seafood, poultry, green leafy vegetables, whole grains, banana, nuts                                    | Protein metabolism, synthesis of several neurotransmitters and adrenaline   | Oral disorders, microcellular anemia  |
| <b>Vitamin B<sub>12</sub></b>                  | Meat, egg, milk and dairy products, fish, offal<br>(plant foods DO NOT contain vitamin B12 - attention vegetarians) | Participation in recycling homocysteine , in hematopoiesis and anemia prevention<br>regulation of the metabolism of folic acid, necessary for synthesis of myelin | Malabsorption of nutrients, ileal diseases, pernicious anemia, neurological disorders   |

|                         |   |   |  |
|-------------------------|---|---|--|
| <b>Biotin</b>           | Liver, milk, cheese, egg yolk, nuts, banana   | Participation in the metabolism and in energy release in the cell   | Dermatitis, glossitis, hair loss, anorexia, depression, hypercholesterolemia |
| <b>Pantothenic acid</b> | Eggs, liver, meat, milk, green vegetables, mushrooms, avocado, sweet potato (found in most foods - "pantothen" in greek means everywhere)                             | Participation in the metabolism of fats and carbohydrates   | Burning sensation in legs, depression, fatigue, muscular weakness            |
| <b>Calcium (Ca)</b>     | Milk and dairy products, sardines (fish eaten with bones), legumes, tahini, green leafy vegetables (eg spinach, broccoli), oysters, mussels                           | Structural component of bones and teeth, blood clotting, proper muscle and nerve signals function and regulation of metabolism and blood pressure | Developmental delay in children, osteoporosis in adults                      |
| <b>Phosphorus (P)</b>   | Milk and dairy products, whole grains, meat, fish, eggs, nuts, legumes, fruits and vegetables (less good sources)   | Structural component of teeth, bones, cell membranes, genetic material and compounds binding energy   | Very rare  |
| <b>Magnesium (Mg)</b>   | Green vegetables and greens, nuts, figs, many spices, cocoa, coffee, tea, seafood, whole grains, legumes ( <i>a large percentage is lost during food processing</i> ) | Component of bones, enzymes function, affects metabolism of potassium, calcium, vitamin D, muscle relaxation, neuromuscular activity              | Cardiac arrhythmias  |

|                      |   |   |   |
|----------------------|---|---|---|
| <b>Sodium (Na)</b>   | Salt, foods high in salt (anchovies, cheese, crackers, sausage, bacon, potato chips, smoked meat or fish)   | Water balance, acid-base balance of blood, transmission of nerve impulses   | Disorders of pressure, muscle and nerve dysfunction   |
| <b>Potassium (K)</b> | Fruits and vegetables, meat and dairy. Richest sources: banana, apricot, avocado, potato, spinach, tomato, chocolate, cocoa, coffee, soy milk, salt substitutes   | Water and acid-base balance, maintenance of heart rate  | Muscle weakness, arrhythmias, confusion   |
| <b>Iron (Fe)</b>     | Liver, meat, fish, seafood, <u>liver</u> and other offal, egg, bread, wholegrain cereals, green leafy vegetables, nuts, dried fruits (figs, prunes, apricots), legumes<br><i>The animal source foods have high bioavailability (rate of absorption in the intestine, 20-25%) while plant source foods have low bioavailability (1-5%)</i> | Major component of hemoglobin and myoglobin for transfer and utilization of oxygen to tissues, structural of enzymes, composition of amino acid, hormones and neurotransmitters   | Iron deficiency anemia  |
| <b>Zinc (Zn)</b>     | Crustaceans and molluscs, offal, lamb, beef, pork, poultry, milk and dairy products, eggs, nuts, mushrooms, figs, whole grain cereals, soy products   | Structure and function of enzymes in many functions: energy metabolism, growth, immune system, synthesis of proteins and DNA, alcohol metabolism, neutralization of free radicals | Developmental delay and sexual maturation delay, dermatitis, diarrhea, hair loss, neuropsychiatric symptoms |

|                        |  |   |   |
|------------------------|--|---|---|
| <b>Copper (Cu)</b>     | Meat, offal, cocoa, legumes, nuts, whole grains  | Hemoglobin and collagen synthesis, neutralization of free radicals                          | Developmental delay, edema, iron deficiency anemia, osteoporosis, immune disorders and nervous system disorders |
| <b>Iodine (I)</b>      | Milk and dairy products, fish such as cod and seafood, iodized salt, all plant foods grown in coastal areas                  | Necessary for synthesis of thyroid hormones (T3 and T4), regulation of basal metabolic rate | Hypothyroidism in adults, cretinism in embryos (mental and physical retardation, hearing and speech disorders)  |
| <b>Selenium (Se)</b>   | Crustaceans, fish, eggs, poultry, meat, milk, vegetables and grains that are grown in soils with adequate levels of selenium | Antioxidant activity in combination with vitamin E  | Keshan disease (cardiomyopathy), Kashin-Beck disease (musculoskeletal disorders)                                |
| <b>Manganese (Mn)</b>  | Nuts, whole grain cereals, tea, leafy vegetables, blueberries, nuts  | Component of enzymes, bone formation  | Rare  |
| <b>Molybdenum (Mo)</b> | Legumes, nuts, wholegrain cereals, green leafy vegetables, milk and dairy products   | Component of many enzymes   | Mental disorders  |
| <b>Chromium (Cr)</b>   | Egg yolk, meat, wholegrain cereals, legumes, nuts  | Transfer of glucose from the blood into cells   | Glucose intolerance, weight loss, neuropathy, high lipid levels   |
| <b>Fluorine (F)</b>    | Water, tea, coffee, rice, soybeans(soya), cooked spinach, onions, lettuce  | Stronger bones and teeth, reduction of the incidence and severity of dental caries          | Dental caries   |

### 3.2.6. Water

Water is essential for all cell functions. The  $\frac{1}{2}$  to  $\frac{2}{3}$  of our body weight is water. Overweight people have less water in their bodies from the thin or normal weight. This is due to the fact that the overweight individuals have more adipose tissue and adipose tissue contains lower levels of water (about 20-35%) compared to the muscle tissue (about 80%). The biological value of water is enormous because of the properties it has, which makes it necessary for the organism:

1. It is solvent of many substances (eg nutrients).
2. Facilitates the absorption and transport of nutrients, hormones, immune factors.
3. Helps the excretion of waste products.
4. Assists chemical reactions in the organism.
5. Regulates body temperature at about 37°C.



The individual water requirements are influenced by the type of diet, physical activity and environmental conditions, as with sweating and high temperatures the needs of the individual increase. The intake of water should cover the losses from the body (eg, urine, sweat, saliva, etc.). The total intake of water, that one person drinks is calculated by adding any water we take from other beverages (juices, milk, soft drinks) as well as from food.

The adoption of a balanced diet that is characterized by moderation and great variety of foods ensures adequate intake of all nutrients. When this balance is disturbed for a long time, health problems may appear. The identification and modification of dietary factors that caused the problem will help to the restoration of the organism's health.

## 3.3. Diet tips for good health

### 3.3.1. What is the meaning of a healthy diet?

The key to a healthy or proper diet is *balance*. Balance means to have a variety of foods in the correct proportions and to consume adequate amounts of food and beverages in order to be

healthy, to have reduced risk of chronic diseases and to achieve and maintain a healthy body weight.








**Variety:** No food by itself, with the exception of breast milk for about the first six months of life, can provide all the nutrients in the amounts needed for good health. It is important that our eating habits are characterized by a variety of foods. The existence of variety in the diet minimizes the possibility of a significant lack of a nutrient. Even foods that are not recommended to be consumed regularly should not be completely excluded from the diet, as they can provide one or more nutrients (eg meat as a source of vitamin B12). Avoiding certain foods is only recommended in cases of food allergy or intolerance (eg lactose) or genetic or other kind of sensitivity to certain foods (eg G6PD enzyme deficiency that causes susceptibility to the consumption of broad beans).

**Moderation:** The classification of foods as "good" and "bad" does not fit in the context of a balanced diet and can move many people away from improving their dietary habits. There are no "good" and "bad" foods, rather than foods that need to be consumed more or less often and some that exceed in providing nutrients. All foods have a place in our diet as long as they are eaten in moderation and in appropriate quantities per category. What matters is the overall dietary regimen followed and not individual foods or meals.

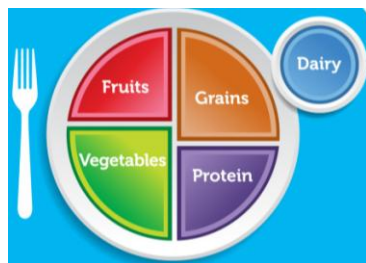
### 3.3.2. Food Groups

On the basis of their characteristics concerning their nutritional value, foods are divided into *food groups*. Each group has different characteristics and differences may exist even in foods of the same group. In the context of a balanced nutrition, a dietary regimen needs to include a variety of choices from the 5 basic food groups, which are presented in the following table:

| Groups                       | Vegetables  | Fruits  | Grains   | Protein   | Dairy  |
|------------------------------|---|---|--|---|--|
|                              |  |  |  |  |   |
| Food                         | Raw or cooked vegetables and 100% fresh vegetable juice                           | Fruits (fresh, dried, cooked or frozen) and 100% fresh fruit juice                | Breakfast cereals, oats, bread, rice, pasta, corn, couscous, quinoa                | Meat, poultry, eggs, fish, seafood, legumes, nuts, soy products                     | Milk, cheese, yogurt, desserts based on milk (frozen yogurt, rice pudding), soy milk |
| Characteristics of the group | Fiber, vitamins, minerals   | Fiber, vitamins, energy   | Energy, B vitamins   | Protein, B vitamins, iron   | Calcium, vitamin D   |

### 3.3.3. What will I finally put on my plate?

These food groups are summarized in a very representative way in the following figure of a dish that has concentrated all 5 groups. The "plate" shows us in what proportion we need food from each group in one day but also at every meal:



**Source:** United States Department of Agriculture (USDA), ChooseMyPlate.gov

- It is good that half of your plate consists of fruits and vegetables.
- A little more than a quarter of the plate to be covered by the grain group (starchy foods). Replace at least half of the grain with equivalent wholegrain or high-fiber (wholemeal bread, cereals, pasta, brown rice).
- Choose low-fat dairy.
- It is good to have variety in your choices from the group of the protein, which covers about a quarter of the plate. You should prefer chicken, fish, legumes and



you should decrease red meat (eg beef, lamb, goat, pork) to 1 time / week or less.

### **3.3.4. What foods or ingredients are good to reduce?**

From various studies it is understood that certain foods or food ingredients are overconsumed and may increase the risk of certain chronic diseases such as cardiovascular disease, type 2 diabetes, hypertension and obesity. These include salt (sodium), solid lipids, added sugars, refined grains, alcohol.

#### **3.3.4.a. Salt (sodium)**

Sodium is an essential nutrient for the body that is needed in small quantities. The sodium in our diet is consumed mainly in the form of salt but is also a component of most foods. The increase of sodium intake leads to the increase of blood pressure while increased sodium intake is observed in both adults and children compared with the quantity recommended. Hypertension is a risk factor for cardiovascular diseases and kidney disease, so both adults and children need to limit sodium intake to 2300 mg per day (about 1 teaspoon of salt). To reduce your salt intake:



- Reduce processed and packaged foods like pizza, chips, savory snacks, cooked meats, canned food, pickles. Fresh foods contain less salt (and sodium).
- You should prefer homemade food, where you can control the amount of salt and avoid eating takeaway food that is rich in salt.
- Read carefully the ingredients on food labels and look for indications of "low sodium" or "no added salt".
- Avoid sauces based on ketchup or soya, pickles, olives or cheese. It is good to choose ketchup or "low sodium" soy sauce or sauce based on yoghurt, lemon and vinegar.



- The herbs and spices such as garlic, basil, oregano, pepper can help you to reduce the amount of salt in your food or salads.

#### **3.3.4.b. Solid lipids (or fat)**

Most of the lipids with a high content of saturated and trans fatty acids are solid at room temperature and are called "solid lipids" while those containing more unsaturated fatty acids are usually liquid at room temperature and are called "oils". The lipids of the diet are important for the organism as they constitute up to 35-40% of total energy intake for adults. However, the type of fatty acids has a greater effect on the risk for cardiovascular disease compared with the total amount of lipids in the diet.

##### ***i. Saturated fatty acids***

There are strong indications that more than the recommended (<7-10% of total energy intake) intake of saturated fatty acids is associated with higher levels of total blood cholesterol and "bad" cholesterol (LDL) as well as with increased energy intake. To reduce their consumption:

- Saturated fats are found mostly in animal-source foods. It would be good to reduce the consumption of foods such as full fat yellow cheese, cold meats, sausages, cow butter, lard, sour cream, sweets and fatty meats like ribs and replace them with foods rich in monounsaturated and polyunsaturated fats (eg in cooking use olive oil instead of butter).
- Replace full-fat dairy products with low-fat dairy or lean.
- Remove visible fat and skin from meat and poultry.

##### ***ii. Trans fatty acids***

Trans fatty acids are present in small amounts in meat and dairy products or they are created during food processing (hydrogenation). A large number of studies show that their increased consumption is associated with increased cardiovascular risk due to the increase of "bad" cholesterol (LDL). Their intake can be limited:

- By reducing the consumption of fried and packaged foods rich in fat as well as of some margarines.
- By eating lean meat and poultry and low-fat dairy.



#### **3.3.4.c. Added sugars**

These are sugars which are added during processing or manufacturing of food and beverages, sweeten their taste and make them tastier. They include: corn syrup rich in fructose, the white or brown sugar, malt syrup or maple, fructose sweetener, liquid fructose, honey, molasses, anhydrous and crystal dextrose. Unlike foods that contain natural sugars (fruits, dairy), foods containing added sugars usually provide enough calories but few or no nutrients and fiber while they are consumed at high frequency. To reduce their consumption, it would be good:

- To limit soft drinks, juices with sugar, energy or sports drinks as well as sweets and candies.
- To replace them with other foods or drinks that do not contain or have little content of added sugars (eg 100% natural juices, light refreshments, water).

#### **3.3.4.d. Refined grains**

The processing (refining) of wholegrain cereals leads to loss of vitamins, minerals and fiber. For this reason, refined grains are often enriched with various vitamins and minerals, but this does not substitute all the components that were lost during processing. Also, many processed cereals which are being over consumed are rich in solid lipids and added sugars (eg biscuits, cakes, pies, donuts). Therefore, it is recommended to replace them with whole grains (at least half) both because of their lower nutritional value and the extra energy they may offer.

### 3.3.4.e. Alcohol

Moderate alcohol consumption (up to 1 drink / day for women and up to 2 drinks / day for men) may be beneficial for health as it is associated with a lower risk for cardiovascular disease and mortality from all causes. On the other hand, excessive alcohol consumption (> 3 drinks / day or > 7 drinks / week for women and > 4 drinks / day or > 14 drinks / week for men) increases the risk for liver cirrhosis, hypertension, stroke, type 2 diabetes, cancer of the upper respiratory tract, injury and violence. It is also associated with increased body weight (due to the high energy provided) and impaired cognitive function. Special situations where alcohol consumption is contraindicated are:

- Pregnant women or women planning to become pregnant
- People who are under the legal limit age
- People who take medication
- People with specific health problems (liver disease, hypertriglyceridemia, pancreatitis)
- People who plan to drive or operate machinery
- People who can not be confined to moderate consumption

*What does 'one drink' mean? 1 drink = 1/2 can of beer = 2/3 of a small glass of wine (100 ml) = 1 small portion (25 ml) of alcoholic beverage (40% alcohol, eg ouzo, raki, whiskey, vodka, rum)*

### 3.3.5. What foods are good to eat more?

The challenge is to consume "nutrient-dense" or "nutrient-rich" foods, which means foods that offer us nutrients beneficial for health with relatively few calories. These foods do not contain or contain few solid lipids, added sugars, salt and refined grains. Fruits and vegetables, wholegrain cereals, lean or semi-skimmed dairy, fish, poultry, legumes and nuts are "nutrient-dense" or nutrient rich foods. Studies show that the consumption of such foods is lower than recommended. As a result low intake of nutrients like potassium, fiber, calcium and vitamin D it is remarked. The increase of the above food groups is associated with health benefits and meeting of nutritional needs.

### 3.3.5.a. Fruits and vegetables



It is recommended to consume at least 5 portions of a variety of fruits and vegetables a day.

The increase of the consumption of fruits and vegetables is important because:

- i. They are an important source of vitamins (eg folic acid, vitamins A, C, K, magnesium, potassium) and fiber necessary for the organism.
- ii. The consumption of at least 5 servings of fruits and vegetables is associated with reduced risk of chronic diseases such as cardiovascular disease (eg heart attack, stroke). Also, certain fruits and vegetables may be protective against certain types of cancer.
- iii. When consumed or prepared without added fats and sugars they are relatively low in calories. Consuming them instead of foods that are rich in energy, will help better regulation and maintenance of body weight.

*1 serving = 1 cup fresh fruit / vegetables ½ cup cooked or 1 cup natural fruit juice*

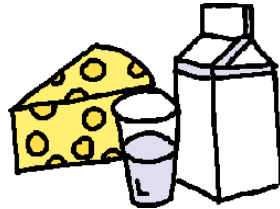
### 3.3.5.b. Wholegrain cereals



The group of grain (starchy foods) consist about a third of our daily energy intake and thus a basic part of our diet. More specifically, whole grain cereals are a good source of fiber, vitamin B complex, iron, magnesium and selenium. There are indications that the consumption of whole grain cereals is associated with lower cardiovascular risk, lower body weight and perhaps reduction in the incidence of type 2 diabetes. Therefore, it would be good, at least half of the grains we eat to be wholegrain. What is also very important is the

reading of food labels to see if a food contains some cereals which are whole grain or if they are all (100% wholemeal). Some examples of cereals that should be whole grain are bread, rusks and wholemeal pasta, brown rice and oats.

#### **3.3.5.c. Milk and dairy products**



The dairy group provides many nutrients such as protein, calcium, vitamin A, vitamin D (for those enriched) and potassium in our diet. There are indications that their intake is associated with better bone health, especially in children and adolescents and perhaps with less cardiovascular risk, type 2 diabetes and lower blood pressure in adults. The choice of low fat dairy offers the same nutrients, but with fewer calories and solid lipids. The 2-3 servings of dairy recommended daily, it is preferable to originate from milk or low fat yoghurt and less from cheeses because most contain much sodium and saturated lipids.

*(1 serving = 1 cup of milk = 1 cup of yogurt = 30g. of cheese)*

For people who have intolerance to lactose, dairy products are available with reduced lactose or lactose-free. Also, for those who do not consume dairy products, there is the alternative of soy products (milk, cheese), which is enriched in calcium and vitamins A / D.

#### **3.3.5.d. Fish and seafood**



Fish and seafood, from the group of protein, are usually consumed less than meat, poultry and eggs. They also constitute an important source of protein, vitamins and minerals as well as omega-3 fatty acids, which are essential for the organism. Fish rich in omega-3 fats are especially fatty fish like salmon, sardines, anchovies, trout, mackerel, herring and oysters. Eating fish twice a week (of which one should be fatty fish) is associated with the prevention of heart disease and reduced cardiac deaths. It is also recommended to be consumed by pregnant or lactating women as omega-3 fats are important for embryonic's and infant's physical and cognitive development. The only fish that pregnant and lactating women should

avoid are those rich in mercury such as swordfish, sharks, royal mackerel as well as albacore in smaller quantities.

#### **3.3.5.e. Oils**

The lipids with a high content in monounsaturated and polyunsaturated fatty acids are usually liquid at room temperature and are called "oils". The oils are not a separate food group but are important as they provide essential fatty acids (omega-6) and vitamin E. These oils are found in foods such as olive, nuts and seeds, avocado and seafood or are plant extracts as olive oil, sunflower oil, corn oil, sesame oil. Furthermore, foods that are basically oils are soft margarines, mayonnaise and salad dressings with oil base. The replacement of saturated fats with unsaturated fatty acids (eg olive oil instead of butter in cooking) appears to reduce both total and "bad" blood cholesterol. It is recommended to use mainly olive oil, which plays an important role in greek (and mediterranean) diet as it is a rich source of antioxidants and its consumption is associated with increased consumption of vegetables and legumes. It should be noted that the quality of lipids (oils or solid fats) is more important than their overall intake. However, because the oils are rich in calories, their moderate consumption is recommended.

### **3.3.6. Principles of a balanced diet - 10 tips**

We could summarize all of the above along with some additional elements on the following tips:

- Consume a variety of fruits and vegetables on a daily basis.
- Prefer bread, cereals or pasta whole meal.
- Consume fish and legumes at least once per week.
- Consume olive oil as the main source of fat in foods and salads and restrict the consumption of animal fats (eg butter, skin, fat in meat, cream).
- Avoid salt. Instead, you can use herbs and spices.
- Prefer plenty of water and avoid liquids with calories (eg refreshments, processed juices). Prefer their light versions.
- Consume sweets wisely and leave them for special circumstances (holidays, birthdays, sorties).
- Eat breakfast on a daily basis and distribute the food of the day in 4-5 meals and snacks.
- Eat slowly, calmly, in a specific room and without doing something else (eg watching TV).
- Listen to your body, eating when you are really hungry and stopping before you have the feeling of a bloated stomach.

## Section II

### 4. Put into practice

#### 4.1. Greek (Mediterranean) Diet

The dietary recommendations for the different food groups and the frequency of their consumption are included in the dietary regimens (or standards), which reflect a total of dietary habits. One of the most studied dietary regimens is that of the Greek (Mediterranean) Diet, which forms a standard of a balanced diet worldwide. Also, it has many advantages compared with other dietary models, mainly in reducing the risk of diseases related to nutrition (eg cardiovascular disease, obesity, diabetes, etc.).

The various Mediterranean countries have their own special dietary habits, but all can be considered variants of the Mediterranean Diet because they have many features in common with the olive oil holding the central position.



##### 4.1.1. Traditional greek diet

The traditional Greek diet is part of the cultural heritage of Greece. Since ancient times, the food tradition of Greece is characterized by the sense of moderation. The rich and complex meals (feasts, symposiums) were happening now and then while the daily diet was based on legumes, vegetables and olive oil. In contrast, meat, sweets and wine were consumed in limited quantities. The milk intake was moderate but the consumption of yogurt and cheese high.

The main factors that contributed to the formation of traditional greek cuisine are the climate of the country, the geographical location of the different regions, the way to prepare food in each of them and the customs that were developed in them. Great is also the influence of religion on dietary habits of the Greeks, since during the days of the year when Orthodox Christians fast, they avoid meat, dairy, eggs and on some seldom times even olive oil. These dietary practices promote good health.

Unfortunately, during the last years, there had been a tendency to substitute the traditional diet with ready-made or processed food, which was detrimental for the health. However, lately, there is a gradual shift to tradition and to Greek traditional recipes.

#### **4.1.2. Historical review of the Mediterranean diet**

The term "Mediterranean diet" refers to nutrition of countries surrounding the Mediterranean Sea and especially of Crete and some areas of Greece and South Italy. This term began to be used since the early 1950s, when a large research started, known as Seven Countries Study, during which were studied the dietary habits of people (men) from 7 different countries (Yugoslavia, Greece, USA, Japan, Italy, Netherlands/ *Holland* and Finland) in relation to health indicators. From Greece men from Crete and Corfu took part. The study lasted 30 years and its results showed that the Cretans had the lowest mortality rate from cardiovascular disease and cancer as well as the highest average life expectancy. The secret of longevity of the Cretans was simple and frugal diet (mainly foods of plant origin: fruits, vegetables, whole grain cereals, olive oil and red wine) as well as greater physical activity (work outdoors) than the rest populations.

Based on the findings of the above study, dietary guidelines were created which constitute the Cretan or Greek Diet which later prevailed as Mediterranean diet.

#### **4.1.3. The characteristics of the Greek (Mediterranean) Diet**

The traditional Greek diet has much in common with the Mediterranean diet. The traditional Mediterranean diet and especially its greek variation, has the following nine basic characteristics:

|    |  |
|----|--|
| 1. | High consumption of olive oil  |
| 2. | High consumption of vegetables   |
| 3. | High consumption of fruits   |
| 4. | High consumption of wholegrain cereals                                     |
| 5. | High consumption of legumes  |
| 6. | Moderate consumption of milk and dairy products (mainly cheese and yogurt) |
| 7. | Moderate consumption of fish   |
| 8. | Low consumption of meat and its products                                   |
| 9. | Moderate consumption of alcohol, mainly in the form of wine with meals     |



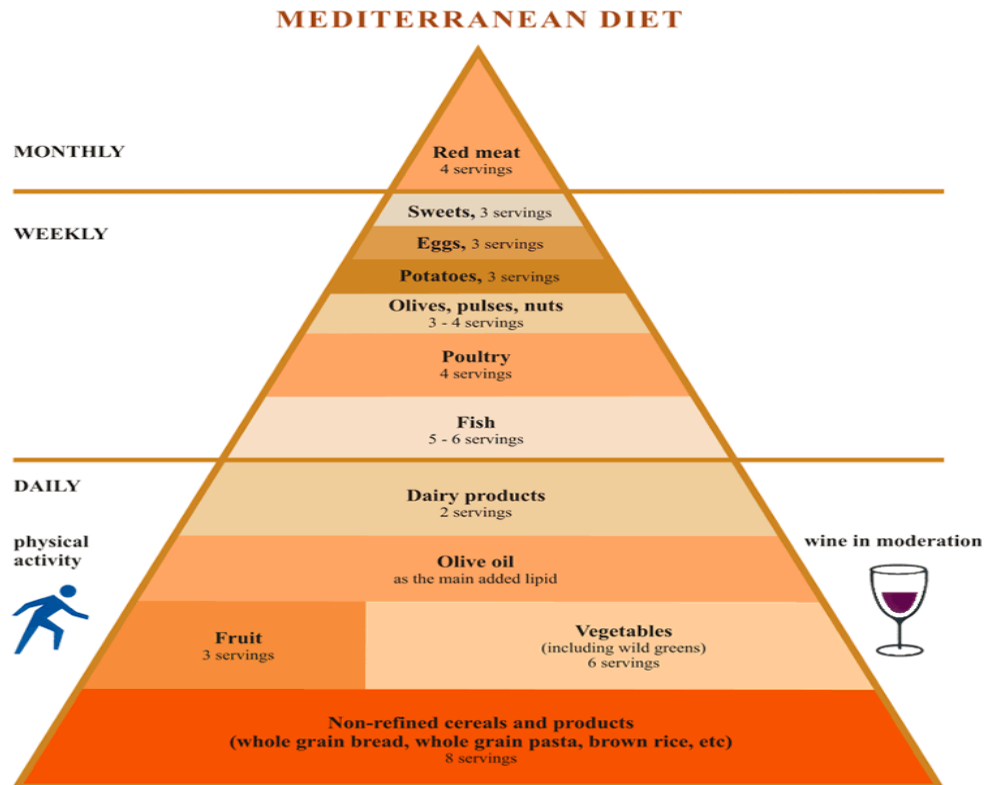
The greek diet was based on three dominant mediterranean products: olive oil, cereals and wine. Next to these, we can add the wild greens, which are part of the food tradition of Greece.

The dietary guidelines are illustrated in the form of a pyramid, the base of which refers to foods that should be consumed very often and the top to foods that should be consumed less frequently, with the other foods occupying intermediate positions.

In 1999, the Supreme Scientific Health Council (SSHC) of the Greek Ministry of Health and Welfare, outlined the dietary guidelines for adults in Greece, where the nutritional value of the traditional Mediterranean diet is emphasized. These dietary guidelines are summarized in the Mediterranean diet pyramid (picture 3.1).

At the base of the pyramid, *are* wholegrain cereals, fruits and vegetables (and greens), which are rich in fiber, carbohydrates (energy), vitamins and minerals for which **daily consumption** is recommended. Also, the daily moderate consumption of olive oil and dairy products (mainly cheese and yogurt) is recommended. **Weekly consumption** is recommended for legumes, eggs, fish, seafood, white meat (*eg* chicken, turkey, rabbit), which are sources of high biological value protein, iron and vitamin B complex. Also weekly consumption is recommended for potatoes, nuts and sweets (less often). Finally, **monthly consumption** is recommended for red meat (*eg* pork, beef, goat) and meat products, which are at the top of the pyramid, mainly because of their high content of saturated lipids, although they are an excellent source of iron and protein of high biological value. Also regular physical activity is recommended, adequate daily water intake and moderate alcohol consumption, mainly in the form of wine. Finally, the pyramid suggests the consumption of herbs (oregano, basil, thyme), which can help to avoid salt as well as consumption of herbs and their infusions.

In the Mediterranean Diet Pyramid, the amounts are referred as "servings", which correspond to smaller quantities than restaurant servings, vary by food and are indicative. Emphasis is given mainly to the frequency of consumption, while the exact amounts depend on gender, age, body weight and physical activity of individuals.



One serving equals approximately half of the portions as defined in the Greek market regulations (portions served in restaurants)

Also remember to:

- drink plenty of water
- avoid salt and replace it by herbs (e.g. oregano, basil, thyme, etc.)

*Source: Supreme Scientific Health Council, Ministry of Health and Welfare*

#### 4.1.4. Health benefits of the Greek (Mediterranean) Diet

The beneficial effect of the traditional Greek (Mediterranean) diet is expressed by its whole rather than individual foods and nutrients. It seems that the combination of foods and the biological interactions of the different components of the Greek (Mediterranean) diet bring in the significant health benefits. Various researches suggest that the traditional Greek (Mediterranean) diet contributes to the prevention of coronary heart disease and possibly of some forms of cancer while it has been shown to be effective in weight loss as well. Also, from studies conducted in Denmark, the Netherlands/*Holland*, Sweden, Spain and the United States emerged that the diet that resembles the traditional Mediterranean diet is associated with longevity.

*The Mediterranean Diet is not just a dietary regimen but a lifestyle*

It is noted that the scientific evidence supporting the beneficial properties of the Greek (Mediterranean) diet refer to the traditional Mediterranean diet rather than the current diet of the countries of the Mediterranean region. From data of the EPIC program (European Prospective Medicine and Society) and also from study in children and adolescents, appears that the degree of commitment of the Greek population in the Mediterranean diet is decreasing and especially among young people. The increase of the availability of food, new products' introduction, advertising and the emergence of functional foods (foods that offer specific health benefits beyond their content of nutrients) and supplements, are some of the factors that may have influenced the change of dietary habits of Greeks.

In conclusion, the Mediterranean diet is addressed to all those who want to follow a healthy diet and life in general. Undoubtedly, it is an excellent dietary pattern that includes all the essential nutrients since it is rich in fiber, vitamins, minerals, antioxidants and omega fatty acids. Obviously, it can be implemented easier in Mediterranean countries, where its distribution of foods is much more familiar and the foods that compose it are in abundance, but it is certainly appropriate for other civilizations and cultures.



## 4.2. Biological or organic foods

### 4.2.1. What are they?

Biological or organic foods are products produced in accordance with the rules and principles of biological agriculture and cattle raising, which are based on:

- Natural processes, without the use of synthetic chemical fertilizers, pesticides, antibiotics, hormones or enhancers.
- The use of appropriate production techniques that maintain the natural balance and soil fertility (eg recycling of plant and animal residues, crop rotation).  
*crop rotation: rotation of cultivation of different crops in the same field*
- The use of native plants and animal breeds which are adapted to local conditions and are more resistant to the development and transmission of diseases.
- The good conditions of breeding and treatment of the animals.

- The protection of the environment



#### 4.2.2. How are they different organic than conventional food?

1. Organic foods are more *environmentally friendly*. They promote physical balance, recycling of plant and animal residues and soil fertility while at the same time they contribute in the reduction of the environmental pollution and of the veterinary waste.
2. Organic products do not have the impressive *uniformity* and size that have the conventional counterparts. The appearance, shape and color in conventional food are affected by the chemical plant protection and the way of their cultivation.
3. Organic fruits and vegetables have 20-30% *lower proportion of water* than conventional, thus have a greater concentration of vitamins, trace elements and minerals. This fact sometimes leads to longer cooking time.
4. Packaged organic products are not protected by chemical means (eg preservatives) opposed to some conventional packaged, so they are more *susceptible* to alterations. If they are found in the suitable conditions (humidity, heat), live microorganisms grow rapidly and lead to physical spoilage of the products.
5. Regarding taste, studies are ambiguous about whether organic products outclass conventional.
6. The *price*. Organic products are more expensive than their conventional counterparts because farming methods do not constitute to the increase of the volume of production, but of the quality. Also, labor costs are higher in organic cattle raising while the number of animals per unit area is reduced. Finally, they are burdened with the additional cost of certification and continuous controls.

*According to a research by the Research Laboratory of Marketing, of the Economic University of Athens, even if organic products are more expensive than conventional, there is an increased demand by Greek consumers, despite the current difficult economic situation.*



#### **4.2.3. Are organic products safer than conventional?**

Organic foods are high quality products and seem to be more secure than conventional as they do not contain synthetic chemical fertilizers and pesticides, antibiotics, hormones and Genetically Modified Organisms (*GMOs*). During their production, the use of limited natural fertilizers and herbicide safeners is allowed. Also, numerous studies have shown that they contain lower concentrations of toxic for health heavy metals, nitrates (because of the absence of use of nitrate fertilizers), as well as residues of insecticides and pesticides, which are used only in conventional agriculture.

#### **4.2.4 Are Organic products more nutritious than conventional?**

Although there are some indications, we cannot clearly conclude that organic products are more nutritious than conventional ones. It is difficult to compare the results of studies conducted by different researchers because of differences in the way of the design and realization of each research. Results of studies show that organic fruits and vegetables are richer in vitamin C, minerals and antioxidants and contain lower amounts of protein but of higher biological value than conventional. Also, researches show that organic grains and legumes have a higher mineral content. Finally the situation is not clear as far as organic animal products are concerned since the available data are incomplete. Moreover, it does not seem to exist substantial differences in nutritional value of organic products compared to conventional ones.

#### **4.2.5. How the consumer will understand that a product is organic?**

In order for an agricultural product to be characterized as organic it must be certified by an approved body (in Greece there are 15 such *bodies/institutions*) to be ensured that it is produced in conditions of organic production and is authentic. All *these bodies/institutions* are controlled by the Agricultural Products Certification and Supervision Organization (AGROCERT) and by the Hellenic Accreditation System (E.SY.D.). Each *institution* has its logo. There is as well the EU organic logo for organic products. The logos are particularly useful for consumers to easily distinguish that this is a certified organic product. The table below presents the logos of greek certification bodies and the EU Organic Logo:

| Institution /Inspection Organization   | logo  |
|--|---|
| EU Organic Logo  |    |
| Certification & Inspection Organization of Organic Products DIO                |    |
| BIOHELLAS Inspection and Certification Body for Organic Products               |    |
| PHYSIOLOGIKE-Inspections Certifications for Organic Products                   |    |
| GREEN CONTROL – Inspection and Certification Organization for Organic Products |    |
| A-Cert European Organization for Certification S.A.                            |    |
| Q-Ways Quality Ways S.A.   |   |
| A.Hatzidiki & Co – IRIS  |  |
| Geotechnical Laboratory S.A.   |  |
| QMSCERT – ‘Q-CERT LTD’   |  |
| Naoum Panayiotis- Kountios George Co. GMCERT                                   |  |
| TÜV HELLAS S.A.  |  |
| OXYGEN Greek Certification Organization  |  |
| Agricultural Products Certification and Supervision Organization (AGROCERT)    |  |
| Hellenic Accreditation System (E.S.Y.D.)                                       |  |

## Questions

1. Could you name the six major categories of nutrients?
2. Which foods contain essential omega-3 and omega-6 fatty acids?
3. What is meant by a "high biological value" protein?
4. Could you name three good food sources of Vitamin C?
5. What is meant by a "healthy diet"?
6. In which foods can saturated and trans fatty acids be found?
7. What foods are good to eat more?
8. What are the characteristics and the health benefits of the Greek Mediterranean diet?
9. Which foods are at the base of the Mediterranean diet pyramid?
10. Are organic foods safer and more nutritious than conventional?

# Are you interested?

## 5. Further readings

- Department of Health and Human Services: [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov)
- US Department of Agriculture (USDA): [www.choosemyplate.gov](http://www.choosemyplate.gov)
- British Dietetic Association: [www.bda.uk.org](http://www.bda.uk.org)
- Academy of Nutrition and Dietetics: [www.eatright.org](http://www.eatright.org)
- Hellenic Health Foundation : [www.hhf-greece.gr](http://www.hhf-greece.gr)
- WHO Collaborating Centre for Food and Nutrition Polices : [www.nut.uoa.gr](http://www.nut.uoa.gr)
- European Food Information Council (EUFIC): [www.eufic.org](http://www.eufic.org)
- Mediterranean Diet Foundation: <http://dietamediterranea.com/piramide-dietamediterranea/>
- Ministry of Rural Development and Food-Department of Organic Farming: [www.minagric.gr/greek/3.6.B.html](http://www.minagric.gr/greek/3.6.B.html)
- Organic Farming in Europe: [http://europa.eu.itn/comm/agriculture/qual/organic/plan/comm\\_el.pdf](http://europa.eu.itn/comm/agriculture/qual/organic/plan/comm_el.pdf)

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## Teaching Unity

### **TOMATOES AND HEALTHY DIET**



## Table of contents

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

**3.1. Origin and characteristics of tomatoes**

**3.2. Local varieties of tomatoes**

**3.3. Differences between organic and conventional tomatoes**

### **4. Put into practice**

**4.1. Organic growing tomatoes / technology /**

**4.2. Traditional cuisine and recipes /shopska salad, lyutenitsa, tomato juice/**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>Tomatoes and Healthy Diet</b>  |
| <b>Area</b>  | small scale organic cultivation   |
| <b>Main Target Audience</b>  | <p>The end users of the module are ...</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Teachers of primary and secondary education that teach lessons related to environmental awareness and nutrition</li> </ul>  |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand ...</p> <p>Origin and characteristics of tomatoes</p> <p>Valuable local varieties of tomatoes</p> <p>Differences between organic and conventional tomatoes</p> <p>Organic growing tomatoes / technology /</p> <p>Benefits from traditional cuisine and recipes with tomatoes</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training; 8 hours for visits (farms, processors, markets) and 8 hours of practical work.</p>   |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <p>which local varieties to use for the production of organic tomatoes;</p> <p>what distinguishes organic from conventional production;</p> <p>how to cultivate organic tomatoes;</p> <p>what benefits there are for health consumption of organic tomatoes and foods in which they are the main ingredient;</p> <p>how to prepare foods with tomatoes.</p> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <p>knowledge about values of tomatoes;</p> <p>how to cultivate organic tomatoes;</p> <p>how to prepare healthy foods with tomatoes.</p>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning /blended learning/: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- case study /field survey/;</li> <li>- workshop;</li> <li>- self study.</li> </ul> </li> </ul>   |

## 1. Abstract

This unit is structured into two main sections: (1) Characteristics of tomatoes and benefits of organic cultivation and (2) Production of organic tomatoes and Traditional recipes with tomatoes.

In the first section the basic knowledge of origin and characteristics of tomatoes are presented. There are several local varieties of tomatoes which are suitable for healthy diet. It gives distinction about benefits from organic and conventional tomatoes. The second section consists of a technology of organic cultivation and the presentation of various recipes of traditional Bulgarian cuisine and on their health benefits.

Keywords:

Tomatoes, organic cultivation, Traditional Bulgarian dishes.

## 2. Introduction

Tomatoes are traditional and one of the most consumed and the main vegetable crops grown in Bulgaria, according to the MAF in 2012 the acreage planted with tomatoes - 34 011 da. And total production of fresh vegetables occupy second place with a share of 9.84%. Production amounts to about 94 016 t. Used for fresh consumption in the domestic market, for processing into canning and export fresh and processed. Their widespread use due to their high taste and nutritional value. Raw tomatoes contain different antioxidants, vitamins and minerals that have the potential to protect us from serious diseases.

The vitamin C content is from 2 to 50 mg%. Rich are mainly active mineral salts - calcium and magnesium, iron, malic and citric acid. Acids transmit flavor of the fruit and help the kidneys and digestive system authorities. This is also due to their curative properties.

The fresh tomatoes have anti-inflammatory properties and even protect the brain from the occurrence of conditions, worsening memory and cognitive abilities. The tomatoes have more specific benefits for men. Nutritionists recommend men to eat tomatoes at least once a week, because lycopene in them contributes to prostate health.

The nutritional value of tomatoes is determined by contained therein antioxidants and other beneficial ingredients. The main antioxidant in tomatoes - lycopene, neutralize harmful free radicals that damage cells in the body. Tomatoes also contain beta-carotene, folic acid and vitamins A, C and E. They are low-calorie food.

# Section I

## 3. Core contents

### 3.1. Origin and characteristics of tomatoes

Homeland of tomatoes is South and Central America. It is derived from the wild along the Pacific coast of Peru tomato, which was a very small fruit, reaching 2.5 cm in diameter. This form was common in Mexico, but also in other South American and Central American countries. It is believed that it is the founder of cultural tomato. It originated in their homeland long before the discovery of America by Christopher Columbus. Ancient inhabitants of Peru fought unconscious selection to its cultivation. In Europe, it was brought by the Spanish in the XVI century, shortly after the conquest of Peru. From there it was in Italy, where he was known as "Peruvian apple." The most interesting thing about tomatoes is that it was originally grown as an ornamental plant because of its beautiful colors and berries. In North America, tomatoes were considered as deadly. There is a case where, to please the English King George wanted to poison rebel army chief North American General George Washington, who then "attempted poisoning" experience for many years and became the first president of the United States. In 1811 was issued botanical dictionary you carefully announcing: "... although the tomato is considered a poisonous plant in Italy eat it with pepper, garlic and oil ...". Although in his homeland Mexico and Peru as early V century BC ancient Incas and Aztecs cultivated and used it for food. Distribution in Europe, acquired only in the XV-XVI century, in Italy it was called "golden apple", and in France - "apple of love." Today, tomatoes are grown throughout the world, not just in the south but in the mid-latitudes, and even in the north, and having passed through the Arctic Circle. They grow them even in such areas of perpetual frost, as far Yakutia.

Curiously, the original tomato weighed about 1 g, while today's cultivated can reach more than 1 kg.

#### Botanical description

Tomato (*Solanum lycopersicum*) is vegetable specy that belongs to the nightshade family (Solanaceae). Tomatoes are grown for berries as annual crops, but in areas where air and soil temperature doesn't drop below 0° C, can be grown as a perennial.

Root system of the plant is very well developed. The location and extent of its development are determined by varietal characteristics, method of cultivation and processing. The main part of the root is arranged in a one-meter deep of the soil but sometimes the root reaches a

depth up to 1,5 m. When the tomatoes are grown from seed, root system is shallow. Every part of the stem is able to develop additional roots.

The stem of tomatoes may end with a top that grows constantly, or a truss. Tomatoes have branches at the base of leaf petiole. Their number varies and is usually large. Higher branches are shorter or do not develop. Trying to produce larger fruits that ripen jointly, the branches are removed. The stem is one of essential features which differ from the variety.

The leaves may be of ordinary type, or of the potato type depending on the size of the leaf partitions. Leaves are entire, with one, two or multiple toothed periphery. The peculiarities of the leaves are used as an important sign of the variety.

Inflorescence can be simple (no branches), complex (with many branches) and intermediate (two branches). Inflorescences are formed mainly in internodes of the stem and rarely at the base of the leaf stalks. Inflorescence of tomatoes is attached by short stalks with knees to the axis. There are varieties of tomatoes that have no knees on the handles and fruits are always harvested without handle. The blossoms are normal if there are 5-6 flower parts (sepals, petals and stamens) and abnormal if the number of flower parts is greater or any part is missing (usually lacking stamens). Because the varieties formed several types of inflorescence simultaneously, this feature can be used for approbation hardly.

Tomato fruits are juicy strawberry. During ripening are colored by light green to dark green. Sometimes green fruits have a dark ring around the handle. Upon ripening tomatoes become red, pink, yellow or orange color of varying intensity. The weight of the fruit is in a broad range - from 10 to 200 g or more. Fruits have seeds or without seeds (parthenocarpy). This is an important sign of approbation.

The seeds of tomatoes are flat or rounded triangular shape with cream-colored or brown color, with or without hairs. When properly storing the seeds of tomatoes retain their germination 5-6 years.

#### Content of fruit

Ripe tomato fruits have high nutritional qualities and are health products. Their chemical composition varies widely depending on soil and climatic conditions, applied agrotechnology and the variety. Tomatoes are rich vitamin composition (C, carotene, B vitamins - B1, B2, B3, B6, B9 and PP, vitamin H). They also contain minerals (sodium, potassium, calcium, phosphorus, magnesium, iron, sulfur, chlorine), and microelements - zinc, cobalt, copper, manganese, iodine, fluorine). They contain organic acids (citric, malic, lactic, oxalic acid), but considerably less than in the potatoes, beets, spinach and dock. Malic and citric acid give the

tomatoes especially refreshing taste, but also increase the appetite and enhance digestion. They also contain nitrogenous substances, sugars, pectin, flavorings, colouring agents (yellow, orange pigment, lycopene, carotene). The tomatoes have little fibers, which are soft and don't irritate the gastrointestinal mucosa.

Much of dry matter are carbohydrates, which are mainly soluble sugars (glucose and fructose) and very little sucrose (0.5-1.5%). Contents of other carbohydrates is very small - starch - 0.05%, dextrin - 0.06 to 0.2%, hemicellulose - 0.1-0.2%, cellulose - 0.16 to 0.31%; Pectin is on average 3.9% of the dry matter. Tomatoes should not be excluded from the diet of people suffering from kidney diseases, and various diseases of the joints associated with impaired metabolism. Meanwhile, unripe tomatoes contain solanine which is poisonous substance. Its content decreases with ripening and in ripe tomatoes solanine disappears completely. Therefore, it should not eat unripe tomatoes in view of the fact that 0.2 grams of solanine can cause headaches, scratching in the throat and sometimes convulsions. In unripe canned tomatoes solanine are diluted by the brine that prevents its toxicity.

### 3.2. Local varieties of tomatoes

**Ideal** - an indeterminate variety (that is to say, high-), medium early, traditional, large-fruited 130-200 g, slightly ribbed, orange-red color and palatable for fresh consumption, grown on a supporting structure.

**Rila F1** - a very fertile variety, high-growing and is suitable to be grown in plastic greenhouses or outdoors. The fruits are smooth, fleshy, without a green ring when ripe, grown on a support structure, very resistant to tobacco mosaic verticillium.

**Milyana** - a determinate variety, medium early, with large round fruits, 150-200 g, intense red. Around the stalk has a green ring that disappears when ripe. With a very good taste and suitable for fresh consumption and for producing high quality purees and juices.

**Elena F1** - a hybrid variety, for cultivation without supporting structure. The fruits are intensely red, flat, round, smooth, and delicious, non cracked, 220-300g. The plants are resistant to high temperatures, tobacco mosaic, Fusaria.

**Triumph F1** - an indeterminate variety (a cross between two varieties, artificial selection), very high fertility, for fresh consumption and processing. The plants require frequent pinched. Fruits are 100 g, flat round, smooth, hard, very tasty and resistant to diseases and adverse weather conditions.

**Plovdiv carotene** - an indeterminate variety of medium early production. The variety is about 60% carotene and lycopene 40% of the total pigment that reaches 6,5 mg%. Fruits are



an average weight of fruit 70-80 grams, round, smooth, medium-hard. The flesh is orange red. Vitamin C is 50-60 mg%. Growing period 115-118 days. Average yield is 4200-4800 kg / ha. Designed for fresh consumption and industrial processing into juice and children's dietary intakes. Disease resistance: Verticillium wilting and Fusarium.



### **3.3. Differences between organic and conventional tomatoes**

The terms organic, ecological or organic food mean the same thing - food grown without the help of genetic engineering, pesticides, soil conditioner and other synthetic substances to protect it from insects or poor yield. It is packaged and stored in a manner that does not impair its taste qualities.

#### **Organic tomatoes**

Organic tomatoes are significantly healthier than those grown with the aid of chemicals, show a study conducted by the Federal University of Ceara in Brazil and the University of Avignon in France. Although they are smaller in size, they contain large amounts of vitamin C and polyphenols, which enhance the immune system to fight a number of chronic diseases and cancers.

The reason for the high concentration of nutrients is due to the more difficult and challenging environment which face the organic plants. While conventionally grown tomatoes are treated with pesticides and fertilizers, organic farming is forcing the plants to protect themselves. The larger the stress to which they are subject lead to the accumulation of more substances which are beneficial to human health.

The study, published in the specialized edition Public Library of Science ONE (PLOS ONE), compared the composition of tomatoes grown on nearby farms with conventional and

organic production in the same region of the state of Ceara in Brazil. The farms were less than 1.5 km. from one another, so that the soil and climatic conditions, for both producers were identical. Experts gathered at random fruits of 30 plants from both farms and analyze them.

Organic tomatoes were on average 40% smaller than conventionally grown, but the concentration of vitamin C in them was 57% higher. Ripe organic tomatoes contained more than two times antioxidants from the class of polyphenols. These include flavonoids which reduce oxidative stress and damage of the cells associated with chronic conditions such as cardiovascular disease, cancer, and various types of dementia.

**Lycopene**, a flavonoid which is in the highest concentration in tomatoes, not only reduces the risk of cancer, but also reduces the growth and proliferation of tumor cells.



**Organic tomatoes features:**

- ✓ organic tomatoes do not contain pesticides, nitrates and Mitotoxin (heavy metals and antibiotics);
- ✓ there is no content of genetically modified organisms;
- ✓ have higher costs because of the extensive nature of production that require more manpower and certification costs of production;
- ✓ lower yields of production;
- ✓ limited market.

**Conventional tomatoes features:**

- ✓ conventional tomatoes contain pesticides, nitrates and toxins;
- ✓ have a higher yields of production;
- ✓ lower costs due to the use of chemicals;
- ✓ easy to transport;
- ✓ larger market.

## Section II

### 4. Put into practice

#### 4.1. Organic growing tomatoes / technology /



Tomato is a warm-loving plant. The optimum temperature for proper development of the plant is 24-25°C. At temperatures below 15°C, colouring substance can not be formed and fruits become yellowish. The colouring substance is not formed at a temperature over 42°C when the fruits turn yellow, the leaves stay small and tomatoes appear scorch.

The tomato plant is a medium demanding of moisture. It can be grown without irrigation. But regular watering obtains abundant harvest. If soil moisture fluctuates sharply after the fruits are formed, they are massive and heavily cracked. Air humidity is very important. High humidity, increases the risk of fungal diseases, thus impeding pollination. Tomatoes can be grown on different soils but they must be well structured and fertile. Preferred varieties of tomatoes are Triumph, Augusta and Balkan /for peeled tomatoes/, Hebros and others.

#### **The early growing tomatoes on open field**

Early growing tomatoes on open field is done by seedlings. Seedlings are grown in greenhouses, using special boxes with a grid. To produce seedlings for 1 ha should be sown 25-30 grams seeds. Seedlings are prepared between 1 and 10 February. As per 1 sq. m. are needed 3 g seeds. Between 1 and 15 March, when the first pair of leaves are formed /phase crossover/ the seedlings must be pricked in the greenhouse at 10x10cm distance.

The soil must be prepared two to three weeks prior to prick in the seedlings. Where there will be furrows the soil must be dug in 12 cm depth. Approximately 7 cm from this depth is filled with a mixture of compost and wood ashes. Seedlings prick in and high ridges must be formed. Immediately after this operation the plants are sprayed with detergent 500. To

strengthen the seedlings recommended trimming root about 1/4 and soaking up the young plants in liquid of Yarrow. The recipe is 1 kg fresh colors Yarrow / or 300 g dry / soaked in 5 liters rainwater. For 2-3 days, the liquid is periodically stirred and it is ready to use.

The furrows can be covered with a thin layer of dry leaves or straw after planting the seedlings. The high furrows favour the "plant bed" to get warm, as opposed to the flat surface. Warm soil is necessary for young plants and it favours rooting.

It is very important, "the bed", in which it we plant seedlings to be warm, even in the greenhouse. Gardeners sometimes experience disappointments because ignore that plants do not like cold soil. In cold weather it is recommended that in future beds of seedlings to be put bottles with hot water. Soon afterwards to plant seedlings in warmed beds. The method of soil preparation before transplantation, can also be used in the cultivation of tomatoes outdoors.

In order not to grow, pricking domatov seedlings grown at relatively low temperature / approximately 17°C / and in reduced soil moisture. Important for patenting plants have drought in the last 10 days before planting them in an open field.

Transplanted tomato soon forms new roots in the shallow soil layer. To encourage the formation of a deep root there is a practice to put / about 10 cm depth / empty cups of yoghurt with pre-drilled holes in the bottom. Periodically fill the cups with water, thus providing irrigation deeper soil layer. Tomato plants with deep root system, are more resistant to diseases and heat in summer.

Preparation of the soil for growing early tomatoes includes tillage at a depth of 25-30 cm and import of compost / about 4 tons per decare /. Also the soil must be harrowed two times before planting. Before ripening, tomatoes must be watered less frequently, but soil moisture does not fall below 70% of the PPV. When the fruit begins to take shape, there is a further strengthening of the plants by spraying with preparation 501. Early morning is treated with the preparation. If at later stage, the plants are not strong enough - the operation is repeated.

In his agricultural course Rudolf Steiner advises to prepare a special compost for tomatoes. Autumn after the harvest, gather the stems and leaves of tomato plants in a separate pile. Add manure top and prepare own biodynamic compost. When the next year, we will plant new tomatoes and they have already begun to form fruit, add some of the special compost. Thus stimulate fruiting. After adding the compost should not be forgotten to cover furrow again with dry leaves or straw, in order to maintain the soil moisture.

Once the fruit is fully grown and start ripening and harvest, soil moisture should not fall below 80% of PPV. Irrigations are performed every 4-6 days and pay attention not to put a

wide variation of soil moisture because it causes cracking of the fruit. Greenhouse whitefly is a big enemy of greenhouse tomatoes. For the expulsion of the greenhouse whitefly recommended planting marigolds in the beds of tomatoes.

It is possible that the tomatoes in the greenhouse to get sick from the virus, spread through touching the leaves of smokers. The virus is transmitted through the tobacco. Infected leaves turn white, fold and all infected plants should be eradicated and discarded. Tomatoes outdoors may occur black spots on the leaves. This happens most often when there is potatoes next to tomatoes and the infection is transferred. Diseased plants must be destroyed.

Before ripening plants can be watered with tap water or by sprinkling. But then - only running water in the late afternoon, in the evening or early morning when fruits are sufficiently chilled. If this is not respected, leaves burn and fruits crack. The first weeding is done soon after planting tomatoes to improve conditions. It is important for initial growth of the roots and proper growing.

Later there can be made two or three weeding if necessary. Common practice in growing tomatoes is pruning. It is done in order to obtain larger fruits. Harvest of early tomatoes usually starts around June 15 to 20. It is important when picking tomatoes to follow the biodynamic calendar. Tomatoes must be harvested on day FRUIT when the moon is ascending.

## **4.2. Traditional cuisine and recipes /shopska salad, lyutenitsa, tomato juice/**

### **Tomato juice**



The tomato juice with no added salt and freshly squeezed is very healthy. It contains very few calories, saturated fat and cholesterol. Furthermore it has a low sodium content and a rich

source of vitamins A, C, and K B6, thiamine (vitamin B1), niacin (vitamin B3). It contains also folic acid and minerals iron, calcium, phosphate, magnesium, copper, potassium and manganese. Not least, tomato juice is rich in fiber, and most of the calories comes from natural sugars in it.

If you drink even one glass of tomato juice a day, it will help you to prevent many serious disease processes and take advantage of the many health benefits.

### **Antioxidants**

Tomatoes are a rich source of antioxidants. They help the body to cleanse itself from free radicals that cause oxidation of tissues, leading to inflammation and potential risk of developing serious diseases. Antioxidants help us to slow down the effects of aging.

### **Tomatoes protect against cancer**

Tomatoes are a rich source of lycopene. It forms red color of tomatoes. Scientific studies have shown that lycopene is effective in the prevention of many types of cancer, particularly cancer of the breast, prostate, lung, pancreatic and colorectal cancer.

### **Tomato juice stimulates immunity**

As a rich source of vitamins C and A, tomato juice stimulates the immune system. It was found that people who drink a glass of tomato juice a day, get sick rarely by the flu or colds. These vitamins also help to prevent infection and inflammation.

### **Reduce bad cholesterol**

Bad (LDL) cholesterol in blood is accumulated in the consumption of foods with a high content of cholesterol and represents the fatty plaques on the walls of arteries. As a result, the heart has to work much harder to pump blood through these arteries, which in turn leads to high blood pressure. These fatty plaques can detach and move through blood, which can lead to stroke or heart failure. Tomatoes contain fiber and niacin that eliminate the fatty plaques in blood vessels.

### **Tomatoes reduce the risk of heart disease**

Substance in the blood called homocysteine, damaging the walls of the blood vessels and leads to heart diseases. Tomatoes contain vitamin B6, which actively breaks up key homocysteine molecules that are harmless to the body.

### **Prevents Macular Degeneration**

Researches demonstrate that tomatoes may protect from developing macular degeneration. This is relevant to decrease risk of blindness in aging population because of the extension of the average life.

### **Prevents constipation**

Tomatoes are rich in natural fiber. Eating fibers helps to prevent slow performance of the intestines. Fibers also purify the digestive system of toxins. Tomato juice can have a laxative effect and to protect us from swelling.

### **Prevents stomach and muscle cramps**

When the body lacks potassium may occur stomach or muscle spasms. Tomatoes are a rich source of potassium, which helps prevent cramps.

### **Tomatoes and treatment of diabetes**

Tomatoes are often recommended by doctors diabetics by helping to stabilize blood sugar levels.

Tomato juice is a very healthy alternative when we are thirsty. Tomatoes can be found in all sorts of colors and different shapes, but they will provide us with approximately the same nutritional content and the same health benefits. Several tomatoes to your daily diet will make it more healthy and protect us from a number of serious diseases.

### **Ingredients:**

- 1 kg tomatoes
- 1 liter water
- 2 tablespoon /tsp/ salt
- 2 tsp sugar
- 2 tsp vinegar

### **Preparation**

Wash tomatoes and cut them into small pieces. Mash the pieces through a sieve.

Add water, sugar and salt. Mixed well and put to boil. Boil for 10 minutes until dissolved tomatoes. Remove from the heat and cover it up for 5 minutes.

Put the juice in pre-prepared bottles. Store in a cool dark place!



## Shopska salad



Shopska salad is a dish from the category of appetizer, spread to the kitchen in Bulgaria, Serbia and Macedonia. It is widespread in Wallachia under the name *salată bulgărească* (Bulgarian salad). Represents a salad of chopped tomatoes, cucumbers, raw or preferably roasted peppers, onions, fresh parsley and grated or crumbled white cheese. It is served with dressing of vegetable oil and wine or cider vinegar. Sometimes may be put a little garlic, especially if there is roasted peppers.

Eat mostly in summer.

### Ingredients for Salad Shoppe:

- **tomato** - 2 ripe red
- **pepper** - 2 green cash
- **cucumber** - 1 peeled cucumber
- **onion** - 1 head, small onion
- **parsley** - for sprinkling
- **cheese** - 150-200 g
- **salt** - 2 pinches
- **vinegar** - 1 tbsp
- **oil** - 1-2 tbsp

### Preparation

Cut the onion into thin crescents. Optionally, you can use red onion.

Cut the tomatoes and cucumbers into pieces and add them to the onions.

Bake, peel and cut into small pieces the peppers and add them to the salad.

Mix all ingredients and pour with the dressing of vinegar and oil.

Crumble the cheese over the vegetables, sprinkle with chopped parsley and serve in the middle. The salad is enough for 3-4 servings.



## **Lyutenitsa - chutney**



**Lyutenitsa** is a food product, a type of tomato sauce, traditional Bulgarian cuisine. It is usually made from roasted peppers, tomato paste, onions, carrots, eggplants and spices. The peppers are the main ingredient in lyutenitsa, which give the nature red color. Lyutenitsa contains fat (oil), and among the most important spices are cumin, chilli and garlic, to which it owes its spicy taste. In rare cases, the recipe for lyutenitsa can contain potatoes.

Products for lyutenitsa must be cleared well, the peppers are roasted and peeled. Peppers and tomatoes must be grinded in a grinder, add spices in the mixture and fry with vegetable oil in a big tray. Density is considered good once while stirring with a wooden spoon leaving a trace on the bottom of the tray. Out lyutenitsa and put it in prepared jars. Lyutenitsa can be stored for a long time.

You can consume it a greased slice of bread and sprinkled with crumbled cheese, or as a side dish to grilled meat, potatoes, rice or pasta. Ttraditional Bulgarian salad with onion and mixed with cooked beans is made with lyutenitsa.

Industrially produced lyutenitsa is usually much more finely ground. It is not fried and contains additives such as starch, and other substituents.

### **Ingredients for Lyutenitsa:**

1. 10 kg peppers
2. 4 kg eggplant
3. 6-7 kg of tomatoes ( or 2 kg tomato puree)
4. 1 cup oil
5. 3 tablespoons salt
6. 1 tablespoon black pepper
7. 1 teaspoon cumin
8. 1 teaspoon sugar

**Time required to prepare:**

3 hours preparation

30 minutes cooking

**Home-made lyutenitsa in three steps:**

2. The first step of the recipe for lyutenitsa is the preparation of ingredients. The first and most time-consuming phase is the preparation of tomato paste. To prepare 2 kg of tomato paste you need 6-7 kilograms of tomatoes. It is better to choose ripe fleshy tomatoes. Wash the tomatoes and peel them, then grind them with a grinder. Separate the seeds when you grind the tomatoes. Put the tomato puree in a large saucepan and put it on the stove. Tomato puree boils until a thick tomato paste. Of course, you can use ready tomato paste in order to save time, but lyutenitsa will lose its authentic taste.
3. Bake peppers and eggplant. You can bake them in Pepper roaster, but if you can it is best to bake the vegetables on fire, to have pepper and eggplant characteristic smoky aroma of baked vegetables. To achieve the desired flavor of baked vegetables, you can use charcoal barbecue. Once roast peppers and eggplant peel them, leaving them to drain well and grind them with a grinder, but not a smooth paste and remain shreds to get the desired consistency of traditional lyutenitsa.
4. There comes a moment when you need to start boiling lyutenitsa. Is a classic home-made lyutenitsa in a large pan on the fire in the yard. Note that during cooking mixture sprays, so choose the greatest and deep pan or distributed and boil the mixture twice. Pour the slurry from the ground peppers and eggplant in the pan and then put on the stove and stirring constantly, otherwise the mixture is bubbling and splashing and risks you burn. The mixture needs to boil 10 minutes, until the water boil off. Then add tomato paste, keep mixing continuously for 10 minutes. So to the boiled mixture add the oil and spices and continue to stirring constantly for 5 minutes to allow the lyutenitsa to be condensed well. There is a classic sign that lyutenitsa has reached the appropriate density - stirring the mixture in the pan, it leaves a trace at the bottom.

### ***Tomato paste***



Pass tomatoes machine that separates the skins and seeds. If you don't have such machine, you can easily peel tomatoes if you put them for a minute in boiling water. Grind tomatoes and leave the mixture in gauze to drain for 2-3 hours.

Then heat the oil on the stove with sugar and can add a little vinegar to taste. Pour the drained tomato pulp and cook over low heat until thickened. Spill the mixture in jars or bottles and close them. Sterilize for 10 minutes.

### **Stuffed tomatoes with cottage cheese and cheese**

Ingredients:

- 3 large tomatoes (about 150 gr one)
- 150 g of cottage cheese
- 50g cheese
- 1/4 bunch of parsley



On the "top" of the tomato cut a little cover and excavate the tomato core. This is made with all the tomatoes. 1/3 scoop of tomato core mixed with cheese - grated advance retail and the cottage cheese. In the resulting mixture are added and 1/2 of chopped parsley. Tomatoes should be filled in and covered. There are two methods for the preparation of the dish. The first option tomatoes wrapped in foil for baking and cook in the oven, in the second bake directly in the oven.

### **Cold tomato soup**

Ingredients:

- 400g ripe tomatoes soft
- 100g peppers
- 50g cheese
- 1 tsp oil
- salt to taste
- 1-2 sprigs of fennel



Bake peppers on a hotplate and peel them. Tomatoes are finely chopped and strained. Pour into a bowl, then add to it chopped roasted peppers already. Add the fennel, oil and crumbled cheese. The dish is low in protein and moderate fat and carbohydrates. Can be consumed at any time of day from people with slow metabolism type. The dish is rich in lycopene. It is important to note that this is not the main course and you should not rely on it.

## QUESTIONS:

### Homeland of tomatoes is?

- a) South and Central America;
- b) Africa;
- c) Asia;
- d) Europe.

### Ripe tomato fruits are rich of...

- a) vitamins, minerals and microelements
- b) organic acids and fibers.

### Plovdiv carotene is a name of...

- a) carrot variety;
- b) cucumber variety;
- c) pumpkin variety;
- d) tomato variety.

### Write 2 advantages of organic tomatoes.

- 1.....
- 2.....

### The optimum temperature for proper development of the plant of tomato is...

- a) 15-16°C;
- b) 19-20°C;
- c) 24-25°C;
- d) 28-29°C;

### When must tomatoes' seeds be planted?

- a) between 1 and 10 January;
- b) between 1 and 10 February;
- c) between 1 and 10 March.

### How often tomatoes' plants must be irrigated?

- a) every day;
- b) every 4-6 days;
- c) over 1 week.

### Which are the main Bulgarian products from tomatoes?

- a) Tomato's juice;
- b) Shopska salad;
- c) Tomato's paste
- d) Lyutenitza;
- e) Cold tomato soup;
- f) All are correct

# Are you interested?

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## Teaching Unity

### HEALTHY EATING AND BULGARIAN SOUR MILK



## Table of contents

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. Historical facts and features**

#### **3.2. Types and nutritive value**

#### **3.3. Organic sour milk vs industrial production of sour milk**

#### **3.4. Benefits of organic sour milk / target groups /**

### **4. Put into practice**

#### **4.1. Domestic production of sour milk**

#### **4.2. Traditional recipes with sour milk**

### **5. Further readings**

### **6. Bibliography**



# The Unity

|  |  |
|--|--|
| <b>Title</b>   | <b>Healthy Eating and Bulgarian Sour Milk</b>  |
| <b>Area</b>  | Domestic production  |
| <b>Main Target Audience</b>  | <p>The end users of the module are ...</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Teachers of primary and secondary education that teach lessons related to environmental awareness and nutrition</li> </ul>   |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand ...</p> <p>Historical facts and features of sour milk</p> <p>Types and nutritive value of sour milk</p> <p>Difference between organic sour milk and industrial production</p> <p>Benefits of organic sour milk by target groups</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training; 8 hours for visits (farms, processors, markets) and 8 hours of practical work.</p>  |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <p>What is the origin of Bulgarian sou milk;</p> <p>what distinguishes organic from conventional production;</p> <p>how to make domestic sour milk;</p> <p>what benefits there are for health consumption of sour milk;</p> <p>how to use sour milk.</p> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <p>knowledge about values of Bulgarian sour milk;</p> <p>how to make domestic sour milk;</p> <p>how to prepare healthy foods with sour milk.</p>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>· Theoretical learning /blended learning/: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- online learning.</li> </ul> </li> <li>· Practical learning: <ul style="list-style-type: none"> <li>- case study /field survey/;</li> <li>- workshop;</li> <li>- self study.</li> </ul> </li> </ul>                                      |

## 1. Abstract

This unit is structured into two main sections: (1) Historical facts and features of Bulgarian sour milk and nutritive value and Advantages of bio sour milk and (2) Home made sour milk and Traditional recipes.

In the first section the basic knowledge of Historical facts and features of sour milk are presented. There are several types of Bulgarian sour milk which are suitable for healthy diet. It describes the process of preparation of Bulgarian sour milk and Nutritional and therapeutic properties of Bulgarian sour milk. The second section consists on how to prepare domestic sour milk and the presentation of traditional Bulgarian recipes.

Keywords:

Bulgarian sour milk, nutritive value, therapeutic properties, home made, Traditional Bulgarian recipes.

## 2. Introduction

Bulgarian sour milk is a fermented milk product, which is obtained as a result of the flow of a lactic acid-fermented milk. Centuries in our land is made sour milk and his fame as a useful and nutritious food gains popularity worldwide. The main micro-organisms that participate in the process of fermentation of the Bulgarian sour milk is 2 - *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. They are in a symbiotic relationship and the alliance between the two bacteria is beneficial for their survival and efficacy only when they are together.

Bulgarian sour milk is produced by two ingredients: milk and ferment. Products containing and another ingredient, for example soy, starch, preservatives to stop the fermentation, are not Bulgarian sour milk.

The nutritional value is determined by the content of nutrients and by the ability of these ingredients to be used by the body. Bulgarian sour milk has a higher nutritional value of milk. The reasons are changes under the action of *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The content of lactose in sour milk is reduced by 20-30%. The remaining quantity of lactose is used as an energy source 4.1 kcal. Bulgarian sour milk is a rich source of calcium, which can fully satisfy the needs of man. It contains more calcium than fresh - more than 400 mg in portion.

Bulgarian sour milk is a product that has a very wide use in cooking. It can be consumed directly from the bowl and alone or in combination with various fruits, granola and sweet.

# Section I

## 3. Core contents

### 3.1. Historical facts and features

Sour milk is a fermented milk product, which is obtained as a result of the flow of a lactic acid in fermented milk. In a large scale it is produced in the Balkan countries and also in other countries around the world because of its good taste, nutritional and medicinal qualities. Two main microorganisms involved in the fermentation of yoghurt - *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. They are in a symbiotic relationship and the alliance between the two bacteria is beneficial to their survival and efficiency only when they are together. It is not possible fermentation in the presence of only one of the bacteria. Each of the two bacteria have a role in the process of fermentation. Fermentation ends naturally by cooling. In several days in warm conditions (kept out of refrigerator) fermentation continues and the taste of sour milk becomes more sour.

There are no accurate data on the origin of sour milk. One theory of its origin is associated with the Thracians. Ancient Thrace possessed fertile soil, rich vegetation and good pasture. All this contributed to develop a flourishing sheep. And because the main pet of the Thracians was the sheep. Thracians noticed that sour milk is kept longer than fresh. By adding the sour milk freshly brewed received product known as curd or “prokish”.

It is assumed that sour milk originated from lactic acid drink called “kumis” that ancient Bulgarian tribes prepared from mare's milk. Once settled in the Balkan region and adopted sheep they began to make “kumis” using sheep's milk. Also Bulgarians started to produce and soure milk under the name “kathak” by using fresh sheep's milk mixtered with cheese. This product Bulgarians generally cooked at the end of the summer, when the milk is at a high dry matter content. Uighur's tribe which live in Sincan region of North China today called sour milk “kathak”. They prepared it by both mare and sheep's milk.

Genghis Khan (1206-1227) used sour milk for food in the army as a method to preserving meat. Milk was preserved in sheep stomachs. Under the action of the existing micro flora in milk starts process of fermentation and as result the milk turns into sour milk. Once solders scrape it from sheep stomach, they fill the stomachs with milk again, and the rest of sour milk is used for starter of another cycle of milk fermentation.

In Western Europe, yogurt became famous thanks to the French king Francis The First. King suffered from severe and incurable diarrhea. He asked for help its ally, the Ottoman Sultan Suleiman the Magnificent. The Sultan sent a doctor who was able to heal him

with a diet of yogurt. In gratitude the French king spread information across Europe for the food that was able to cure him.

At the beginning of XX century in the most famous for this time scientific institute "Pasteur" in Paris started work the great Russian biologist Ilya Metchnikoff (1845-1916). He made assumption that aging is a disease of man like any other. Metchnikoff assumed that the protein in the large intestine rot, causing yielding toxic amines that are harmful to humans. They are absorbed by the body and cause changes in the tissues of the arterial wall. As a result, nursing changes occur in humans that lead to excessive early death. Metchnikoff believed that the harmful effects of these microorganisms could be reduced by appropriate lactobacilli.

Metchnikoff assume that the large number of centenarians in Bulgaria is a result of regular consumption of sour milk. Metchnikoff gave the first scientific basis for nutritional, dietary and medicinal properties of sour milk and draws the world's attention to it. Convinced of the superior qualities of sour milk as a healthy food Metchnikoff regularly consumed it in the last 10 years of his life.

The first man who examines the microflora of sour milk was Stamen Grigorov (1878-1945), a student of medicine in Geneva. In 1905, he described it as consisting of a rod and a ball lactic acid bacteria. In 1907, rod-shaped bacteria is called *Lactobacillus bulgaricus*. In 1917 Orla Jensen proves that in the process of the production of sour milk except *Lactobacillus bulgaricus* participate cocci (spherical micro) called *Streptococcus thermophilus*.

In foreign literature sour milk is known as "yoghurt". The origin of this word has different interpretations. According to Simeonov (1984), the origin of word is Hun - Altaic and literally means "thick milk" from "yogi" - thick, fat and "urt", "Urdu" or "Urs" - milk.

Ruminant milk (cow, buffalo, sheep and goat) contains large amounts of milk protein called casein. After accumulation of lactic acid casein molecules unfold. In the places where they touch the lactic acid is linked. There the mentioned acid accumulates in an inactive form and does not stop the development of *Lb. bulgaricus*, but it slows down.

When a person consumes Bulgarian sour milk the linked lactic acid released in the stomach and intestines. It suppresses all harmful germs and helps to develop useful. In several hours Lactic acid is vanish. Then lactic acid rods *Lb.bulgaricus*, whose growth has been slowed by the inactive lactic acid, begin to develop. Besides lactic acid they produce many biologically active substances which accumulate and immediately begin to act. *Lb. bulgaricus* continued to be developed in the intestine 10-25 days after the last consumption of Bulgarian sour milk. All this has a number of positive effects on the human body.

The first scientist who described them, is the founder of pharmacology Abu Ali al-Hussain ibn Abdullah ibn Sina (980 - 1037g), also known as "Avicenna". In his work called "Canon of Medicine" he gave the following prescription for the treatment of intestinal disorders ""a teaspoon of black cumin (*Nigella sativa* L.) is mixed with a cup of sour milk and drink twice daily for three days". Today pharmacologists know that black cumin oil helps the body to throw rotten intestinal contents and excess gas, and sour milk neutralize accumulated toxins in the intestines and stops the growth of pathogenic microbes.

## 3.2. Types and nutritive value

### 3.2.1 Types

According to BDS 12:2010 sour milk is divided by type of raw material and fat of:

- cow, sheep, buffalo, goat and mixture;
- whole and partially skimmed milk.

Composition of milk of some species of animals (average value in %)

| Indicators     | Type of milk |         |       |      |
|----------------|--------------|---------|-------|------|
|                | caw          | buffalo | sheep | goat |
| Casein         | 2,8          | 3,5     | 4,8   | 3,0  |
| Whey protein   | 0,6          | 0,8     | 1,2   | 0,7  |
| Lactose        | 4,7          | 4,7     | 4,6   | 4,6  |
| Salts          | 0,7          | 0,8     | 1,0   | 0,8  |
| Non-fat solids | 9,0          | 9,8     | 11,6  | 9,1  |
| Fats           | 4,0          | 7,5     | 7,3   | 4,0  |
| Solids         | 13,0         | 17,3    | 18,6  | 13,1 |
| H2O            | 87,0         | 82,7    | 81,4  | 86,9 |



### 3.2.2 Nutritive value

The nutritional value is determined by the content of nutrients and the possibility of these components to be used by the body. Sour milk has a higher nutritional value than milk. This is due to the changes under the action of *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The content of lactose in sour milk is reduced by 20-30%. The remaining quantity of milk sugar is used as an energy source 4,1 kcal. Sour milk is a rich source of calcium for the needs of people. The calcium maintains excitation of the human heart muscle. This element is extremely important for the proper functioning of the nervous system. It stimulates the action of the endocrine glands and accelerates blood clotting. Sour milk is an indispensable source of calcium for people who suffer from lactose intolerance, as well as middle-aged women, who often suffer from bone deformities due to calcium deficiency.

| Product            | Kcal/100g | Fats, g | Protein, g | Carbohydrates, g |
|--------------------|-----------|---------|------------|------------------|
| Sour milk 0,5%     | 37        | 0,5     | 3          | 4                |
| Sour milk 2%       | 42        | 2       | 3          | 3                |
| Sour milk 3,6%     | 60        | 3,6     | 3,2        | 2,5              |
| Sour milk 6,5%     | 90        | 6,5     | 3,5        | 2,5              |
| Sour milk strained | 150       | 11      | 6          | 5                |

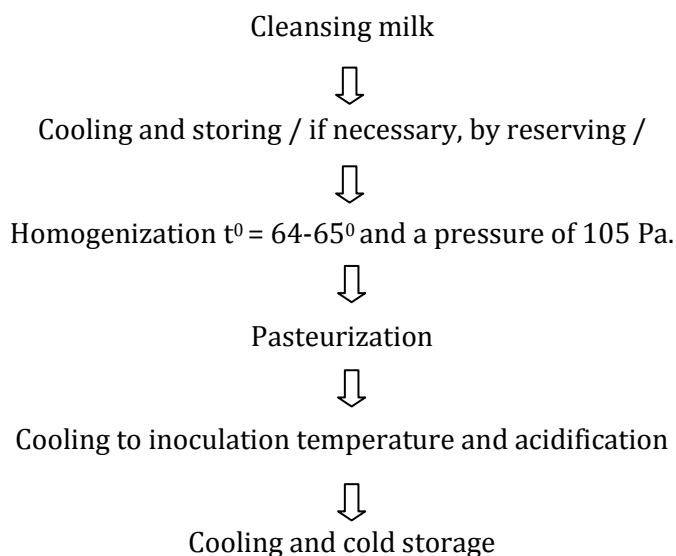
## 3.3. Organic sour milk vs industrial production of sour milk

### 3.3.1 Organic sour milk

Bio sour milk is a pure, natural product, with a nice creamy and extremely pleasant lactic acid taste with caramel flavor. Bio sour milk is the only organic milk in Bulgaria. It meets all international requirements and is certified by the “Balkan Biocert” LTD. Milk is produced without antibiotics, growth hormones or dangerous pesticides. It contains no chemicals, milk replacer, preservative or neutralizing agents. This is a pure, natural product, with a nice creamy and extremely pleasant lactic acid taste with caramel flavor.



The technological process for the production of Bulgarian sour milk takes place in the following scheme:



By cleansing milk aims removing physical impurities. The most common way to purify the milk is their percolations through a thin cloth fabric in several layers by periodically remove of the top layer.

It was found that, immediately after milking and 1-2 hours after this, the milk does not constitute a favorable environment for the growth of the microorganisms trapped in it. This feature is of great importance for the newborn mammal, but it has practical significance for increasing the durability of milk as raw material for the production of sour milk. The period of time when the milk is limited to the development of bacteria on the surface thereof is known as a bactericidal, phase of the milk. The length of this period depends on the storage conditions of milk. If immediately after milking, the milk is cooled to a temperature of  $+ 4^{\circ}\text{C}$  bactericidal phase was retained for 24 hours. If milk is cooled down to  $+ 15^{\circ}\text{C}$  bactericidal phase is about 10 hours; at refrigerator temperature  $+ 20^{\circ}\text{C}$  about 6 hours; at  $+ 30^{\circ}\text{C}$  about 2 hours. It should be noted that prolonged cold storage of milk over 48 hours is undesirable because it creates conditions for bacteria that degrade the quality of sour milk.

Homogenization is particularly important when making sour milk from whole milk. Through it prevents the formation of an oily layer on the surface of the sour milk. At a temperature of  $64 - 65^{\circ}\text{C}$  and a pressure of 105 Pa milk fat is in the liquid state and the milk is getting homogenized.

In the production of Bulgarian sour milk is applied high thermal Mode  $+ 92 - 95^{\circ}\text{C}$  with retention at this temperature for 30 minutes. With this thermal regime is achieved the following features:

- Disposal of harmful and pathogenic micro flora of raw milk;

- A product with a taste of boiled;
- Yielding a number of decomposition products, which are the growth factors, thermophilic lactic acid bacteria;
- Improvement of the texture of the product;
- Creating favorable conditions for the development of beneficial lactic acid bacteria added as yeast in milk.

The pasteurized milk was cooled to a temperature of 44 - 45°C inoculation, and then add the required amount inoculums (2-5 %). The process of fermentation continues for 2.5 - 3 hours.

After the end of fermentation should be start the cooling of the sour milk to suspend further development of micro flora. Cooling must take place gradually, with the first two hours the temperature was decreased to + 20°C, and in the next two hours, at less than 10°C. Bulgarian sour milk is stored at a temperature of + 1°C to + 4°C. The duration of storage last up to 10 days.

### **3.3.2 Industrial production of sour milk**

Industrial production of sour milk was introduced in other dairies in the country, but the product differs in some degree of homemade. The main disadvantages are reflected in a sharp sour taste of desires, a granular structure. Moreover quickly spoils the desired ratio of *Lactobacillus bulgaricus* and *Streptococcus thermophilus*.

To overcome these drawbacks Professor Tonyu Girginov done extensive research in the Institute of Food Industry - Plovdiv (now University of Food Technologies - Plovdiv) and developing original technology for industrial production of Bulgarian sour milk, built on four basic principles:

- 1) The use of freshly prepared starter culture consisting of active strains of *Lactobacillus bulgaricus* and *Streptococcus thermophilus*;
- 2) Fermentation of milk in two temperature regimes;
- 3) Two-stage cooling of the milk;
- 4) Continuous process of fermentation of milk, combined with the cooling liquid and ripening in a liquid state at 34°C, or without cooling at 22-24°C.

To secure technology with starter cultures in Central Laboratory for pure cultures - Sofia were created seven symbiotic starter that are patented and immediately implement in production.

Sour milk produced by this technology with the original Bulgarian starter has a typical flavor, homogenous structure and dense texture. Technology and starter cultures quickly find application in all dairies in the country and are still used today.



### **3.4. Advantages of bio sour milk /target groups/**

Organic sour milk is unique for the Bulgarian market, which is substantially different from other yogurts on the market. The wonderful taste and flavor are not random. Here are five reasons, which made sour milk as unique product:

- Cows that give milk, eat mostly pasture. Two hundred days a year are pastures and in winter, farmers feed them mainly to meetings in the summer hay and grass mixtures of these same pastures. Often felt in milk flavor of seasonal herbs.

This means valuable balance of Omega 3 and Omega 6 in milk.

- Cows do not fit. Farms that work never tethered cows and they are free to move and decide where around the farm. Every day, even in the snowy winter days, a few hours walking around the mountain.

This means milk from healthy cows.

- Farms are organic. European laws on organic farming certify farms. In these farms care for the health of the soil, clean water and maintaining biodiversity. Cows eat only organic food, fertilizer use, and does not pollute the animals are healthy and the milk, which is given the highest possible quality.

This means pure product with unique taste.

- Not homogenized milk dairy. Almost all milk sold in stores is homogenized - fats are broken down into microscopic particles to obtain a homogeneous mixture smooth. So lose the texture of the cream and milk. Milk is not homogenized, it is believed that this is detrimental to the health process and hampers the body in the absorption of valuable milk constituents.

This means milk that is well accepted by the body.

- Not degreased when not necessary. Most dairies degreased whole milk, then back fat to achieve the desired fat content. A in organic farms that avoids unnecessary processing and proposes milk as milking cows.

This means minimally processed product in the most natural form.

#### **Nutritional and therapeutic properties of Bulgarian sour milk**

It was found that 100 grams of sour milk having the same nutritional value as well as 100 grams of milk. But during the fermentation process occurred a number of biochemical changes that give yogurt following advantages:

- It improves digested lactose. About 30% of the lactose is converted to lactic acid by the action of lactic acid bacteria, which facilitate its uptake by people with lactase deficiency;
- It improves absorption of milk proteins. Absorption of milk proteins in sour milk is twice as fast as it contains twice as many free amino acids;
- It improves absorption of lactic acid. There is a significant increase in the content of free fatty acids.

Bulgarian sour milk possesses therapeutic UV, which are as follows:

- It Increased the amount of dissolved calcium, which leads to bone mineralization and is a successful tool to prevail on osteoporosis;
- There is antimicrobial action. Sour milk consumption improves gastrointestinal micro flora;
- Production of compounds with antitumor activity. Bogdanov ( 1951g. ) states that sour milk has antitumor activity in the cell wall and accepts that this is due to the glycopeptide enzyme. Statistical data show that cancer of the stomach, pancreas and liver are not found more frequently in people consuming regular sour milk;
- Stimulates the immune system. Lactic acid bacteria in sour milk produce immunoglobulin that stimulates the body's immunity and increases its resistance against infections;
- Healthy food in diet for reducing cholesterol. Lactic acid bacteria in sour milk show action on the formation of lipid plaques that precede the development of sclerotic processes;
- Preventive action against radiation. Lactic acid bacteria in sour milk increases the body's resistance to moderate doses of ionizing radiation;

Bulgarian yogurt is definitely a valuable food of high biological value, dietary and medicinal qualities.

## Section II

### 4. Put into practice

#### 4.1. Home made sour milk



Bulgarian sour milk is traditional national product. Bulgarian sour milk, as defined in BDS 12-82 as product, which is produced from only two ingredients: milk and yeast. Products containing other ingredients like powder milk, sweeteners, starch are not Bulgarian sour milk.

Yeast is actually sour milk from previous inoculation. It contains two bacteria - *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. If you put yeast in milk and provide the necessary temperature conditions for the development of bacteria after a certain time the milk becomes sour.

Milk becomes sour as follows: boil one liter of milk and allow cooling to about 40-45°C degrees. Pour out the bottle of milk about a quarter to a suitable saucepan and add two to three tablespoons of sour milk. Shake well and pour the rest milk. Stirring the mixture and capped it with a lid. You must not allow the milk to cool over the next three hours. For this purpose, the saucepan is wrapped in a blanket and left in a warm room. After three hours, the blanket should be removed and the sour milk is cooled into the refrigerator. So obtained sour milk may differ from what you buy from the store, because it is natural and has no additives, but it is true Bulgarian sour milk.

If the milk does not curdle the reasons could be the following:

- The temperature was too high, which destroyed the bacteria;
- The temperature was lower and did not provide optimal conditions for the development of bacteria.

## 4.2. Traditional Bulgarian recipes with sour milk

### Tarator



One of the traditional dishes with sour milk undoubtedly is tarator. The most complete recipe for classic Tarator is as follows:

1. a large cucumber
2. half a bunch of dill
3. a pot of yoghurt
4. cold water (one cup of yogurt)
5. two or three cloves of garlic
6. a handful of walnuts
7. two or three tablespoons of vegetable oil / olive oil and salt

Time required preparing:

15 minutes

How to prepare:

1. The first step of the recipe for Tarator is preparing cucumbers. Wash the cucumber and then peel it. If you managed to get a fresh cucumbers produced by a grandmother in the village there is no need to peel them. Cut it in very small pieces /cubes/.
2. Pour the cucumber in a large bowl and add to it finely chopped dill (you can use dried dill), ground walnuts and garlic, which are crushed or cut into very small pieces.
3. Once you have added the garlic, walnuts and dill Salt, add the oil /olive oil/ and mix well. Then beat one cup of milk with one cup of cold water, add to mixture with cucumbers and mix again. Now Tarator is ready.

### Airan

Products: cow sour milk 1 kg. /5 cups / water and 1 l /5 cups/ or sheep yoghurt 1 kg. /5 cups/ water and 1,200 liters /6 cups/

Beat milk well and diluted with chilled water, stirring continuously. This beverage is suitable in the hot summer months, as it has a positive impact refreshing people.

## QUESTIONS:

**Sour milk is a fermented milk product, which is obtained?**

- a) as a result of poor hygienic;
- b) as a result of adding artificial to the milk;
- c) as a result of adding sugars to the milk;
- d) as a result of the flow of a lactic acid in fermented milk.

**Which type of sour milk is the most nutritive?**

- a) From cow milk;
- b) From sheep milk;
- c) From buffalo milk;
- d) From goat milk.

**Sour milk has a higher nutritional value than milk.**

- a) Yes;
- b) No.

**Sour milk is a rich source of...**

- a) Calcium;
- b) Potassium;
- c) Magnesium;
- d) Iron.

**Write 2 benefits of Bulgarian sour milk.**

- 1.....
- 2.....

**What is the duration of the process of fermentation?**

- a) continues less than 1 hours;
- b) continues for 2.5 - 3 hours;
- c) continues over 1 night.

**You can storage organic sour milk...**

- a) up to 10 days;
- b) up to 2 weeks;
- c) up to 1 month.

**The sour milk must be stored...**

- a) at a temperature below 0°C;
- b) at a temperature of + 1°C to + 4°C.
- c) at a temperature over + 10°C.

**Which are the main products from Bulgarian sour milk?**

- a) Tarator;
- b) Airan;
- c) All are correct.

## Are you interested?

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## Teaching Unity

### **DRIED FRUITS AND HEALTHY DIET**



## Table of contents

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. The origin and meaning**

#### **3.2. Classical Quartet**

#### **3.3. Nutrition**

#### **3.4. The benefits of organic production**

### **4. Put into practice**

#### **4.1. Production of dried fruit at home**

#### **4.2. Recipes with dried fruits**

### **5. Further readings**

### **6. Bibliography**



# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>Dried Fruits and Healthy Diet</b>  |
| <b>Area</b>  | organic diet  |
| <b>Main Target Audience</b>  | <p>The end users of the module are ...</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Parents of minors and pregnant women</li> </ul>   |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand ...</p> <p>The origin and meaning of dried fruits</p> <p>The most widespread dried fruits - Classical Quartet</p> <p>Nutrition values of several dried fruits</p> <p>The benefits of organic production</p> <p>Production of dried fruit at home</p> <p>Traditional BG recipes with dried fruits</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training; 8 hours for visits (farms, processors, markets) and 8 hours of practical work.</p>   |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <p>importance of dried fruits;</p> <p>features of dried fruits;</p> <p>what benefits of consumption of dried fruits for health;</p> <p>how to prepare dried fruits at home and recipes with them.</p> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <p>knowledge about values of dried fruits;</p> <p>how to dry fruits and use them.</p>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning /blended learning/:             <ul style="list-style-type: none"> <li>- face to face;</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning:             <ul style="list-style-type: none"> <li>- workshop;</li> <li>- self study.</li> </ul> </li> </ul> |

# 1. Abstract

This unit is structured into two main sections: (1) Meanings of dried fruits and their nutritive value and benefits of organic products and (2) Home made of dried fruits and Traditional recipes with them.

In the first section the basic knowledge of origin and meanings of dried fruits are presented. There are four varieties of dried fruits which are known as the classical quartet. The nutrition values of dried fruits are suitable for healthy diet. But they must be produced in organic way. The second section consists on how to make dried fruits at home and the presentation of traditional Bulgarian recipes with dried fruits.

Keywords:

Dried fruits, nutritive value, vitamins, minerals, benefits, home made, dried fruits for Christmas Eve

# 2. Introduction

Dried fruits should be a mandatory part of the menu of people who want to lead a healthy lifestyle, researchers advise. Dried fruits provide normal metabolism, and better performance of the heart and blood vessels.

The list of recommended dried fruits scientists include dates, figs, raisins, apricots, apples, prunes. These fruits contain a lot of fiber, which has a low glycemic index. Because of this dried fruit maintain optimal metabolism and act prophylactically for problems with metabolism.

Dried fruits contain a huge amount of antioxidants are therefore useful not only in the heart, but also for the treatment of inflammation and cancer. They are a great option for everyone who wants to normalize its weight, because not only optimize metabolism, but also contain less sugar, they are comfortable to eat and can be used as a snack in the office.

## Section I

### 3. Core contents

#### 3.1. The origin and meaning

Dried fruits are a true treasure in the world of food, often underestimate or forget. Remarkably tasty and useful food rich in simple sugars - mainly fructose and glucose, and they are a very high-energy. Friendly technologies for drying fruit retains vitamins and minerals much better than any method of preservation, and with it reduce the water content - dried fruits have up to four or five times greater concentration of vitamins and minerals compared to fresh.

To extend the taste of summer or just to preserve a few months surplus fruit - people did it by instinct always. Moisture in the fruit evaporates from the sun and air, which stops the growth of microorganisms that cause decay and deterioration - it was hard to get to this insight through encounter and experience and the most ancient human communities.

Because of their sweetness, good food and healthy qualities, magnificent flavor and attractive shapes and colors dried fruits from time immemorial been a symbol of abundance and prosperity. Suffice it to recall the role of oshafa and raisins in a ritual meal for Christmas Eve in our Orthodox tradition.

The oldest mention of dried fruits in Mesopotamian cuneiform tiles containing probably the oldest recorded recipes discovered by archaeologists. In all the ancient Mediterranean civilizations are part of the culinary traditions and the constant presence of the rich feast. In medieval Europe also become an important ingredient in the menu, especially the wealthy and aristocrats that eating different tart with a filling of beef with prunes and dates, salted fish cooked with figs and raisins and duck with stone fruits.

Large stuffed cakes contain a mixture of beef and hen meat, eggs, dates, prunes and raisins, generously seasoned with spices. In Armenia, Turkey and all countries in the Middle East and the Maghreb, where the culture of dried fruit is particularly strong, cook lamb with prunes, apricots, almonds, honey and spices, and chicken - with prunes, quinces, dates or raisins.

The inclusion of fruits such as prunes, apricots, raisins, and many others, meat dishes and game adds exceptional character and nobility of taste. The sweet taste should prevail, but adds depth and tenderness of the meat - just the secret is in the right balance of ingredients and spices. A lot of people frown at the thought of beef or lamb with prunes for example, but no reasonable person who does not like such a dish, if cooked and finely master. Thith

Moroccan lamb with prunes, is among the most appetizing dishes from the rich cuisine of the Maghreb.

Fresh fruits are undoubtedly superb food, but they are seasonal and definitely not advisable to eat cherries and melons in January - surely they have come thousands of miles to get to us, which in turn follows that are picked ripe and poorly are treated with chemicals to extend their fitness. Therefore, dried fruits are a wonderful way to replace missing fresh seasonal and local fruits.

In properly dried fruit balance of vitamins and trace elements - calcium, iron, potassium, sodium, and magnesium, is the unique straight. Experts say that if a person eats each day about 150 g cocktail of dried fruit - prunes, figs, apricots, raisins or sliced apple, pear, pineapple, melons ... forever would forget about any problems with the gastrointestinal tract. And also that only five medium dried apricots contains all iron dose needed to maintain hemoglobin and calcium - a fact which in particular greatly affects people with sedentary lifestyles.

Dried fruits are rich in easily absorbable fructose, which meets the needs of sweet and does not bring harm. And another their advantage - they are light, do not take up space and are extremely good choice for food for hikers and athletes.

An idea of the overall hierarchy of fruit according to their content of antioxidants gives the study team from State University Tufts focused on their ability to absorb free radicals without fruit is divided into fresh and dried. Here's the beginning of the list: prunes, raisins, blueberries, strawberries, raspberries, plums, oranges, grapes, cherries. For some reason, however, this study does not include figs and dried their option, according to a report in the "Journal of American Nutrition", even shifting prunes in the first place.

Undoubtedly purely practical reasons, smaller fruit, which can be dried whole or halved, have become the stars of the group. Another reason can be found in the fact that "classical quartet" consists of the most typical fruits of the lands around the Caspian Sea, the Middle East and North Africa, where the most powerful has become their culture. However, dried apples, pears, quinces, cherries, sour cherries, berries and exotic fruits also have their important place in cooking and can also boast great taste bunch of useful features and capabilities in the kitchen.

### **Traditions and warnings**

Unfortunately, even when it comes to such a valuable natural products should be affected and some serious problems. Yes, dried fruits are tasty and useful food, but only if they are dried properly if they are not treated with chemicals and no added sugar.

Millennia fruits are dried or sun or air flow in special ventilated buildings - dryers, or wind tunnel. Today they still use traditional methods, but large firms have modern facilities for drying, and already marketed and home electrical appliances that do a great job.

The market is full of shiny golden raisins, bright orange dried apricots and supersladki and fleshy cranberries. Only in dried fruits should definitely look "ugly duckling." Because alluring appearance is most often the result of smoking apricots and raisins with sulfur dioxide, which enhances the color and prolongs them. Residues of this substance are minimal, but doctors do not recommend the use of the processed products.

Plums, apricots and raisins sometimes dried in an accelerated method in gasoline or gas furnace at high temperature and the taste becomes a shade of gasoline, surface cracks and nutrients in them disappear. Another result of misunderstood our civilization soak prunes in sleazy oil or processing with glycerin - the objective is, of course, gain deliciously shiny and soft appearance.

Part of the dried fruits in the market as cranberries, pineapple, mango, papaya, pears and other are not actually real dried fruit, candied and are then dried.

The good news is that manufacturers can no longer hide the composition of the product offered, so that the labels contain accurate data. When buying dried fruit in bulk, you should require further information about the origin and their way of working as dealers are required to have and provide. If you trust your senses, it should not be forgotten: the quality and safety dried fruits are unattractive appearance - they are dark and shriveled, but full of flavor and health.

## **3.2. CLASSICAL QUARTET**

### **Raisins**

They are a perfect substitute for sugar in a healthy diet and a diet more so except vitamins and other micronutrients contain many pine, which prevents the development of osteoporosis because in its absence, disrupting the absorption of calcium from the body. Together with the dates they have the highest concentration of sugars (67 g/100 g of dried product).

And since raisins sweetness is balanced by the acid in the grapes, they are eternal star among dried fruit and are indispensable for confectionery. For salty cuisine are also very curious component. Of meatless dishes such as stuffed cabbage, stuffed peppers or other dried rice recipes they add character and integrity of the taste and variety of terrines or poultry dishes become more gentle and noble with a handful of raisins.

Annual worldwide consume over 750,000 tons of raisins. There are two main technology for drying raisins - with or without immersing the grapes in a hot water or alkaline solution, and drying in the sun or dried in special dryers.

The most profitable, both economically and medically - the grapes to dry in the sun. In many countries, raisins are produced by air solar drying of grapes in greenhouses with plastic coating.

### **Figs**

The dried version of this divine tropical and subtropical fruit is also packed with nutrients - figs are between 3 and 4 times richer in calcium than other dried fruits. This ancient fruit combines a remarkably tasty and interesting way with prosciutto, pork with duck and foie gras with any poultry, but also with soft cheeses - a lightly dampened for 15 minutes in lukewarm water fig filled with brined sheep's cheese or ricotta, mascarpone, brie, camembert or gorgonzola are becomes rich in flavors and contrasts snacks or sledyastie. In confectionery they also have numerous applications, most commonly used for stuffing various cakes.

### **Apricots**

Orange "ears", as in some languages called Dried apricots contain twice as much potassium from figs, raisins and dates and richest of the entire group of vitamin A. On the other side are the poor in sugars and with prunes most saturated of useful fiber, making them straight to the golden food.

They are among the tastiest and most accommodating in cooking dried fruit, and in the opinion of many experts drying emphasizes and even enhances the taste. Are worthy and interesting place in countless sweets and salty dishes from kitchen - for example, in Moroccan thith, North Indian curries, steamed Iranian, Uzbek pilaf or South African barbecue sauces. Especially nice is combined with the taste of chicken, pork and mackerel.

## Prunes

They hold the championship in fiber, which makes them most valuable for digestion and peristalsis. Are first and presence of antioxidant polyphenols, that have a value for the prevention of the formation of cancer cells and are useful for the health of bones.

Maybe that prunes are the most typical and beloved culinary in our land. In places will grow plum trees, and at home it's mostly soft Predbalkanskata hills, centuries dried plums and use them in the winter for holiday sweets, but quite lean and meat dishes. Combine is amazingly well with beef, lamb and game, but a lean stew with leeks and prunes can be truly inspiring.

Prunes come from lands around the Caspian Sea and cooking with them is typical of Asian countries, Moroccan, Afghan, Armenian and Greek cuisine. Hungarians and Austrians, however recipes with prunes are also primordial part of their national cuisines. In our beef with prunes is a dish typical for Bulgaria and the region, and Vidin, so it is difficult to say whether itself in our home menu by Greeks, Armenians, Austria-Hungary or in Turkey.



### 3.3. NUTRITION

- **Raisins** are rich in vitamins B2 and C, the minerals iron, potassium, magnesium, copper, calcium, boron, zinc, phosphorus, and antioxidants. In 100 grams of raisins contains about 300 calories; 3 g protein; 0.5 grams of fat and 80 grams of carbohydrates.
- **Dried figs** are rich in vitamins, minerals, iron, copper, potassium, magnesium, sodium, calcium, phosphorous and zinc, fiber, antioxidants, flavonoids and polyphenols. In 100 g of dried figs contains about 250 calories; 3.4 g protein; 1 gram of fat and 64 grams of carbohydrates.

- **Dried apricots** are rich in vitamins A, C and E, minerals phosphorus, magnesium, iron, calcium, zinc, and fiber. In 100 g of dried apricots contains about 240 calories; 3.4 g protein; 0.5 grams of fat and 63 grams of carbohydrates.
- **Prunes** are rich in vitamins A, C and E, minerals magnesium and phosphorus, and fiber. In 100 g of prunes contains about 240 calories; 2.2 g protein; 0.4 grams of fat and 64 grams of carbohydrates.
- **Dried apples** are rich in vitamins B, C and E, minerals iron, magnesium, phosphorus, pectin and fiber. In 100 g of dried apple contains about 244 calories; 0.9 g protein; 0.3 grams of fat and 66 grams of carbohydrates.
- **Dried Pears** are rich in vitamins B and C and the minerals iron, calcium, zinc, magnesium and phosphorus, and fiber. In 100 g of dried pear contains about 263 calories; 1.9 g protein; 0.7 grams of fat and 70 grams of carbohydrates.

### Raisins

Tentative content of substances in 100 g:

| Product | water % | kcal | protein/ g | fats/ g | carbohydrates/ g | chol. / mg | sugars/ g | fibers/ g |
|---------|---------|------|------------|---------|------------------|------------|-----------|-----------|
| Raisins | 15.43   | 299  | 3.07       | 0.46    | 79.18            | 0          | 59.19     | 3.7       |

- glucose to fructose – 40 : 60%;
- they contain lower amounts of vitamin C in large amounts vitamin B2;
- rich minerals are magnesium, potassium, iron, copper and are sources of calcium, phosphorus and zinc;
- are rich in antioxidants. In this respect comparable with dried apricots and pears.

### Figs

Tentative content of substances in 100 g:

| Product    | water % | kcal | protein/ g | fats/ g | carbohydrates/ g | chol. / mg | sugars/ g | fibers/ g |
|------------|---------|------|------------|---------|------------------|------------|-----------|-----------|
| Dried figs | 30.05   | 249  | 3.30       | 0.93    | 63.87            | 0          | 47.29     | 9.8       |

- glucose to fructose – 55 : 45%;
- are a source of vitamins B1, B2, B5, B6;
- rich minerals are magnesium, potassium, iron, copper, and are a source of calcium, phosphorus, zinc and sodium;
- are rich in polyphenols and flavonoids;
- are rich in antioxidants.



## Pears

Tentative content of substances in 100 g:

| Product     | water<br>% | kcal | protein/<br>g | fats/<br>g | carbohydrates/<br>g | chol. /<br>mg | sugars/<br>g | fibers/<br>g |
|-------------|------------|------|---------------|------------|---------------------|---------------|--------------|--------------|
| Dried pears | 26.69      | 262  | 1.87          | 0.63       | 69.7                | 0             | 53.5         | 7.5          |

- glucose to fructose to sucrose – 25 : 65 : 10%;
- contain vitamins C, B2 and B3;
- minerals contain phosphorus, magnesium, calcium, zinc, iron;
- contain boxes indigestible fiber laxative effect.

## Apricots

Tentative content of substances in 100 g:

| Product        | water<br>% | kcal | protein/<br>g | fats/<br>g | carbohydrates/<br>g | chol. /<br>mg | sugars/<br>g | fibers/<br>g |
|----------------|------------|------|---------------|------------|---------------------|---------------|--------------|--------------|
| Dried apricots | 30.89      | 241  | 3.39          | 0.51       | 62.64               | 0             | 53.44        | 7.3          |

- glucose to fructose to sucrose – 65 : 22 : 13%;
- contains vitamins B2, B3, B9 and E contain low amounts of vitamin C and an excellent source of pro-vitamin A;
- rich minerals are iron, phosphorus, magnesium, calcium and zinc contained.

Apricots are excellent source of calcium, magnesium, iron , phosphorus and especially potassium, which regulate water-salt balance in the body, lowers blood pressure, ensures the normal operation of the cardiovascular system. It balances the absorption of sodium from the body and assists in the removal of surplus salt (if not, the body begins to retain water and swell the cells). The yellow color of dried apricots can be explained by the high content of pigment carotene (provitamin A). In the intestine and liver carotene is converted to the active form of vitamin A (retinol), which positively affects the skin, eyesight and blood production. Dried apricots help children grow and have a restorative effect on the body of elders.

No need to choose the best looking apricots - often their perfect shape due to the use drying chemicals and vegetable oil. Better buy gray color and medium hard fruits.

## Apples

Tentative content of substances in 100 g:

| Product      | water<br>% | kcal | protein/<br>g | fats/<br>g | carbohydrates/<br>g | chol. /<br>mg | sugars/<br>g | fibers/<br>g |
|--------------|------------|------|---------------|------------|---------------------|---------------|--------------|--------------|
| Dried apples | 31.76      | 243  | 0.93          | 0.32       | 65.89               | 0             | 57.19        | 8.7          |

- glucose to fructose to sucrose – 17 : 68 : 15%;
- contains vitamins B2, B3, C and E;
- minerals contain phosphorus, magnesium and iron;
- contain pectin, which improves digestion as clean intestinal micro folds.

## Prunes

Tentative content of substances in 100 g:

| Product      | water<br>% | kcal | protein/<br>g | fats/<br>g | carbohydrates/<br>g | chol. /<br>mg | sugars/<br>g | fibers/<br>g |
|--------------|------------|------|---------------|------------|---------------------|---------------|--------------|--------------|
| Dried prunes | 30.92      | 240  | 2.18          | 0.38       | 63.88               | 0             | 38.13        | 7.1          |

- glucose to fructose to starch – 62 : 30 : 8%;
- contain moderate amounts of vitamin A (provitamin), B1, B2, B3, and B9, are rich in vitamins E and C;
- they contain lower amounts of phosphorus minerals, magnesium
- European plain plum (prune) contain oxalic acid, which inhibits the absorption of calcium and loaded metabolism in renal patients. Not toxic to healthy people, but durable adopted oxalic acid can reduce the overall level of absorbed calcium for the period of their consumption.

Prunes have a high rating popularity among dried fruits for their nutritional properties and flavor. Prunes are rich in dietary fiber, as well as vitamins B. They eliminate feelings of anxiety, increase the body's resistance to stress. Since all dried fruits are concentrated must eat them in moderation.

Loose stomach due to the high content of organic acids and fiber. If you are trying constipation, do not rush to take medication, and solve the problem using the homemade marmalade. Soak in hot water 100 g of prunes and figs. Once swollen, they blend in a blender with 100 g of honey and 1 aloe leaf. Take three times a day after eating half a tablespoon of jam dissolved in ½ cup warm water. Keep laxative in a glass container in the refrigerator.

**Several tips for dried fruit:**

1. Before you buy dried fruit, take a small portion. Smell them and if you can smell spoiled, try them. It remains only to decide whether you deserve a big purchase.
2. Before you buy dry fruits, view them good for brown spots and soft decayed places and mildew.
3. Do not consume more than 100 g dried fruit at once. A high content of glucose and sucrose may lead to hyperglycaemia.
4. If you decide to make a compote of fresh, leave a portion dried fruit to soak in cool water for six to eight hours.
5. If you have allergies, do not buy candied dried fruits. Sometimes, better preservation and drying added allergenic agents such as sodium sorbate, potassium sorbate or potassium bisulfite.

**3.4. THE BENEFITS OF ORGANIC PRODUCTION**

**Dried fruits** have natural light in the winter. Strengthen the body and have exceptional health benefits. **Dried fruits** are natural coloring - make the skin soft and smooth nails - healthy and hair - strong and shiny.

**Raisins** reduce the risk of osteoporosis and enhance nervous cardiovascular reinforcing lungs and are useful for the thyroid gland.

**Dried figs** protect from cancer, speed up digestion and improve the functioning of the thyroid gland.

**Dried apricots** stimulate the immune system, prevents cancer, tone and improve digestion.

**Prunes** accelerate the work of the gastrointestinal tract, eliminate stress and anxiety.

**Dried apples** and **pears** intensify brain activity, prevent cardiovascular and colds, strengthen gums and improve digestion.



## **Dried fruits in your diet**

100 g of dried fruit of day satisfy the need of sweet body without increasing the levels of insulin and glucose in the blood. Dried fruit improves the gastrointestinal tract, sate, stimulate digestion and fat burning.

Choose dried fruits without spots or rotten spots on them that are not too dry and not taste wine. Enjoy dried fruits throughout the year, and in winter must take advantage of their superb food, health and dietary qualities.

If you have decided to make homemade granola with dried fruit, but wondering what to put or just love dried fruits, then be sure to read these lines! You will learn the most important for widespread dried fruits in the market, namely the composition of vitamins, minerals and calories.

Dried fruits are a concentrated food. Contain a lot of simple sugars and high calorific value. Friendly technologies allow natural drying already dry fruit to keep your vitamins better than preserved, while reducing water content. The latter results in a four to five-fold higher concentration of vitamins and minerals in relation to dried fruits fresh.

If your diet allows sweet, a handful of dried fruit may give you a lot more health than a piece of chocolate. In addition, just as tasty. In Bulgaria most common in stores nuts are the following fruits: figs, raisins, apricots, pears, plums, apples. Below you will find the composition, vitamins and minerals contained in them.

## **Dried fruits are not less useful than fresh**

Dried fruits, although used since ancient times as though today still have not received their deserved place on our table. And they are extremely useful - contains a balance of minerals and vitamins, as well as useful carbohydrates (glucose and fructose), thanks to which do not lead to weight gain. So dried fruit can easily be used for day of discharge and for severely restricting diet.

Dried fruit also contains many soluble cellulose (pectin), which normalizes the process of processing the food. Cellulose takes harmful products of metabolism and leads them out of the body. Along with them are displayed and surplus cholesterol - a fact which is extremely important for the prevention of cardiovascular disease, especially atherosclerosis.

Specialists recommend every day to use no more than 25-35 g of cellulose , and dieticians believe that a balanced diet, in which one year person eats at least 2 kg of dried fruit.

If you want to cheat hunger, chew carefully 2-3 dried apricots or plums. Besides cheat appetite, they prolong the feeling of fullness and prevent overeating in the evening. And most importantly - will save you from high-calorie cake or your favorite chocolates.

So bring your own fruits and eat them whenever you feel the urge to eat something delicious. They don't have fats and their calorific value ranged from 200 to 300 calories/100 grams.

### **Merits of dried fruits**

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### **Dried apricots**

Excellent source of calcium, magnesium, iron, phosphorus and especially potassium, which regulate water-salt balance in the body, lowers blood pressure, ensures the normal operation of the cardiovascular system. It balances the absorption of sodium from the body and assists in the removal of surplus salt (if not, the body begins to retain water and swell the cells).

Dried apricots are a valuable food for those suffering from hypertension or chronic inflammatory diseases of the kidney, accompanied by edema and increased excretion of potassium from the body.

The yellow color of dried apricots can be explained by the high content of pigment carotene (provitamin A). In the intestine and liver carotene is converted to the active form of vitamin A (retinol), which positively affects the skin, eyesight and blood production.

No need to choose the best looking apricots - often their perfect shape due to the use drying chemicals and vegetable oil. Better buy gray color and medium hard fruits.

### **Figs**

They are nutritious, rich in cellulose, mineral salts and vitamins (B group, C, -carotene).

In folk medicine, dried figs are used as anti-inflammatory drug, is believed to have mitigating and expectorant effect and successfully applied in dry cough, tonsillitis, bronchitis and wheezy voice.

Dried figs are an excellent aid against colds. Pour 1 cup milk 1 tablespoon chopped figs and cook them on medium heat. When slightly cool, add 2 tsp butter, and then vortex the resulting mixture with a mixer. It is best to drink hot drink before bed.

### **Raisins**

They are rich in magnesium, boron and manganese, which prevent the emergence of osteoporosis because deficiency of these minerals disturbing absorption of calcium in the body.

Dried fruits are natural treats. As delicious pastries, but useful as fresh fruits, dried fruits are natural multivitamins. Which dried fruits with what food, health and dietetic properties differ?

Dried fruit is fruit, but with a very low water saturation. It is important to distinguish between real dried fruit (prunes, dried apricots, dried figs, raisins, dates, etc.) and "Candied " (candied, dried and artificial additives melon, mango, pineapple, coconut, etc.) that can be found in a wide range with nuts that are sold in the streets. Real dried fruits are 100% natural and does not contain any artificial enhancers.

### **Dried fruits - food quality**

Dried fruits are concentrated food products, ie contain very little water. They are rich in simple sugars (glucose and fructose) and thus are high-grade, but calories they are not "empty", and contains vital nutrients. Current technologies for natural drying, not only retain the vitamins and minerals in the dried fruit, but they are even with a higher concentration of those substances.

## Section II

### 4. Put into practice

#### 4.1. PRODUCTION OF DRIED FRUIT AT HOME

##### Let's dry peaches



If you like peaches, you can conserve a variety of ways - as a sweet, compotes or jams. But many are delicious peaches that are dried.

They can be served as a separate dessert and can be complemented with vanilla sauce or a little cream, maybe with ice-cream.

Dried peaches retain the nutrients of the fruit, which contains many important vitamins and trace elements. These include potassium, B vitamins, vitamin PP, beta-carotene.

To dry peaches, choose fruits that are not too soft. They are not suitable for drying, but only for direct consumption or for marmalade.

Drying will need ripe but slightly hard peaches. To find maturity, press them gently with your finger and if well reddened peach is slightly softened, then you can use it for drying.

To dry peaches, wash them well, then cut them. Cut each fruit in half. Remove the pyrene and cut the halves into thin slices.

Arrange sliced peaches on gauze or a large pan. You can also use a grid of metal or wood. Cover the slices with a layer of gauze and leave to dry in dappled shade.

Do not expose the peaches of direct sunlight each day and pay them very carefully so as not to crush the delicious fruit. The moment that shrink by more than half and are sufficiently dry to the touch , it's time to put them in jars.

In jars can only order the slices that are fully cured. You can sprinkle a little powdered sugar on dried fruit and use them as a delicious dessert at any time of year.

If you do not wait long, as the drying process may take more than 10 days, you can dry the peaches in the oven. For this purpose, wash and chop the peaches and put them in a tray. Preheat oven to 100 degrees and place the pan, leaving the door ajar. Pay regular peaches and a few hours you will have ready dried fruits.

## 4.2. Recipes with dried fruits

### **Dried fruits for Christmas Eve/Oschav/**

Products:

700 ml water

150g dried fruit: apples, plums, pears, apricots or other fruit

150 g of sugar

2-3 cloves grains

1 tsp cinnamon

Preparation:

- The dried fruits were washed and soaked for 1-2 hours in cold water.
- Rinse and place in a large saucepan.
- Pour in the recipe provided with water.
- Boil on medium heat.
- When the fruits are soft, add the sugar, cinnamon and cloves.
- dried fruit cool in the pan in which it is boiling.

### **Boiled wheat with dried fruits**

Reason: St. Nicholas; Christmas Eve; Commemoration

Ingredients:

500 g wheat

honey to taste

1/2 cup walnuts

1 tablespoon cinnamon

dried fruit if desired - prunes, dried apricots, raisins

Preparation

Clean and well washed corn is left overnight in water in order to swell well. Then pour water and boil on low heat until soft. After boiling the water is drained, which is a boil, allow to cool and thoroughly mixed with chopped walnuts, chopped pieces of dried fruit, cinnamon and sugar.



## **QUESTIONS:**

**Dried fruits are rich of...**

- a) vitamins, minerals and microelements
- b) organic acids and fibers.

**Which way of dry preserve quality of the fruits?**

- a) immersing in a hot water or alkaline solution;
- b) drying in the sun or drying in special dryers.

**Raisins, Figs, Apricots and Prunes are know as ...**

- a) the great four;
- b) classical quartet..

**Which dried fruit is the richest source of calcium?**

- a) Prunes;
- b) Apricots;
- c) Figs;
- d) Raisins.

**Which dried fruit is the richest source of vitamin A?**

- a) Prunes;
- b) Apricots;
- c) Figs;
- d) Raisins.

**Which dried fruit is the richest source of fibers?**

- a) Prunes;
- b) Apricots;
- c) Figs;
- d) Raisins.

**Write 2 benefits of organic dried fruits.**

1.....

2.....

**What amount of dried fruits satisfies the need of sweet body without increasing the levels of insulin and glucose in the blood?**

- a) 50 g of dried fruit of day;
- b) 100 g of dried fruit of day;
- c) 200 g of dried fruit of day.

**Which are the main dried fruits for Christmas Eve /Oschav/?**

- a) Apples;
- b) Plums;
- c) Pears;
- d) Apricots;
- e) All are correct.

## Are you interested?

### 5. Further readings

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<http://www.hera.bg/s.php?n=541>

## Teaching Unity

### ***Wine***



*Wine is everything, it is the sea,  
the twenty league boots,  
the magic carpet, the sun,  
the seven language Parrot.*

*Wine couplets (Nicanor Parra)*

## **Table of contents**

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1 Wine and Health throughout history**

#### **3.2 Composition of red wine**

#### **3.3. Valor nutricional del vino**

#### **3.4. Key Health benefits of wine**

### **4. Put into practice**

#### **4.1. Wine Contraindications**

#### **4.2. Folk remedies with wine**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>WINE</b>   |
| <b>Area</b>  | Knowledge of attributes and healthy features of wine  |
| <b>Main Target Audience</b>  | <p>The end users of the module are ...</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Teachers of primary and secondary education that teach lessons related to food safety and healthy nutrition</li> </ul>  |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand ...</p> <p>Wine and Health throughout history</p> <p>Red wine composition</p> <p>Key Health benefits of wine</p> <p>Short description and list of diseases wine can cure.</p> <p>Wine contraindications</p> <p>Folk remedies with wine</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training; 8 hours for visits (farms, winiards, markets, restaurants, etc) and 8 hours of practical work.</p>   |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <p>Make your own remedies with wine.</p> <p>How to cure insomnia, take care of prostate, fight against cancer, etc what benefits there are for health consumption of wine.</p> <p>how to prepare foods with wine.</p> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <p>knowledge about values of wine;</p> <p>how to prepare healthy foods with wine.</p> <p>How to treat your own disturbances dinking wine.</p>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- field survey;</li> <li>- workshop;</li> <li>- self study.</li> <li>- Wine tasting parties.</li> </ul> </li> </ul>  |

## 1. Abstract

Wine is a beverage whose references are very old. Since the Bible said: Noah planted vines and with their wine got drunk, many millions of liters of wine were produced. But wine has exceptional medical properties that are considered in this teaching unit.

As a structure of the Unit, first consider the relationship between wine and health throughout the history of man. More red wine than white wine is produced. The tannins that give dark color also have healing powers. Red wine composition is analyzed. Also their nutritional value as a food it is analyzed too.

There is a chapter devoted to the main benefits of wine for health, giving importance to the title of this project FOOD-MED. But not everything is positive; its consumption can also be negative for some types of people. This section is important to emphasize to avoid evils of ignorance.

Finally there are a number of recipes for making wine folk remedies. At the end, are two chapters with bibliographical and web references that deal with wine.

**KEYWORDS:** Wine; red wine; wine and health; contraindications; remedies with wine.

## 2. Introduction

Wine has been part of human culture for 6,000 years. Throughout its various evolutionary stages, man considered wine a treat for the palate, a support for coexistence and an element with beneficial properties for the health (I. Saez, 2006).

The historical background related wine to health and longevity, especially in Mediterranean culture. Indeed, in several Mediterranean countries (France, Spain, Portugal, Italy and Greece) wine is integrated in the everyday behavior of the people who consume it, both with meals and celebrations [Leighton, F., Urquiaga, I.].

Agriculture was implemented during the Neolithic and vine cultivation started in the territories between the Caspian and Black seas. Its cultivation slowly spread across southern Europe, arriving to the Iberian Peninsula through Catalonia. Simultaneously there was a distribution through the sea, and wine reached the Peninsula through the commercial expeditions brought by Phoenicians and Greeks entering the Mediterranean and south Atlantic coasts. Wine mainly served a stimulating role, although it was also used for religious worship.

In the Roman period, wine continued to be a food, a stimulant, a safeguard of health and a subject for religious worship. This religious connection increased after the full establishment of Christianity in the peninsula, under Constantine.

In the medieval period the discovery of the tomb of St. James in Galicia and the establishment of the Camino de Santiago promoted the development of vine cultivation. The monks who settled along the way assist pilgrims soon realized the usefulness of wine. It provided nutrients, prevented the spread of waterborne diseases, encouraged them and provided warmth in the long and often cold way.

Today, numerous studies have served to corroborate some of those properties released thousands of years ago. But it is clear that these properties are best expressed when the product quality is excellent. (I. Saez, 2006).

## Section I

### 3. Core contents

#### 3.1 Wine and Health throughout history.

Wine is a natural product obtained by direct fermentation of grapes or their juice; contains alcohol and multiple bi-products of alcoholic fermentation, but also contains many other substances from the grapes, where its healthcare value specifically lies.

Wine brings through its properties, many benefits to human health, according to the American Heart Association, numerous scientific studies have addressed over the past decades moderate alcohol consumption and its association with fewest deaths from heart diseases in certain towns. Most researches suggests that the benefits may be due to the consumption of wine, especially red wine, a drink rich in flavonoids (which provide a vasodilatory effect, beneficial for the arteries), tannins and polyphenols (found in the seeds and skin of grape), which function as antioxidants against molecules known as free radicals.

#### 3.2 Composition of red wine:

“Vinum” in Latin, wine is an alcoholic drink made from grapes. The process involves the fermentation of grape juice or through metabolic action of the yeast.

Its composition is:

- a) Vitamins A, C and several B complex as biotin, choline, inositol, cyanocobalamin, folic acid, nicotinic acid, pyridoxine and thiamine among others..
- b) Mineral salts, highlighting calcium, potassium, magnesium, silicon and zinc, fluorine, copper, manganese, chromium and sulfur mineral anion.

c) Polyphenols: wine phenolic compounds include, among others, phenolic acids (coumaric, cinnamic, caffeic, gentisic, ferulic and vanillic) and flavonoids (catechin, quercetin and resveratrol).

d) Tannins: are phenolic compounds that have astringent and anti-inflammatory properties.

### 3.3. Nutrition value of wine:

Per 100 ml:

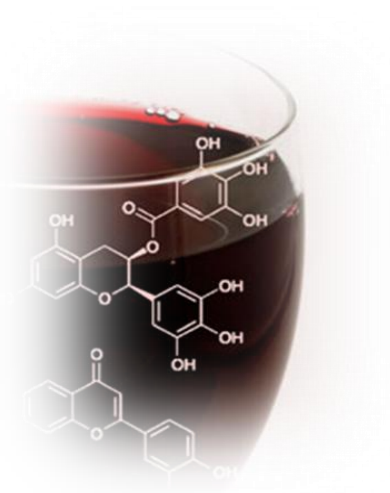
85 Kcal Calories

Protein 0,07 g

Carbohydrates 2,59 g

Sugar 0,62 g

Fat 0 g



### 3.4. Key Health benefits of wine:

*“Wine is the healthiest and most hygienic of beverages.”*

*(Luis Pasteur)*

The term "moderate drinking" refers to a glass of red wine a day, ideally during a main meal, in order to delay the absorption of ethanol and decrease the blood alcohol level reached.

#### a) In general:

- ✓ It is considered a complete food.
- ✓ It is a power source of easy assimilation.
- ✓ It is associated with longevity.
- ✓ It is a natural tonic recovery when taken after a physical effort. The tone of the wine originates mainly tannins. The richer in tannins, the wine will be more tonic. This tonic properties is evident not only at a physical level but also mentally.



✓ Red wine, especially if it is aged, is particularly indicated during periods of convalescence, or in the course of infectious diseases.

✓ It contains a high concentration of mineral salts that can be easily assimilated. Among these may be mentioned calcium, potassium, magnesium, silicon and zinc, fluorine, copper, manganese, chromium and sulfur mineral anion.

✓ Wine has a bactericidal action. The bactericidal action of the wine has been known since antiquity. It manifests mainly after epidemics. In 1886, Rambuteau remarks that wine drinkers were less sensitive to cholera as water drinkers. Recently Professor Masquelier has shown the bactericidal power of Bordeaux reds in cases of "collibacillose".

✓ Canadian researchers found that red wine could attack certain viruses, including polio and herpes.

✓ Its antiseptic properties are higher when the wine is aged.

**b) For the mood:**

✓ Wine is a therapeutic remedy for anxiety and emotional stress, so many experts believe that "wine maintains a balance of mind and feelings."

✓ It is a pleasant accessory. When tasting sparingly endorphins are released in two areas of the brain, increasing the feeling of pleasure, according to a study conducted at the University of California. In addition, if the ambient light is red or blue, the pleasure and taste of wine are much more intense than when it has green or white shades.

✓ Wine develops euphoric properties that decrease depression.

✓ It is highly recommended to control the nutritional abnormalities. Therefore ingesting one or two glasses a day helps to balance hunger.

**c) Improved cognitive function:**

✓ Around 70 scientific studies show that moderate wine consumption improves brain function and, in small amounts, prevents dementia, as shown by a study based on Swedish Academy Sahlgrenska tracked 1,500 women for 34 years. Scientists that due to the high presence of antioxidants in its composition it reduces inflammation, prevents hardening of the arteries (atherosclerosis) and inhibits clotting, thereby improving blood flow to the brain, as concluded in an analysis published by Neurological Scandinavica Act.

**d) Improves sleep**

✓ Red grapes contain large doses of melatonin, the hormone that regulates sleep that "indicates" the body the right time to sleep through their increased levels. To get a deep and restful sleep you just have to take a glass of wine before bed.

**e) Delays aging:**



Red wine contains a number of antioxidants, which can delay the signs of aging.

Drink one or two glasses of red wine a day will help us protect against diseases associated with aging, such as osteoporosis.

**f) Prevents degenerative diseases:**

✓ The abundant antioxidants in red wine can help prevent many degenerative diseases such as Alzheimer's and type 2 diabetes

**g) In the treatment of arthritis:**

✓ Reduces discomfort of arthritis.

**h) At menopause:**

✓ Avoid hot flashes in menopause.

✓ Wine seems to be a good ally against diabetes, so characteristic of perimenopause. One or two glasses of wine a day helps regulate blood sugar levels.

✓ Wine strengthens defenses, so you can avoid many of the most common infections from the flu to gastroenteritis through cystitis. The immune system weakens in menopause due to hormonal changes, so wine can be the best antidote for infections.

✓ Many menopausal women notice a lower intellectual performance, lack of concentration or memory loss. A glass of wine daily can prevent these problems as well as improving blood circulation.

✓ Osteoporosis is one of the most dreaded diseases related to menopause. Experts claim that a moderate amount of wine a day can slow bone weakening.

✓ Frequent weight gain associated with menopause can be prevented by a healthy diet, some exercise and a glass of wine that will help distribute the body fat more equitably.

✓ The most direct benefits are observed in cardiovascular health, reducing the risk of stroke and controlling blood pressure.

✓ Mood swings, presented as one of the most common symptoms of menopause, also find their most natural remedy in a glass of wine.

**i) Takes care of the prostate:**



A study says that having seven glasses of red wine a week after turning 40 years of age, reduce by more than half the diagnoses of prostate cancer.

**j) Against Cancer:**

- ✓ Recent research suggests that moderate wine consumption protects against the pathological effects of free radicals that cause various types of cancer, as it contains substances which activate cellular respiration.
- ✓ Scientists have found that resveratrol, when used in conjunction with chemotherapy, penetrates cancer cells and induces apoptosis. Apoptosis is a type of cell death which occurs when the cell dies and dissolves as a result of the assets released by the immune system.
- ✓ In addition, resveratrol inhibits subsequent reproduction of cancer cells removed through this process, making chemotherapy much more effective than it would normally be.
- ✓ Red wine helps reduce the risk of lung cancer in men, especially if they are smokers. Furthermore, it blocks the growth of the cells responsible for breast cancer. These properties may be due to the resveratrol slowing the effects of estrogen, the female hormone par excellence.
- ✓ The anticancer properties of wine are also proved, provided a moderate consumption. Studies say that a glass of wine a day may reduce the risk of ovarian cancer by up to 50%.

**k) Improves digestion:**

- ✓ Wine stimulates the segregation of gastric juices. It is particularly suited to meat and fish, as it facilitates the digestive process.
- ✓ Wine has digestive properties, because it is very rich in vitamin B2, which eliminates toxins and helps liver regeneration.

Red wine consumption, source of tannins, acts on the smooth muscle fibers of the intestines, thereby increasing the peristaltic properties, standing as an additional means to avoid the risk of constipation



- ✓ Wine participates actively in the metabolism of proteins and carbohydrates.
- ✓ El vino participa de una manera activa en el metabolismo de las proteínas y de los glúcidos.

**l) Antiallergic:**

- ✓ Wine has antiallergic properties for its abundance of manganese and vitamin B, and opposes any excess formation of histamines, which are responsible for the allergic phenomena item.

**m) For the eyes:**

*"Wine gladdens the eye, cleans the tooth  
and heals the belly "*

*(Popular saying)*

- ✓ Wine Antioxidants prevent from the attack of free radicals to the cells of the retina that are sensitive to oxidation. This allows for a protective effect of the eye health and prevents the eye diseases, especially those of a degenerative nature, such as visual loss caused by macular degeneration.
- ✓ It blocks the progression of cataracts.

**n) For the teeth:**

- ✓ It reduces periodontitis: a progressive infectious disease that affects the gums and bone that surround and support the teeth, often causing them to move and can cause permanent loss.

- ✓ Red wine, strengthens tooth enamel, making it much more resistant to caries.

Hardened enamel is more resistant to the development of another type of bacteria which may significantly damage our gums.

- ✓ The wine fights bacteria present in our mouths. Italian researchers at the University of Pavia confirmed that the habit of treating gum infections with wine has a scientific basis. Apparently, some compounds present in this drink slow the growth of oral streptococci and related bacteria associated to caries, as well as other bacteria associated to gingivitis and sore throats.

**o) Palate cleanser:**

Taken during the meal, wine helps to better perceive flavors when it is accompanied by water. This is due to its astringent properties, which tackles the strong taste of fat caused by foods like red meat and allow for an improved food tasting.



**p) In the treatment of kidney disease:**

- ✓ Drinking moderate amounts of wine is associated with lower levels of protein in the urine. Dr. Tapan Mehta, a kidney expert at Anschutz Medical Center, University of Colorado, Aurora, said in a recent study, that it is not exactly known how wine might contribute to this. Among those suffering from kidney disease, higher levels of protein in the urine have been linked to an increased risk of progression of kidney disease.

**q) In blood and cardiovascular diseases:**

- ✓ A study conducted at the Hospital Clinic of Barcelona, by Dr. Alvaro Urbano-Marquez and Ramon Estruch, suggest that wine contains polyphenols that have the ability to reduce arteriosclerosis up to 30% and prevent by 96% the appearance of low density cholesterol in the blood.

- ✓ Red wine contains resveratrol, a powerful antioxidant that helps protect our heart. Resveratrol protects our heart and arteries from the effects of saturated fats, so taking two glasses of red wine a day can help protect your heart and prevent cardiovascular disease.



- ✓ Recent studies have shown that the tannins in red wine have health benefits for the body, such as the ability to block the formation of endothelin-1, a signal molecule that causes constriction of blood vessels, which reduces the risk of heart disease.
- ✓ The alcohol in red wine, when taken in moderation, raises levels of good cholesterol, or HDL, which is useful for removal of blood clots and to protect our arteries from damage caused by "bad cholesterol" or LDL.
- ✓ Wine contains antioxidants that can help prevent heart disease by increasing levels of good cholesterol and cause a protective effect on the arteries.
- ✓ Wine is an ally of the cardiovascular system. Several studies conducted by the World Health Organization indicated that moderate and regular wine consumption rates stimulates the Ald.DH enzyme in the liver.
- ✓ Wine accelerates cholesterol clearance, it facilitates and enhances the action of vitamin C, necessary for debugging cholesterol.
- ✓ Wine is an important source of iron, so it should be taken in case of anemia.
- ✓ stabilizes the collagen fibers that support various arteries.
- ✓ Reducesce the risk of cerebral ischaemia (blockage of an artery in the brain).

**r) Ally against fat:**

- ✓ Wine consumption activates SIRT1 gene, which prevents the formation of new fat cells and helps mobilize existing ones, as scientists demonstrated Massachusetts Institute of Technology (MIT) in a study published in Nature.
- ✓ A study published in the the magazine "Archives of Internal Medicine" concluded that, although alcohol contains 7 calories per gram, a moderate consumption has possitive effects on our metabolism, reducing obesity and overweight in aging. The optimal daily dose, according to this research would be 30 grams of alcohol a day.

**s) Bottled exercise:**

- ✓ A study published in The FASEB Journal, suggests that resveratrol present in grapes reduces the negative consequences on our body of a sedentary lifestyle. Scientists conducted their experiments on several rats undergoing a sedentary environment and limiting their movements. A group of mice was provided resveratrol. They found that only animals who did not drink this wine ingredient began to experience decreased muscle mass and strength and bone showed weakness. "Resveratrol is not a substitute for exercise, but it can lessen the deterioration in the event that an individual is forced to remain idle," said Gerald Weissmann, editor in chief of the publication.

## Section II

### 4. Put into practice

#### 4.1. Wine Contraindications

The MONICA study (Monitory Cardiovascular Diseases) has shown that consuming one or two glasses of wine reduces the risk of cardiovascular disease. However, above 30 grams daily alcohol causes serious damage to the liver, brain and heart.

We must not forget that alcohol is toxic when ingested in large amounts and is contraindicated in the following cases:

- ✓ Diabetes.
- ✓ Pregnancy.
- ✓ Children and adolescents.
- ✓ People with liver disease and severe heart disease or some arrhythmias.
- ✓ People taking certain medications.

To conclude, remember that a doctor should always individually assess the risks and benefits of alcohol consumption in each particular situation. Drinking alcohol can have beneficial or harmful effects, depending on the amount, age of the person, their lifestyle, etc.

*“Wine makes life better and easier, with fewer tensions and more tolerance.”*

*(Benjamin Franklin)*

#### 4.2. Folk remedies with wine

**a) Reconstituyente:**

Mix 1/4 liter of red wine with 2 teaspoons of honey stir well until it is completely dissolved. Add 2 egg yolks and beat with a wooden whisk for about a minute, after which you add the juice of 1 lemon. This reconstituent formula must be taken in small sips 1 or 2 times a day.



**b) For the Cold:**

To relieve the symptoms of a cold, take a warm glass of red wine before going to bed.

**c) For constipation, stomach pain, gastritis, insomnia and nervousness.**

Put 40 gr. of basil leaves in 1 liter of wine for 24 hours. Filter the wine and add a glass of brandy to enhance their conservation. This preparation has calming, carminative and antispasmodic properties.

**d) For urinary incontinence:**

Crush the shells of 15 eggs (well cleaned) and let marinate for a month in the mixture of 1 liter of red wine and 1 glass of brandy, then filter it.

We get a remineralizing wine recommended for demineralization, and urinary incontinence.

**e) Uric acid:**

Marinate in a liter of red wine, during 8 days, 20 g of birch (*Betula pubescens*) and 20 g of ash (*Fraxinus excelsior*). Mix every day. Filter and drink 2 tablespoons before lunch and before dinner.

**f) Fatigue:**

Mix 30 gr. of sage leaves (*Salvia officinalis*) and 30 g of rosemary leaves (*Rosmarinus officinalis*), add to a liter of red wine and 1.5 tablespoons of honey, heat for 45 minutes in a hot water bath. Stirr. Let marinate for 4 days. Filter and drink 2 tablespoons of the remedy 10 minutes before lunch and 10 minutes before dinner.

**g) Reduce bad cholesterol:**

Place 50g. of parsley in  $\frac{3}{4}$  liter of red wine. Mix the ingredients and let sit in the bottle for 12 days. Drink a small cup after dinner.



**h) Para tratar la astenia, impotencia, infecciones intestinales y espasmos digestivos.**



Let 6 cinnamon sticks marinate in 1 liter of red wine for a week and then filter it.

The wine we get has aphrodisiac, carminative, digestive, tonic and vermifuge properties

**i) Avoid Epilepsy:**

Mix equal parts of rosemary and rue and then boil them in wine.

Take the mixture as 1 infusion once a day helps to liven up the problem of epilepsy.

**j) Antioxidant anti-aging mask:**

Place two tablespoons of wine in a bowl and add four tablespoons of liquid honey. Mix well until completely amalgamated. Apply to face and neck, leave on for 15-20 minutes and rinse with a little warm water

**k) Rosemary wine - soothing the ills of the heart and dropsy:**

Put a bundle of rosemary leaves and sprigs, cut into small pieces inside a bottle. Fill it with red wine, and after seven or eight hours, the wine rosemary wine is ready. Take it daily, three tablespoons twice daily, as long as there is no medical indication not to consume alcoholic beverages. It is an effective soothing in cases of heart dropsy it helps to secrete the excess of fluid through urination.

**l) Medicinal tonic Wine: stomach soothing:**

In a clean bottle place 1 sprig of rosemary 1 nutmeg, 3 cm. ginger root and 3 cm. cinnamon bark. Then fill the bottle with red wine, place it in a fresh place and let marinate for two weeks. After this time, filter the medicinal wine and add some port wine, mixing well.

Take 1 cup of liquor after meals.

## **Questions**

- 1. Wine has four groups of components, how many can you remember?**
- 2. What kind of people should avoid wine consumption?**
- 3. Can you fight a cold with wine?**
- 4. The Rosemary Wine, how can it help soothe heart diseases?**
- 5. Resveratrol is a flavonoid found in red wine. Do you remember what it is?**
- 6. How many vitamins can be found in red wine?**
- 7. In the Middle Ages, in the convents of the Camino de Santiago in Spain, Monks gave wine to Pilgrims in order to heal them. Do you remember what diseases were cured with wine?**
- 8. What is the American Heart Association opinion on wine?**
- 9. Do you remember the famous phrase of the French scientist Louis Pasteur about wine?**

## Are you interested?

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## Teaching Unity

# *Olive oil*



*“If you want to grow old,  
drink olive oil like an owl.”*

*(Popular Saying)*

## Table of contents

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. Olive oil and health throughout history**

#### **3.2. Composition of olive oil**

#### **3.3. Types of olive oil**

#### **3.4. The main benefits of olive oil for health**

### **4. Put into practice**

#### **4.1. Counterindications of olive oil**

#### **4.2. Folk Remedies with olive oil**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |  |
|--|--|
| <b>Title</b>   | <b>OLIVE OIL</b>   |
| <b>Area</b>  | Knowledge of attributes and healthy features of Olive Oil  |
| <b>Main Target Audience</b>  | <p>The end users of the module are ...</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Teachers of primary and secondary education that teach lessons related to environmental awareness and nutrition</li> </ul>   |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand ...</p> <p>Wine and Health throughout history</p> <p>Olive Oil composition</p> <p>Key Health benefits of Olive Oil</p> <p>Short description and list of diseases Olive Oil can cure.</p> <p>Olive Oil contraindications</p> <p>Folk remedies made with Olive Oil.</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training; 8 hours for visits (farms, processors, labs, and markets, etc) and 8 hours of practical work.</p>   |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <p>Make your own remedies with Olive Oil.</p> <p>How to cure cholesterol, against cancer, prevention of diabetes, rheumatism, burns, skin care, etc</p> <p>what benefits there are for health consuming Olive Oil.</p> <p>how to prepare foods with Olive Oil.</p> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <p>knowledge about values of Olive Oil;</p> <p>how to cultivate organic Olive Oil;</p> <p>how to prepare healthy foods with Olive Oil.</p>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- case study /field survey/;</li> <li>- workshop;</li> <li>- self study.</li> <li>- Olive Oil tasting parties.</li> </ul> </li> </ul>                             |



## 1. Abstract

Olive oil is one of the natural products from the Mediterranean diet most consumed for its healing properties. In fact, it has sold only in pharmacies in the UK, China, etc; when it was not so abundant and transport not as easy as it is today.

This product also has a long treatise on the effects on human health throughout history. This section describes the content of each of its major components. The composition and its nutritional values are considered.

The chapter explains the main benefits of olive oil for health. And like all good things, may have contraindications and should not be taken by everyone. Cases are explained when its consumption is not recommended.

A chapter is also devoted to home remedies based on olive oil. These recipes contain centuries of experience and the contribution of people's wisdom. Finally we have the relevant references to each study, the bibliography; plus other references with the list of Internet web and its therapeutic qualities.

**KEYWORDS:** olive oil; Mediterranean diet; cosmetics; preventing diseases; antioxidant; burns.

## 2. Introduction

The olive tree has fed the body, soul and mind of man for thousands of years. There are many stories and myths about the olive tree and its fruit. Olive oil has been more than just a food for the peoples of the Mediterranean: it has been medicine, magic and an unlimited source of both fascination and amazement as wealth and power. A feature of their food, olive oil has been used as a medicine, and has been used in cosmetics and religious ceremonies. Even the Egyptians used to facilitate moving the giant stone blocks to build the pyramids. (TDC-OLIVE 2004).

The olive tree and olives are part of the Mediterranean culture, are well entrenched in the consciousness of the population and is widely used every day. Despite the passage of centuries, that fascination still remains about olive oil. The tradition of olive growing in Mediterranean countries and the Middle East dates back to earlier times of Christianity, having been even starred in previous beliefs and myths (Puerta, C.).

Olive cultivation is tradition and custom, so reading the book of Columella, (born in Cadiz south of Spain, during the first century), it is surprising that their advices and descriptions are aligned with the current crop in the traditional olive areas less evolved.

Around the year 1040 (B.C.) olive reach Spain by the Phoenicians, but were the Romans who spread their culture from Tarifa to Gredos in Spain, and enhance their value: "prima olea arborum est" said Columela (year 60 dc). If the fig tree is the truth, the olive tree is the tree of life and peace.

For Unamuno, oil divides Europe in two. "The line passes through the Loire; in the south of the border live small land dark men who cook with olive oil, and are gods. People living in the north of this line, have golden hair, cook with butter, and are Eskimos. "



The designation "olive oil" includes oils from the fruits of olive trees "Olea Europea". No oils obtained by solvent or by mixing other oils are allowed. Olive oil is extracted from the olives, by subjecting them to pressure. Oil and vegetable water, containing water soluble and some oil: two layers are separated. The residue formed by the solids residues is also olives. The oil is extracted mostly pulp (fleshy part) of the olives. Bone oil, which contains about 28% amount, of which a small part (less than 1%) is located in the bone itself and the rest in the almond contained therein..

All ancient Mediterranean peoples claim, each to their gods, the discovery and use of olive tree. Has connotations that express the best symbols: peace, fertility, strength, victory, glory and even purifying and sacred. We will mention some legends taken from the book of Toussaint-Samat Maguelonne, "Natural and Moral History of Food", about the history of oil between the different peoples and their importance within religions.

For the Egyptians six thousand years ago, corresponds to Isis, "supreme goddess" and wife of Osiris, the merit of having taught their cultivation and use.

The Greeks loudly claim that honor for Palas Athena. A legend says that in the mountains behind the Erechtheum, Athena grew an olive tree "capable of providing flame to light at

night and heal the wounds and to generate a lovely food, rich in flavor and energy supplier." The gods judged the tree, symbol of peace, was more useful to humanity than the horse picture of the war, created by Poseidon. They granted the sovereignty goddess of the region and the city founded by Cecrops and his father. Since then that city is named Athens.

It was characteristic of the divine offspring be born under an olive tree: Romulus and Remus, as descendants of gods were born under one. And, according to the Romans, Hercules would have been asked to spread the olive tree in the Mediterranean in his tour of the twelve labors.



In the Genesis, the dove that Noah released at the end of the flood returned to the ark with an olive branch in its beak, as testimony to the appeasement of divine wrath.

In the Garden of Olives, Jesus will pray and cry during His passion "Father, father, why have you forsaken me?". His cross will be made by olive tree wood.

The Bible tells us in the Judges Book that one day the trees decided to choose a king. Naturally, they went to the ancient olive tree, carrier experience and wisdom, and said, 'Reign over us. "The olive tree said to them, "Can I give up from my oil which assures me the honor of God and man to reign over the trees?"

Not only Moses indicates, following the advice of the Eternal Father, oblations should be made with pastry "flower flour", baked with olive oil (Exodus, Leviticus 29 and 2), but, during the Exodus, had learned from Yavéh the LORD to do them with olive oil, "mixed with the best aromatic herbs", an oil for the holy anointing, for the furniture of the sanctuary and to Aaron and his sons: "the hallow to make them serve me as priests."



From that oil which anointed priests and kings of Israel giving them authority, power and glory in the name of God and the Holy Spirit, comes the name of Jesus: Messie in Hebrew; and in Greek: Christosen, both words mean anointed (from chrism, oil sacrum). Christ, the anointed of the Lord. So early Christianity looked baptisms with anointing oil (Tertullian, Treatise of Baptism, 7).

The Greeks, who entrusted the care and handling of olive oil only to virgins or pure men, and poured oil on the face of anybody dead. Eleusinian Rites of Eastern origin made this gesture a symbol of light and purity, very useful for the infernal dark abodes.

This tradition is also found in the early Christians. Although coming from afar, testified true sustainability. The pseudo-Denis explains anointing making this a rite of passage to eternal peace: the oil of baptism began in the daily struggle (against the spirit of evil). For some alchemists, olive oil is one of the elements of the philosopher's stone, along with wine and wheat. It is a link, but also a protector.

In North Africa oil gets on the plow before opening the first furrow, offering to the Invisible a solar field and "hot", true rite of rape to be as sweet as possible, for fertilization of motherland.

For the Japanese Shinto, the primordial waters were virgin oil. This is the washing oil for newborns worldwide, before the first diaper is put on them.

It is not surprising that the Christmas holidays, heirs to the solemnities of the solstice, the traditional sweets of Provence to be mixed with olive oil as the Hebrew oblations: "The time it turns cold and the sea that breaks / All tells me that winter has come for me / and forthwith have to cherish my olives / and offering virgin oil to the altar of the good God! "(Fredéric Mistral).

## Section I

### 3. Core contents

#### 3.1. Olive oil and health throughout history:

Olive oil has been used for 6,000 years to the cultures of the Mediterranean peoples for all anoint kings, children and the sick; lighting palaces, homes and cities; food preservation; heal cracks and burns; beautify women such as Cleopatra; care for athletes and gladiators, etc. (L. Guerrero, S., 2004).

As we shall see later olive oil is rich in monounsaturated fatty acids and also contains valuable antioxidants. In 1950 KEYS & GRANDE found that olive oil is a healthy and nutritious product.

At one time the olives were also considered medicinal, for "strengthened the stomach and moved appetite, undoing the viscosities of the stomach and bowel movement doing." The oil is used since ancient times as a medicine in itself and as a vehicle for other drugs or as an essential element of ointments, liniments and other products such as perfumes. This is due, among other reasons, to its resistance to rancidity and its ability to dissolve other substances. Thus olive oil was used to produce the famous former injection of "camphorated oil". It poured with oil products that now seem as surprising as the "oil with lime water" which was used to treat burns, or the "oil with red wine" that was used as a healing of wounds of all kinds. The oil was a laxative fasting (still remains such use) and served as antidote after ingestion of toxins and poisons helping to induce vomiting. If its action as a laxative was not enough, it was recommended as an emollient as "enemas" (for example, in the eighteenth century Pharmacopoeia Matritense) together with the decoction of mallow and honey. Ingested in generous doses and mixed with lemon juice, crude oil accounted fasting which eliminated some gallbladder calculus (A. MARTINEZ, JR, et all, 2005).

### 3.2. Composition of olive oil



The term virgin olive oil is a juice from the olives in perfect maturity, from a healthy olive avoiding any treatment or mechanical, physical and especially thermal manipulation that alters the chemical nature of their components (KIRITSAKIS, AK ).

In terms of composition, we could separate three parts:

**a) Part saponifiable or olive oil fat** (constitutes 98%)

These fatty acids are essential to health, as the body does not have the capacity for synthesis, are essential fatty acids. Monounsaturated fatty acids are the most abundant, then saturated and polyunsaturated fewer:

- ✓ 63-80% oleic acid (*monounsaturated*)
- ✓ 10-17% palmitic acid (*saturated*)
- ✓ 1.5-5% stearic acid (*saturated*)
- ✓ 0,3-3% palmitoleic acid (*monounsaturated*)
- ✓ 3-14% linoleic acid (*polyunsaturated*)
- ✓ 1.5% linolenic acid (*polyunsaturated*)

**b) Part un-saponifiable.**

The un-saponifiable fraction of the form hydrocarbons, sterols and tocopherols such as vitamin E (for every 13 grams of olive oil contains vitamin E mcgr 1.56). In much fewer polyphenols (taste), carotenoids and chlorophyll (color) and other volatile components that give them their smell.

**c) Polyphenols.**

Although a much lesser extent, are the polyphenols, including Oleocanthal.

### 3.3. Types of olive oil:

- a) **Extra Virgin Olive Oil:** synonymous with high quality, is one which preserves all its sensory and health properties. It can be considered olive juice no additives or preservatives, should have a lower acidity of 0.8% and present a pleasant and identifiable sensory characteristics.
- b) **Virgin olive oil:** without the word "Extra" is still olive juice with no additives or preservatives but has some sensory defect however minimal. Its acidity must be less than 2%.
- c) **Olive Oil:** it is no longer considered "Virgin" is an inferior oil mixture to be the result of refined oils and virgin oils. Part of this mixture is obtained from refining virgin olive oil with 2% higher acidity so olive oil is olive juice. Yet it is safe to eat and have a degree of acidity not exceeding 1%.
- d) **Pomace Oil:** oil consumption is lower quality fit for consumption. This oil can not be considered as Olive is the result of the mixture of refined pomace oil with virgin olive oil. You must have a degree of acidity not exceeding 1%.



It is always recommended to consume the Extra Virgin Olive Oil because it is healthier, more authentic, more tasty, aromatic and delicate of all olive oils.

### 3.4. The main benefits of olive oil for health:

*“Olive oil removes all evil”*

*(Popular Saying)*

To be sufficiently beneficial, the recommended dose is 40 grams per day, 2 to 3 table spoons.

**a) For the heart.**

✓ "Olive oil lowers lipid levels in patients with cardiovascular disease and other complications such as diabetes or hypertension." Statement of Dr. Ramon Estruch from Universidad Autónoma de Barcelona.

✓ The diet with olive oil reduces inflammation of the arteries. The study called "Prevention with Mediterranean Diet" (PREDIMED), conducted by 16 research teams in 7 regions and coordinated by Dr. Ramon Estruch (University of Barcelona), shows that people who supplemented their diet with olive oil had an 8% decrease in indicators of inflammation of the arteries, being the best analytical results than those who did not eat any fat. "

✓ The intake of antioxidants and fatty acids make the olive oil in an optimal choice for cardiovascular health care, helping to reduce levels of bad cholesterol (LDL) and protected from conditions such as atherosclerosis . That is why the Spanish Heart Foundation (FEC) recommends daily consumption of olive oil in each meal.

✓ Olive oil takes a leading role in the prevention of atherosclerosis and as a blood pressure controller. "This natural olive juice, considered the golden liquid of our diet provides us with a high nutritional value necessary to follow a balanced and healthy diet is essential for proper operation of the main engine of the body, our heart" says Dr. Leandro Plaza , chairman of the FEC.

Olive oil provides carotenoids, and polyphenols, chemicals that are very beneficial to control chronic diseases of cardiovascular system. In this sense, the cardio-protective effect of polyphenols has its importance in combating atherosclerosis, in which process a hardening and narrowing of the arteries as a direct result of the natural loss of elasticity, is generated.

Moreover, this disease, atherosclerosis, is primarily responsible for the appearance of multiple cardiovascular conditions from angina pectoris, to hypertension, to myocardial infarction, among others. Thus, studies confirm that polyphenols are able to preserve endothelial function, generating greater amounts of nitric oxide that can regulate both the ischemic risk (reduced blood supply) as oxidative stress.

**b) Against cholesterol**

It regulates cholesterol levels in the blood due to the monounsaturated fatty acids. Olive oil is rich in oleic acid (C18: 1), it is a type of monounsaturated fat (MUFA) good for heart's health increases HDL (good), without increasing the total blood cholesterol "Replacing saturated fats with unsaturated fats in the diet helps maintaining normal blood cholesterol levels. Both oleic acid and omega3 acids are unsaturated fats, "says Dr. Leandro Plaza, president of the FEC.



Phytosterols increase HDL cholesterol, while improving cardiovascular diseases and arteriosclerosis.

**c) Faced with hypertension**

It helps reducing blood pressure by polyphenols and oleic acid.

**d) The prevention of atherosclerosis.**

✓ A publication of the University of Zaragoza says the extra virgin olive oil is effective in controlling atherosclerotic lesions, mainly in the context of a Mediterranean-type diet (low in cholesterol).

**e) Improves digestive function.**

In the digestive tract, acts as a shield against excess stomach acids.

- ✓ Improving the Ph of the body, increasing it.
- ✓ It improves absorption of calcium and magnesium.
- ✓ Prevents constipation. Taken fasting in the amount of 1 or 2 tablespoons soup, the olive oil works as a mild laxative.
- ✓ It is a natural stimulant for the expulsion of intestinal worms.
- ✓ Improves nutrient digestion by stimulating the secretion of bile from the gallbladder, which helps preventing slow or heavy digestion of fats.
- ✓ Almost all the structures and organs of the gastrointestinal tract respond favorably to olive oil, the partial inhibition of gastric secretion and gut hormones, such as neurotensin and peptide YY.
- ✓ In the hepatobiliary system, oil colecistocinético produces a significant effect, gallbladder contracting due to the stimulation of cholecystokinin. Which further increases the hepatic secretion of cholesterol (bile salts), increasing its excretion. The result is the reduction of circulating cholesterol.
- ✓ In enteral diets shows that the gallbladder contracts with the oil faster compared to oral administration, facilitating the digestion of people who need this kind of power.

**f) Metabolic and cognitive functions.**

- ✓ Improved metabolic and brain functions.
- ✓ It favors the formation of cell membranes and brain tissue.
- ✓ Studies show that people who consume more saturated fat compared to those who consume less, have less memory. People who consume more monounsaturated fat, which contains olive oil, have cognitive improvement over time.

**g) Against Cancer.**

✓ YANG and coworkers have shown that the main component of olive oil, oleic acid, is inserted into the cell membrane mediated signaling regulates G-protein coupled receptors. These signals are those that control blood pressure (which explains its beneficial effect on cardiovascular levels, reducing blood pressure) and cell multiplication (which explains the protection against cancer, a disease characterized by excessive cell multiplication). This work provides, for the first time, what is the initial step in the antitumor and antihypertensive effect of olive oil.

**h) Anti-inflammatory action.**

✓ "Olive oil contains oleocanthal that provides anti-inflammatory properties on cyclooxygenase comparable to those of an analgesic drug such as ibuprofen prescribed enzyme (COX)". Francisco Jiménez, director of the study published in the *Journal of the American College of Cardiology*.

**i) In the prevention of osteoporosis.**

✓ Improves absorption of calcium, magnesium and zinc. So it is helpful in bone growth.

**j) At menopause.**

✓ Fundamental during menopause improves the absorption of fat-soluble micronutrients such as vitamin A and D.

**k) In the treatment of rheumatoid arthritis.**

✓ Studies by Dr. Athena Linos Faculty of Medicine, University of Athens highlight that diet may affect the development of clinical symptoms of rheumatoid arthritis. These studies show that in regions where olive oil consumption is high there are fewer risks of incidence. Oil is able to reduce symptoms of arthritis for the decreased production of proinflammatory mediators. It has been found that the use of olive oil twice a week decreased the risk of developing the disease. It is also concluded that the olive oil has a protective effect on the development or severity of arthritis.

**l) Antioxidant action.**

✓ It acts as an antioxidant, reduces the aging of the cell membrane, due to its vitamin E. Animal studies suggest that phenolic substances (oleuropein aglycone-ligstroside, hydroxytyrosol and tyrosol) found in olive oil have antioxidant effect, which turn acts in the body protecting the appearance of cardiovascular disease and cancer. (Maud N. Vissers, Peter L. Zock, Annet JC Roodenburg, Rianne Leenen and Martijn B. Oil Phenols Are Absorbed Katan.Olive in Humans J. Nutr 132:.. 409-417, 2002).

✓ Help lipoproteins to be more resistant to oxidation (oxidative process is a key to the development of coronary and vascular disease, causes inflammation and arteriosclerosis), preventing plaque formation of atherosclerosis.

**m) Prevention of diabetes.**

✓ Helps control other conditions that increase the risk of diabetes or obesity.

✓ Olive oil is rich in monounsaturated fats. These fats help control insulin levels in the body

**n) Prevention of depression.**

✓ The consumption of olive oil reduces the risk of depression. A recent scientific study at the University of Navarra in the journal "Archives of General Psychiatry" attributed to the Mediterranean diet reduced the risk of depression by 40% to 50%. And within the Mediterranean Diet, the extra virgin olive oil is one of their main ingredients.

**o) Feeling full.**

✓ Satiety effect against hunger, according to studies by Prof. Peter Schieberle, Head of the TUM Chair of Food Chemistry and Director of the German Research Center for Food Chemistry.

**p) Cosmetic treatments.**

✓ Based creams olive oil protect the skin against external agents such as pollution, cold, dry climate, etc.

✓ Due to its texture and fluidity is excellent for massage therapy.

✓ Delays skin aging by the antioxidant action of vitamin E.



- ✓ Tones the epidermis and has nourishing, regenerating and skin softening properties, this is because it is rich in vitamin E.
- ✓ Oleic acid provides elasticity to cell membranes and thus to the skin.
- ✓ With its significant content of essential fatty acids, restores natural moisture levels of the skin.
- ✓ To treat brittle nails. Put soak fingertips in olive oil for a few minutes helps to give greater strength to the nails.
- ✓ Massaging dry hair with olive oil and leave it on for about two hours before washing helps hydrate and achieve a healthier appearance.
- ✓ In the treatment of dry skin on elbows, sunburn, rashes, wounds or insect bites, etc.
- ✓ Hand and foot massage with olive skin gets these areas eliminates dryness and roughness.

## Section II

### 4. Put into practice

#### 4.1. Counterindications of olive oil :

- ✓ If you are taking medication for diabetes or blood pressure, decrease the consumption of this oil as it reduces blood sugar and blood pressure, which can cause complications.

*"Is any sick among you?"*

*Let him call for the elders of the community and pray over him, anointing him with oil in the name of the Lord "*

*(Sant. 5:14)*

#### 4.2. Folk Remedies with olive oil:



**a) Constipation:**

**a.1)** is recommended to take 2 tablespoons of olive oil in the morning on an empty stomach, you can enhance the flavor with a few drops of lemon juice. If constipation is more serious, it may prepare a mixture of olive oil (1 teaspoon) and warm water (another teaspoon), and apply it as an enema.

**a.2)** Make a poultice based raw spinach well mashed with olive oil applied on the belly. Works well against constipation and other ailments of the digestive system. You can also mix and drink chamomile tea with a tablespoon of olive oil

**b) Hemorrhoids.**

To relieve them, wash the area with water resulting in the firing of 30 gr. olive bark per liter of water. Another remedy is to wash with warm or hot water immediately with homemade soap made with olive oil zone. Rinse with cold water.

**c) Earache.**

For earache, you should put in each ear a drop of warm olive oil and cover with cotton.

**d) Remove earplugs.**

Sweating plugs applying a few drops of olive oil in the ear before bed and plug the ear with cotton. After two or three nights you can remove the stopper with a syringe of warm water pressure inside the ear.

**e) Painful Gums.**

To calm nervousness and pain producing gums when teeth come in small children. Scrubs are made in the gums with a little olive oil.

**f) Rheumatism and sprains**

**f.1)** As olive oil is very similar to the properties of ibuprofen, massage with this product are very beneficial. Pour a tablespoon or two of olive oil on the affected area and massage for about ten minutes until absorbed well. Relief will be noted immediately.

**f.2)** based ointment 25cl is performed. virgin olive oil, dried chamomile flowers. Water bath the mixture is heated for half an hour, allowed to cool and filtered. Subsequently aside a tablespoon of camphor and 3 tablespoons of alcohol to 60 ° is mixed. This mixture is added to the previous infusion. It is applied topically in massage joints, 2 times a day.

**g) Tiredness of the feet.**

To his relief a few drops of olive oil is added in the palm of the hand and feet massaged.

**h) Burns.**

**h.1)** To improve and heal a burn, is very beneficial apply a tablespoon of olive oil. But not to do right after it has been burned since you first leave a few minutes for the wound to breathe. Oil, what it does, is to moisturize the skin and relieve pain.

**h.2)** To relieve the pain of burns rub them with homemade soap made from olive oil.

**i) Wounds.**

To facilitate healing ointment with olive oil, black wine and honey is made equally and spread over the wound. It is also said that washing the affected area with water for cooking dried olive leaves accelerates healing.

**j) Bleeding.**

Apply powder rue (wild plant) with a little olive oil. The bleeding stopped and the wound heals quickly.

**k) Stretch Marks Skin.**

To improve the appearance of stretch marks, mix one tablespoon of olive oil with another oil wheat germ, applied to the skin and massage gently. With a constant daily application, hydration will improve them.

**l) Swelling.**

Crush a clove of garlic with a piece of cotton or gasilla. We spread the area with a little olive oil and put it over the previous gasilla gauze wrapped in another part. We will leave until the swelling recess.

**m) Chilblains.**

Apply olive oil directly on affected areas chilblains.

**n) Psoriasis.**

Psoriasis pustules hydrate and diminish the direct cutaneous application of Virgin Olive Oil.

**o) Rosacea.**

To improve symptoms or delay their appearance, are made of three or four minutes of daily massage with olive oil.

**p) Gallstones, bladder and kidneys.**

To facilitate stone expulsion should be taken on an empty stomach one tablespoon of olive oil with the lemon juice.

**q) Acne.**

Thanks to the antioxidant properties of olive oil, is a perfect place to solve the problems of acne ally. It is therefore recommended that you include in the diet, and also the skin clean and moisturized is maintained. To do this, prepare a special tonic with 10 drops of lavender essential oil on a quart of olive oil. Each day, take part in the affected facial massages.



**r) Smooth wrinkles.**

Thanks to its excellent antioxidant and moisturizing, it is very beneficial for the skin. You can smooth wrinkles marks applied nightly massage the face with a tablespoon of oil and two drops of lemon. Our skin will look brighter and recovered.

**s) Crow's feet.**

Heat water bath 3 tablespoons olive oil, 1 teaspoon beeswax and half a teaspoon of cocoa butter. Cool and add two tablespoons of rose water. Stir to form a thick paste that is applied to the crow's feet.

**t) Cream for dry skin.**

Mix 2 tablespoons of olive oil with two tablespoons of liquefied lanolin water bath and apply to the skin.



**u) Hair loss.**

Olive oil allows the hair follicle to relax and increases blood flow to the area. To do this, massage the scalp with olive oil, then, cover the head with a towel a couple of hours. Then wash the hair with water and shampoo.

**v) Hair punished.**

For the hair regains vitality and luster lost by treatments and styling products restoring its natural beauty. Simply apply a few drops of olive oil on the hair and allow oil to take effect, apply 10 minutes before soaping.

**w) Nail Care.**

It is placed in a glass a couple of fingers of olive oil and nails are immersed in it for 5 minutes once a day before bedtime.

**x) Rosemary Oil - Relieve muscle aches and respiratory problems.**

Wash the rosemary and let dry completely. Place it in a whole container, without taking anything. Fill the entire container of rosemary.

Then add olive oil until it covers all rosemary. Cover the bowl and leave to marinate in a dark place for at least a month. After this month, strain and rosemary oil is now ready for use.

## **Questions**

- 1. Do you remember how many commercial types of olive oil are there on the market?**
- 2. What is the role of olive oil in controlling cholesterol?**
- 3. How many applications does olive oil have in cosmetics?**
- 4. How has researcher Yang and his collaborators described the curative effects of olive oil on cancer?**
- 5. What kind of people shouldn't consume olive oil?**
- 6. What kind of treatments can be done to fight acne with olive oil?**
- 7. How can olive oil help fight alopecia?**
- 8. What treatment would you follow to care for your nails with olive oil?**
- 9. What does the Japanese Shinto think over the primordial waters used to wash the newborns?**

## Are you interested?

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## Teaching Unity

# Honey



*“Honey is the word of Christ,  
the molten gold of his love.  
What lies beyond the nectar,  
The mummy of the light of paradise”*

*Federico García Lorca  
(Song of Honey)*

## Table of contents

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. Honey and health throughout history**

#### **3.2. Composition of Honey**

#### **3.3. Nutritional value of honey**

#### **3.4. The main health benefits of honey**

### **4. Put into practice**

#### **4.1. Folk Remedies with Honey:**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |  |
|--|--|
| <b>Title</b>   | <b>HONEY</b>   |
| <b>Area</b>  | Knowledge of attributes and healthy features of Honey  |
| <b>Main Target Audience</b>  | <p>The end users of the module are ...</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Parents of minors and pregnant women</li> </ul>  |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand ...</p> <p>The origin and meaning of Honey</p> <p>The most widespread Honey - Classical Quartet</p> <p>Nutrition values of several Honeys</p> <p>The benefits of organic production</p> <p>Traditional recipes with Honey</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows: - 8 hours of theoretical training; 8 hours for visits (farms, beehives, processors, markets) and 2 hours of practical work in a lab.</p>  |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module. Once you have completed this course you will be able to understand:</p> <p>importance of Honey;</p> <p>Features of Honey;</p> <p>What are the benefits of Honey consumption for health;</p> <p>How to prepare recipes with Honey at home.</p>                  |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <p>Knowledge about values of Honey;</p> <p>How to use Honey at home for the family's health..</p>   |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- workshop;</li> <li>- self study.</li> <li>- Honey tasting party.</li> </ul> </li> </ul> |



## 1. Abstract

This work begins with honey throughout history and its role in human health. There are many cave paintings in Africa and southern France, realizing how humans have taken honey bees. It also explains the composition of honey, and all the components to be used from the hive.

The nutritional value of honey is another great asset of this product, as well as major health benefits. And this noble product has a number of people who realize ill but should dispense consumption.

Honey is an exceptional component for home remedies. The wisdom and experience of millennia make these remedies an invaluable and practical guide.

This teaching unit closes with two listings. One, bibliographic references, and other, references to major web related to honey, its nutritional value as a food, and as a medicine for healing.

**KEYWORDS:** honey, hive, wax, propolis, royal jelly, home remedies.

## 2. Introduction

Honey is a product that humans have used since its origins. In fact, the rock paintings of Cueva de la Araña, Bicorp (Valencia), dating back 7,000 years before Christ, show as a man collecting honey. This shows that even the first inhabitants of the land discovered the benefits of this food.

According to the Papyrus of Thebes written in 1870 BC, the Egyptians fed and cared for their children with honey. For the Egyptians, honey comes from the tears of Ra God and is part of all religious offerings in the pharaonic Egypt. When the ancient Egyptians made their expeditions, they preserved meat in barrels filled with honey. Its use is very well recorded in the papyri found; among other things, they used the honey to treat cataracts, sores, cuts, burns; in cosmetics and as a strengthening food. They also brewed beer from fermented honey. In the tomb of Pharaoh Tutankhamun, discovered in 1922, there were several vessels with honey in perfect condition, despite the 33 centuries.



Spider Cave, early settlers collecting wild honey from a hive.

Hippocrates (V century BC), the father of medicine, praised the curative powers of honey, and used it to cure various skin conditions, ulcers and to relieve pain in general. He recommended honey to his patients to achieve longevity (Hippocrates lived 107 years). The Greeks believed that a diet consisting of honey was very important to achieve a deep spirituality. In Greek mythology, is the food of the gods of Olympus, the symbol of knowledge and wisdom, reserved for the chosen ones, the initiated, the exceptional beings in this world and the other.

When Augustus, Roman emperor asked his friend Asinio Pollion Romilis what he attributed his longevity and healthy state (he had just turned 100 years old) he replied laconically as usual " oil in the outside and honey in the inside." Doctors used it to help their patients to doze. The so-called honeymoon has its origin in the Roman custom that the mother of the bride, left a pot of honey every night at the bridal chamber for the newlyweds to "recover energy". This practice lasted all honeymoon.

In the Bible, honey is mentioned as an article of export in Genesis 43:11 and Ezekiel 27:17. Besides many other passages that refer to this product, e.g.:

*Pr. 16. 23 The hearts of the wise make their mouths prudent, and their lips promote instruction.*

*Pr. 16.24 Gracious words are a honeycomb, sweet to the soul and healing to the bones.*

*Pr. 24.13 Eat honey, my son, for it is good; honey from the comb is sweet to your taste.*

*Pr. 24.13      Know also that wisdom is like honey for you: If you find it, there is a future hope for you, and your hope will not be cut off.*



Painting at the Spider Cave, where the first images of beekeeping were drawn.

All the great prophets refer to honey in the sacred books, the word honey represents sweetness, justice, virtue and divine goodness. The Holy Quran speaks in terms of bees and honey, "Honey is the first benefit that God gave the earth '. In the Qur'an there is a Sura that is called "The Bees". In it, God says, "know the men that in the belly of bees a liquid is produced that is used for healing".

The perfection of honey makes it the main element of many religious rituals. Among the Incas and Aztecs of America, honey played an important role in the ceremonies and rituals of initiation and purification.

When Alexander died in Babylon, he was taken to Macedonia in a bowl full of honey and the body remained intact.

Until the sixteenth century when cane sugar appeared, honey was the only known sweetener. At first it was prized for its sweet taste.

In an experiment conducted in 1971 showed that pieces of fish, kidney, liver and other tissues of animal origin, covered with honey, retained its freshness at room temperature for 4 years, while the pieces covered with "artificial honey" (mixture of sugars such as glucose and levulose) began to decompose the fifth and eighth day.

## Section I

### 3. Core contents

#### 3.1. Honey and health throughout history:

By empiricism our ancestors had discovered the antiseptic, dietetic, sweetening, fortifying, soothing, laxative, diuretic, antibacterial properties of honey and were able to take advantage of these properties against most diseases.

The ancient Egyptians preserved the bodies in honey. This proved unwittingly the antiseptic power of this highly saccharine substance. Likewise, they used honey as an ointment on the sores or wounds having realized that it ensured a quick and straightforward healing. This property also evidences the antimicrobial and regenerative activity of honey. Egyptians were also aware of the positive effects on diseases of the digestive tract, kidney and eyes as wells in skin diseases.

In Egyptian cosmetology honey was one of the main ingredients of beauty creams. Its healing properties, its tonic effect and softening qualities made it the favorite ingredient in all cosmetics and facial creams at that time.

The Quran says "Eat honey, my son, because it's not only nice and healthy food, but also a remedy for many diseases." Honey is therefore used to cure. After the incision, honey is used against ulcers, insect bites, burns, eye problems, fungi and bacteria on the skin. Honey also appears to be effective in pulmonary diseases, for example, a maceration of rose petals with pure honey, was thought to be one of the first medications active against tuberculosis.

### 3.2. Composition of Honey:



Honey is a food produced by honey bees from the nectar of flowers and other sugary substances that they collect from plants, transform, enrich and deposit on the wax panels.

Honeys vary in color, flavor and consistency depending on the plant, the nature of the soil, weather patterns and the harvest season, so no two honeys are the same. However, basically all honey is composed of two simple sugars, glucose and fructose. The body can assimilate these sugars directly, since the bees have already done the necessary work to transform complex sugars into simple sugars, saving the human gastrointestinal tract from that work. Glucose is absorbed directly into the blood, and fructose somewhat less rapidly; as chemical changes are not necessary and being a predigested food by bees, honey is a natural source of quick energy par excellence.

Honey, as the natural product it is, can differ in composition depending on its floral source, time of year and geographic area.

The main components of honey and its general features are:

**a) Water:** the amount depends on the type of flowers used by bees, ranging between 13 and 20%.

**b) natural sugars:** glucose (38%), fructose (31%) and sucrose (1-2%).

**c) Proteins:** in small amounts but in the form of enzymes.

**d) mineral salts.** The mineral content is very small. The most common are calcium, copper, iron, magnesium, manganese, zinc, phosphorus and potassium.

**e) Vitamins** of group B and C.

**f) HMF** or hydroxymethylfurfural: harmless substance that is essential to determine the freshness of honey: a greater amount of HMF less freshness.

**g) Volatile components:** is responsible for the aroma and some properties of honey.

**h) enzymes:** invertase, diastase, catalase, inulasa, phosphatase and glucosidase. There are also 4 to 7 flavonoides mainly quercetin, kaempferol and isorhamnetin and other resins, terpenes, essential oils, aldehydes and higher alcohols.

**i)** Among the lipids there are **glycerides**, sterols and phospholipids. Palmitic acid (27% of total lipids), and oleic acid (60%) have been identified, as well as small amounts of lauric, myristic, linoleic and stearic.

**j)** Other important ingredients are **colloidal substances**, terpenes, acetylcholine and an antibacterial substance called inhibin.

### 3.3. Nutritional value of honey:

Honey is essentially a concentrated aqueous solution of inverted sugar. Its concentration in sugar makes it a very caloric food (304 cal / 100 g).

Below, there is a table with a summary of the main nutrients of honey. These components are present in all honeys, but the percentages vary depending on the floral source variety.

The amount of nutrients shown corresponds to 100 grams of this food.

|               |           |
|---------------|-----------|
| Calories      | 302 Kcal. |
| Fat           | 0 g.      |
| Cholesterol   | 0 mg.     |
| Sodium        | 2,40 mg.  |
| Carbohydrates | 75,10 g.  |
| Fiber         | 0 g.      |
| Sugars        | 75,10 g.  |
| Proteins      | 0,38 g.   |
| Iron          | 1,30 mg.  |
| Vitamin C     | 2,40 mg.  |
| Calcium       | 5,90 mg.  |
| Vitamin B2    | 0,28 mg.  |

### **3.4. The main health benefits of honey:**

Consumption of two or three teaspoons of honey a day is recommended as it would be the right amount to sweeten without gaining weight, but in cases presenting an infection or lack of energy, you can eat two or three tablespoons until symptoms disappear.

#### **a) Prevents tooth decay:**

- ✓ Natural honey does not cause tooth decay by the action of an enzyme that removes plaque. Although it should not be abused.

#### **b) Improves digestive function:**

- ✓ Bees' Honey, alone or mixed with the main foods, reduces gastric acidity. Many authors, based on clinical observations, have reached the conclusion that it can be used as dietetic medicine and food in cases of gastrointestinal diseases accompanied with hyperacidity, gastritis and ulcers.
- ✓ Relieves heartburn and ulcer pains. It also has antibacterial properties against *Helicobacter pylori*, bacteria that is known today as responsible for much of the drawbacks of ulcers and gastritis; probably related with gastric cancer. Amy E. Jeffrey, Carlos M. Echazarreta Faculty of Veterinary Medicine, Autonomous University of Yucatán, Mérida, Yucatán, Mexico.
- ✓ Clinical studies have shown that honey reduces gastric acid secretion. Besides, gastric ulcers have been treated successfully with the use of honey as a dietary supplement. In 600 patients with gastric ulcer who were administered honey orally, a recovery rate of 80% was achieved. Radiological examination showed that in 59% of cases the ulcers disappeared.
- ✓ It has an slight snack effect that helps digestion and assimilation of other foods, being rapidly assimilated, it does not produce alcoholic fermentation. Its free acids also help with fat absorption

✓ Honey activates liver metabolism eliminating up to 35% alcohol. It is also good for removing toxins and it protects the liver from drugs and an unbalanced diet.



✓ Honey favors the process of assimilation in the intestine and especially effective in cases of constipation. Honey progresses through the gastrointestinal tract and its content in acetylcholine influences peristalsis.

✓ Honey helps in the process of gastroenteritis since it exerts bactericidal activity against many pathogens, including species of Salmonella and Shigella, and Escherichia coli (E. Jeffrey Amy, Carlos M. Echazarreta Faculty of Veterinary Medicine Autonomous University of Yucatán, Mérida, Yucatán, Mexico). In cases of bacterial diarrhea is very useful for its antibiotic effect.

✓ In patients undergoing antibiotic treatments that produce disbacteriosis, the combination of honey and yogurt will help replenish the intestinal flora killed by antibiotics, with obvious improvement of diarrhea and general condition of the patient. By regulating intestinal transit, it increases the elimination of toxins, which is reflected in the improvement and beautification of the skin, as Dr. Julio Cesar Days in article published in “Apitherapia Hoy”, in Argentina and Cuba.

### **c) Liver disease:**

✓ The action of honey on the liver disease is determined by the glucose / fructose ratio in it. These sugars are rapidly absorbed and subsequently pass rapidly into the bloodstream. Glucose is absorbed quickly, causing an almost instantaneous creation of energy that the body needs. Fructose is absorbed more slowly, keeping blood sugar levels for a long time.



✓ In clinical practice, honey is being used in the treatment of liver diseases. Its high content of fructose achieves more convincing cures than glucose alone. This effect is explained because fructose activate sugar combustion processes responsible for energy. Moreover, it is estimated to have a 10 times faster reaction rate. This translates into a better assimilation of other sugars, and the liver needs to work less, consuming less glycogen. In Hepatic metabolism, up to a 29% of the glucose present in honey is converted into glycogen.

✓ Ioirish (1985) highlights that the mineral salts, organic acids, vitamins, hormones, enzymes, antibiotics and other elements present in honey have a major role in the vital processes taking place in the liver and throughout the whole body.

✓ We recommend taking honey in cases of hepatic failure, as it improves the removal of alcohol from the blood and helps to alleviate the effects of alcoholism and alcohol poisoning. Chezeries (1985).

✓ Alcohol and Honey: the mucosa of the small intestine has absorption mechanism that puts honey in conflict with alcohol, meaning this poison is badly or poorly absorbed. Also catalase, speeds up the metabolism of alcohol at hepatocyte level (liver cell), which removes the body faster. This, along with other dietary properties of honey should be considered in the field of alcohol treatment. It should never be used to the reduce the effects of a planned strong alcoholic ingestion, but to the delight of those who act this way, the effects of alcohol will be less noticeable, as also will be the absence of hangover. Ref. Apitherapia Hoy, Argentina and Cuba, Julio César Días.

#### **d) In the treatment of urinary tract diseases:**

✓ Honey has diuretic properties thanks to its levulose, organic acids and essences. It therefore contributes to the smooth functioning of the kidney and disposal of toxic wastes in the urine (especially urea).

**e) Antiseptic and healing properties:**

- ✓ Honey prevents infection and speeds healing of damaged skin. The biochemistry professor Peter Molan, who leads the Honey Research Unit at the University of Waikato, New Zealand, referred to the history of the wound of a patient that has persisted for over 20 years infected by a strain of bacteria resistant to antibiotics. In August 1999, he read about the healing properties of honey, he convinced doctors to apply it as a poultice to the wound and a month later the wound was completely healed.
- ✓ Honey is effective in the treatment of burns because of inhibin (Dolci, Du & Dziao, 1937), which has antimicrobial effect. In the papyri of Eberts and Smith, dating from before 1500 BC, the use of honey for the treatment of wounds was also advised.
- ✓ The presence of honey in an open wound leads to a steep rise of glutathione in the wound, playing an important role in the redox processes in the body. Therefore, the division and growth of cells is stimulated and, therefore promoting crystallization, according to clinical observations of the Russian surgeon Krinitski (Iorish (1985).
- ✓ Heinerman (1988) recommends the use of honey in the treatment of ulcers, herpetic lesions, cracks and sores. For chronic varicose ulcers, burns, lupus erythematosus, a mixture of honey and Vaseline is suggested (80: 20).
- ✓ The great healing activity of honey makes its use recommended in the recovery and healing of hospital surgeries processes (Heinerman, 1988).
- ✓ Honey applied on skin area affected by edema can reduce it. The edema increases the deterioration of the skin lesions that can lead to necrosis.
- ✓ reports indicate the efficacy of honey in the treatment of gangrene, this may play a beneficial role in reducing the number of amputations resulting from meningococcal septicemia.

✓ honey is considered as a good remedy for wrinkles, according Heinerman (1988), providing softness and freshness to the skin. Its application as a mask is recommended and is a good remedy for dry skin.

✓ Formerly, as Hippocrates and Avicenna indicated properties of honey to give facial skin nuances of freshness and youth.

#### **f) Diseases of the respiratory system:**

✓ Honey acts on the mucous membranes of the nose, larynx and lung alveoli when used in inhalations, thus exerting a local bactericidal and generally fortifying the body, as wrote Ioirish (1985) in his work about the healing process of 20 patients suffering from progressive atrophy of the respiratory system.

✓ Honey is effective in treating acute and chronic rhinitis, pharyngitis, bronchitis and other respiratory diseases (Ioirish, 1985).

✓ Honey has great antitussive properties, used as antitussive in countless syrups, plus smooth throat discomfort.

✓ Its use is recommended in case of hoarseness, sore throat, laryngitis and coughing (Heinerman, 1988).

✓ Expectorant and cough soothing. Hippocrates indicated honey-based drink for these symptoms. Avicenna recommended a mixture of honey and rose petals after the appearance of the first symptoms of tuberculosis.



**g) Nervous system disorders:**

- ✓ Nervous, exhausted or fatigued people are advised to take a glass of warm water with a teaspoon of honey and the juice of half a lemon and half an orange in the evening in order to regain their normal state. (Heinerman, 1988) .
- ✓ Chezeries (1982) considers the honey to have relaxing and sleep-inducing properties, and therefore recommends it in the diet of patients affected with chronic insomnia.
- ✓ Clinical observations have shown that shots of hypertonic glucose solutions give quick results in the treatment of certain disorders of the nervous system. Usually, already after the first three injections some subjective improvement is observed, decrease in headaches, vision improvement, etc.
- ✓ Ioirish (1985) mentions the treatment with honey of patients suffering from Huntington's disease, with annoying convulsive muscle contractions. He notes that after three weeks of treatment and avoiding any other types of medication, very good results were obtained. The patients recovered normal sleep, headaches disappeared, fatigue and irritability decreased, and the mood was recovered.

**h) For the eyes:**

- ✓ An ointment from eucalyptus honey is suggested for the treatment of eyelid and cornea swelling, ulcers and other conditions of the eye. Ioirish (1985) recounts the virtues of honey in healing patients with acute keratitis and scrofula. Improvements were observed in these patients were, among others, decreased inflammatory processes, improved vision and disappearance of unpleasant subjective symptoms. It should be noted that to treat eye diseases, sterile comb honey must be used.
- ✓ Other authors like Chezeries (1982) note the therapeutic effect of honey in the irritation of the eyes and its use is recommended in the form of instillations made with honey and boiling water.

**i) For the heart:**

- ✓ Glucose contributes to flebeetasia (dilated veins) and therefore improves the blood circulation of the coronary system. According to Iorish (1985), extended consumption for 1-2 months, of 50-140 g per day in patients with heart disease, led to the improvement of the general state, normalization of blood composition and to raise the amount of hemoglobin and cardiovascular tone.

**j) For blood:**

- ✓ It stimulates the formation of red blood cells due to the presence of folic acid.
- ✓ It stimulates antibody formation due to ascorbic acid, magnesium, copper and zinc.

**k) In the treatment of anemia:**

- ✓ Thanks to its minerals, particularly iron, honey helps to increase the level of blood hemoglobin, molecule carried by the red blood cells that provides the oxygen necessary for cell life.

**l) Antioxidant action:**

- ✓ A study by the University of Illinois (USA) has found that honey has antioxidant properties due to its high content of phenolic acids and enzymes such as catalase and glucose oxidase, that are able to protect cells from free radicals.

**m) prebiotic food:**

- ✓ Honey is a prebiotic food because it contains oligosaccharides known for naturally increasing the population of bacterial flora (bifidobacteria and lactobacillus), improving digestive and immune system health.

**n) In osteoporosis:**

- ✓ Honey ☞ increases calcium absorption therefore helping to increase bone mass. Researchers have found that honey increased by 33.6% the calcium absorption in rats, probably by the contents of carbohydrates as glucose, fructose and raffinose.

**o) In the treatment of arthritis:**

- ✓ The intake of honey relieves pain caused by arthritis because it helps reduce the joints inflammation and soothe the pain caused by the disease.

**p) Anticancer action:**

- ✓ It has been found that natural honey and its derivatives (propolis, royal jelly, etc.) come to reduce tumor growth and prevent metastasis when injected into tumors in mice, which would make a good anti-tumoral treatment.

**q) Action against harmful external agents:**

- ✓ Honey has applications to prevent diseases caused by radiation, and in some countries they use a treatment prepared from honey. It is applied in the form of intravenous injections from deproteinized honey, at a dose of 10 ml of a solution at 20-40%.
- ✓ Applied before each radiotherapy session, it will largely reduce the consequences of treatment with X-rays. In the European market, a drug appeared for this purpose called "Melcaína", consisting of a honey solution without protein with a 1-2% of novocaine.
- ✓ Stojko and Col. (1987) demonstrate the effectiveness of honey in the process of adaptation of the organism to harsh environmental conditions.

✓ Heinerman (1988) suggests that honey attenuates allergic hay fever outbreaks and recommended as a preventative, a tablespoon of honey after every meal. The author observed a decrease in the symptoms of allergic disease after the ingestion of honey and observed a significant decrease in lacrimation and mucus. Perhaps the mechanism of action is that the body produces specific antibodies from small amounts of pollen that contains honey, which thus acts as a vaccine. However, further studies are required to reach a conclusion on this point.

**r) Astringent and soothing:**

✓ Honey has an astringent and soothing action that allow for its inclusion in galenic preparations such as creams, face masks, toners, etc.

**s) For the treatment of hair loss:**

✓ The use of honey on skin processes has healing properties such as seborrheic dermatitis and dandruff, major causes of hair loss as evidenced by the work of Dr. Al-Wa'ili NS (Dubai Specialised Medical Centre and Medical Research Labs, PO data Box 19964, Dubai, United Arab Emirates Al-Wa'ili NS.

**Cases where the honey is not recommended:**

✓ **Children under eighteen months.** Honey should not even be used to sweeten the dummy. At this age the child's digestive system is not sufficiently developed and this could favor the germination of spores of *Clostridium botulinum*, which can be present in honey, which could cause botulism toxin in children.

✓ **Obesity or overweight.** Its high calorific value makes their consumption not recommended for people who have to control their weight or undergo weight loss program.

✓ **Hypertriglyceridemia.** People with high triglyceride levels in blood must restrict their intake because of its richness of carbohydrates would favor the increase of triglycerides.

✓ **Diabetes.** Diabetics must control the use of honey for its high content of simple sugars such as glucose and fructose, which would increase blood glucose levels.

✓ **Hayfever,** especially if children are involved. The presence of pollen in honey can cause asthma attacks and develop other allergies.

*“Bee Honey, tastes well and feeds well”*

*Popular saying*

## Section II

### 4. Put into practice

#### 4.1. Folk Remedies with Honey:

**a) Honey Remedy for asthma:**

Boil, simmer, 1 small onion, 2 garlic cloves and a pint of Royal Jelly, for 30 minutes. Let it cool. Alternate 1 tablespoon of the mix and 1 tablespoon honey every two hours.

**b) Honey Remedy for a hangover:**

Combine half a cup of honey with half a cup of grapefruit and crushed ice. Take time before attending a party to mitigate, in part, the effects of ingested alcohol.

**c) Honey Remedy for Insomnia:**

c.1) Mix 2 tablespoons honey with the juice of 1 lemon or 1 orange in half a glass of warm water. Take before bedtime. It is recommended that honey is the darkest possible for best results.

c.2) Mix 2 teaspoons of apple cider vinegar with 2 teaspoons of honey in a cup of water. Take a quarter cup before bedtime.





**d) Honey Remedy for states of exhaustion:**

Put in a warm water bath in 1 liter of sherry wine, 25g of rosemary tops, sage 20 g and 15 g of honey. After 20 minutes, remove from heat and let cool. Filter and take 1 glass before meals.

**e) Honey Remedy for minor burns:**

Place 2 or 3 tablespoons of honey over the burn which will provide rapid relief of pain and itching.

**f) Honey Remedy for Cough:**

Boil a lemon inside water for 10 minutes or until crust is tender. Cut in half and extract the juice. Place lemon juice in a glass. Add 2 tablespoons of honey. Take 1 teaspoon every 4 hours.

**g) Remedy with honey for ulcers, stomach and duodenum:**

Take a teaspoon of honey, fasting, daily, one hour before breakfast, slowly swallow honey after dilution in the mouth.

**h) Honey Remedy for intestinal disorders or diarrhea:**

Dissolve honey in a jar with water and take as a daily beverage. It effectively acts as an antiseptic intestinal flora.

**i) Honey Remedy for colitis and constipation:**

Add 1 or 2 tablespoons of honey as a sweetener in 200 grams of any food which will help control the activity of the intestines.

**j) Remedy for the nervous system:**

Take 1 teaspoon of honey, six times a day, will give you peace and quiet. You can add a glass of milk to rest easier.

**k) With honey remedy for liver diseases**

Dilute 2 or 3 teaspoons of rosemary honey, sweetening a cup of infusion of juniper.

**l) Honey Remedy for Jaundice with honey.**

Boil 30 grams of sage in 1 liter of water for 10 minutes and then sweeten with a teaspoon of honey. Take three cups a day.

**m) Remedy for acne with honey.**

Boil 40 grams. elderberry leaves in a liter of water for 10 minutes. Remove from heat and let cool. Take a daily cup sweetened with honey rosemary.

## **Questions**

- 1. Do you remember the composition of honey?**
- 2. How can honey help patients with liver diseases?**
- 3. Why is honey good for the respiratory system?**
- 4. How does honey affect the nervous system?**
- 5. How does honey affect heart behavior?**
- 6. How does it affect our blood?**
- 7. Honey and its derivatives, how can they be beneficial against cancer?**
- 8. What do you remember about honey and its effect on physical exhaustion?**
- 9. If you had rheumatism, would you consider bee-stings as a therapy?**

## Are you interested?

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## Teaching Unity

### **NUTRITION DURING ADOLESCENCE**



## **Table of Contents**

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. Development in adolescence**

#### **3.2. The nutritional needs of adolescents**

### **4. Put into practice**

#### **4.1. Factors that influence the dietary behavior of adolescents**

#### **4.2. Problems related to nutrition and body image**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>NUTRITION DURING ADOLESCENCE</b>   |
| <b>Area</b>  | Healthy nutrition   |
| <b>Main Target Audience</b>  | The end users of the module are: <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Parents of minors and pregnant women</li> </ul>   |
| <b>Description of the module and general aims</b>                                | This module allows the participant to understand: <ul style="list-style-type: none"> <li>- Development in adolescence</li> <li>- Changes in the body during adolescence</li> <li>- The nutritional needs of adolescents</li> <li>- Factors that influence the dietary behavior of adolescents</li> <li>- Problems related to nutrition and body image</li> <li>- Nutrition advice in special situations</li> </ul>  |
| <b>Learning Time and Duration</b>  | Learning time and maximum duration for the training related to the module:<br>The maximum duration of training is 24 hours<br>24 hours theoretical training   |
| <b>Learning Objectives</b>   | Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.<br>Once you have completed this course you will be able to: <ul style="list-style-type: none"> <li>- Understand the changes of the body during adolescence</li> <li>- Understand the psychological and social changes during this age</li> <li>- Get acquainted with the special nutritional needs of adolescents</li> <li>- Understand how obesity can be avoided</li> <li>- Know about the necessity of physical activity</li> </ul> |
| <b>Competences achieved</b>  | Specific competences related to the project theme: <ul style="list-style-type: none"> <li>- Organize one's daily and weekly diet patterns</li> <li>- Change one's diet during examinations</li> <li>- Avoid obesity</li> <li>- What to eat when out of home</li> </ul>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | Type of activities considered useful for the training of this module: <ul style="list-style-type: none"> <li>- Face to face teaching</li> <li>- Online learning</li> <li>- Suggestion of additional websources and bibliograpfy</li> </ul>  |



## 1. Abstract

This unit is structured into two main sections: (1) Development in adolescence and (2) dietary behavior of adolescents.

In the first section presents the basic knowledge of nutritional needs of adolescents. It gives several tips for healthy diet. The second section consists on factors that influence the dietary behavior of adolescents and problems related to nutrition and body image.

**Key words:** adolescence, body composition, nutritional needs, energy requirements, nutrient requirements, balanced diet, weight loss, obesity, eating disorders, physical activity

## 2. Introduction

Adolescence is the period of human life that begins with puberty and reaches adulthood, where the development of the organism is completed. During this period, both physical and mental development is rapid, resulting in increased nutritional needs in more nutrients. As the teen gradually becomes autonomous, his dietary habits change, including increased consumption of food away from home, consumption of snacks high in fat or sugar, fewer family meals, while it can also be observed increased appetite. Also, due to the intense school program, physical activity of adolescents usually declines. So, we come to realize the importance of adopting proper dietary habits in order to cover the increased demands and to achieve a healthy weight as well.

Adolescents grow at different rates and it is difficult sometimes to accept the changes in their body while they may develop unrealistic expectations about how their body should look. As a result, they may get or lose weight, become overweight or underweight. Both obesity and preoccupation with diets for weight loss but also eating disorders constitute problems of adolescence related to nutrition. For the treatment of obesity is recommended the change of eating behaviors and also the increase of physical activity and at the same time the reduction of sedentary activities. The family involvement is equally important. On the other hand, eating disorders are considered psychiatric disorders and require the contribution of many specialties for their treatment (psychiatrist, psychologist, nutritionist, doctor).

Also, adolescents often experiment with new dietary regimens such as vegetarian diet while in this period are confronted with special situations, like the large *volume* of examinations for school. The following chapters provide recommendations for balanced diet for adolescents but also recommendations regarding the above special situations.

## Section I

### 3. Core contents

#### 3.1. Development in adolescence

##### 3.1.1. Changes in weight and height

During adolescence, the growth is rapid. In this period, adolescents get 20% of the height that they will have as adults and 50% of the weight, while most of their organs are doubled in size. While before adolescence, boys and girls have the same body size, from the beginning of puberty growth rates are not the same for both genders. Girls reach the maximum growth rate 2 years earlier, in 10 or 11 years while boys at 12 or 13. Thus, while in the early years of the adolescence the girl is about 4-5 cm taller than the boy of the same age, towards the end of adolescence the boy ends up being 10 to 12 or more cm taller. While in boys the growth rates of weight and height coincide, in girls growth rate of height precede/*comes before* by about 6 months of the rate of weight gain. It is important to note that the growth rate can vary significantly from person to person, even of the same gender.



##### 3.1.2. Changes in body composition

During the adolescent period, another physiological change that occurs and varies with gender is body composition. Girls gain more fat while boys almost double their muscular tissue. Due to the deposition of fat in girl's body, changes are observed also in body shape since deposition is made at certain points, especially on the buttocks and chest.

##### 3.1.3. Changes in bone development

Adolescence is also characterized by a rapid skeletal development, during which is obtained about 40% of the total mass of bone (bone mass). The skeleton grows and the dimensions of the bones change. Especially *visible* are the changes in the shoulders and pelvis, which are different for the two genders. In boys, the region of the shoulders increases more than the pelvic region while in girls the opposite happens. The bone development and health in adolescence are influenced by genetic, hormonal, mechanical

(physical activity) and dietary factors. Therefore, the role of balanced nutrition is important also for bone health and for the obtainment of high bone mass during adolescence, which protects from the appearance of osteoporosis after menopause.

#### **3.1.4. Psychological and social changes**

Adolescence is a period of maturation for both the body and the mind. Along with physical growth and changes that occur in the body, the adolescent grows mentally, emotionally and socially. During adolescence, the adolescent begins to know his body, trying at the same time to make it attractive for peers of the opposite sex. He often feels embarrassment and anxiety watching the changes in his body, which he thinks that the others around him observe, like various skin problems (acne) or changes in weight and body shape. Also, during this phase, the teenager:

- Develops and stabilizes his body image, which is necessary for the development of the self image and the formation of his individual identity.
- Changes radically his way of thinking. He thinks methodically, develops skills on decision making and problem solving.
- Begins to become autonomous.
- Is often influenced by his peers.
- In the early years of adolescence he trusts adults (eg parents) while later he questions them and is less influenced by them.
- Has frequent emotional changes or changes concerning his interests.
- Forms emotional relationships outside the family.
- Makes plans for the future, sets goals and objectives and formulates values and beliefs.

The above changes usually affect also the dietary habits of adolescents. For example, in their effort to become autonomous, adolescents often experiment with weight loss diets or vegetarian diets (exclusion of food of animal origin).

### **3.2. The nutritional needs of adolescents**

#### **3.2.1. Energy requirements**

As a result of significant increases in weight, height, muscle and adipose tissue and of organs development during adolescence, energy needs increase as well. The energy needs, measured in calories, vary greatly from person to person because of different growth rate and different levels of physical activity among adolescents. Also, they are higher in boys than in girls. In the table below are presented the energy requirements in calories per gender and age, and according to the level of physical activity:

| Energy requirements in calories (kcal) by gender and age,<br>and according to the level of physical activity |              |           |           |           |
|--|--------------|-----------|-----------|-----------|
| Level of physical activity**   |              |           |           |           |
| Gender   | Age* (years) | Low       | Moderate  | Intense   |
| Girls  | 9-13         | 1400-1600 | 1600-2000 | 1800-2200 |
|  | 14-18        | 1800      | 2000      | 2400      |
| Boys   | 9-13         | 1600-2000 | 1800-2200 | 2000-2600 |
|  | 14-18        | 2000-2400 | 2400-2800 | 2800-3200 |

\* In children and adolescents, more calories are needed as age increases.

\*\*Low means lifestyle that includes low physical activity associated with the typical daily activities. Moderate means physical activity equivalent to walking about 2,5-5 km / day, and intense to walking > 5 km / day.

Source: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.

### 3.2.1. Nutrient requirements

For most nutrients (carbohydrates, lipids, proteins, vitamins, minerals), adolescents needs are similar to those of adults, with the exception of protein, iron and calcium, which are listed below. The role and importance of nutrients are presented in detail in the 1<sup>st</sup> section "*An introduction to healthy diet.*" The table below shows the change in nutrient requirements according to age. Percentages refer to the proportion of total daily energy intake (calories we ingest in a day):

| Recommended proportions of nutrients according to age |               |          |        |
|---|---------------|----------|--------|
|   | Carbohydrates | Proteins | Lipids |
| <b>Young children (1-3 years)</b>                     | 45-65%        | 5-20%    | 30-40% |
| <b>Older children and adolescents (4-18 years)</b>    | 45-65%        | 10-30%   | 25-35% |
| <b>Adults (≥19 years)</b>                             | 45-65%        | 10-35%   | 20-35% |

Source: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.



### 3.2.3. Special dietary requirements

The intense growth rate during adolescence , creates increased nutritional needs in the following nutrients:

- **Iron:** Increased iron intake is needed for the prevention of anemia, the growth of muscle mass and also due to an increase in the total blood volume in the body. In girls the needs are even greater because of the blood loss from menstruation (period). Foods rich in iron are: red meat, offal, seafood, green leafy vegetables, legumes and whole grain cereals.
- **Calcium:** Increased calcium intake is necessary due to the rapid bone development during adolescence but also for the prevention of osteoporosis later (last years of adulthood and at the old age). Foods rich in calcium are: milk, yogurt, cheese, small fish eaten with bones (eg sardines), legumes and green leafy vegetables.

### 3.2.4. Balanced diet for adolescents

For the maintenance of good health, for proper growth but also for a healthy body weight, adolescents is good to follow a balanced diet and to have increased physical activity (exercise, sports, dance, walking, etc.). A balanced diet is characterized by moderation and variety of good quality foods in order to provide the organism the appropriate quantities of nutrients.



Foods, on the basis of the quantities of the various nutrients they contain, they are divided into ***groups***. So, each food group has different characteristics as to its nutritional value, but even foods of the same group have some differences between them. Unfortunately no food contains all the nutrients we need. This means that it is good to choose foods from all groups and different foods from each group. The groups are usually separated as follows:

- **Cereals**

Often referred to as starchy foods (they contain a large quantity of starch). In this group belong all foods derived from cereals (eg wheat, barley, oats, rye, oatmeal) like bread, nuts, pasta, rice, breakfast cereals as well as potatoes and corn (starchy vegetable). Cereals are mainly a good source of carbohydrates, which are the main nutrient for energy supply. They also contain fiber, B vitamins as well as minerals (eg magnesium). They are divided in wholegrain (whole grain milling) and refined or peeled cereals (without grinding the husk and germ of the grain). The wholegrain have more health benefits (eg intestine's health) and it is good to be preferred. They form the basis of our diet as it is recommended to be consumed in larger quantities than other food groups.

- **Fruits**

In this group belong all forms of fruit, that is fresh fruits, boiled or baked or dried fruits and natural juices, but it is better to eat the fresh fruits. The fruits are a rich source of vitamins (such as A, C, folic acid), fiber (they contribute to proper intestine function) and minerals (such as potassium). They have high water content and contain relatively few calories.

- **Vegetables**

In this group belong all vegetables in any form, fresh, boiled, baked, frozen, in the form of salad or as a main dish (eg food in olive oil). Vegetables are rich in vitamins, fiber, minerals and antioxidants. They are further divided into five subgroups according to their color, like fruit. Each color has specific characteristics so in order to get everything we need to consume fruits and vegetables of all colors (red, green, yellow, orange and purple).

- **Meat and its products, fish, eggs, legumes**

This group is often called and "protein" group because of the high content in protein of the foods of the group. In this group belong: meat, poultry, fish, seafood, eggs, legumes. The main nutrient of the group is the high quality proteins (of high biological value) but they also contain vitamins (eg, folic acid, vitamin B12) and minerals (eg iron, zinc.) Because not all of the foods of this group have the same value, it is recommended different frequency of consumption. Specifically it is recommended the reduction of the consumption of red meat (eg beef, pork, lamb) and its products (cold cuts) and increase of the consumption of fish and seafood. For people who follow vegetarian diet or who avoid meat, legumes are a very good choice.

- **Dairy**

In this group belong milk and dairy products, namely cheese and yogurt as well as

desserts based on milk, such as frozen yogurt. The main feature of the group is calcium but they also constitute good sources of protein, phosphorus, potassium and vitamin D. They contribute to the development of bones and teeth but they have also other health benefits. For people who want to regulate their weight, the low fat dairy is a good choice.

- **Fats and oils**

In this group belong foods which consist mainly of fat. That is all the oils such as olive oil or other seed oils (eg corn oil), margarine, butter, mayonnaise and sauce based on mayonnaise, olives, nuts and bacon. As in other food groups, all foods in this group are not of the same quality. Vegetable oils and especially olive oil, which is the main characteristic of the Mediterranean diet, are more beneficial for health, containing antioxidants, vitamin E and "good" lipids (monounsaturated, omega-3, omega-6). Because these foods are rich in calories, it is recommended their consumption in moderation.

- **Foods high in sugar or fat**

In this group belong mainly some sweets and snacks such as biscuits, croissants, cakes, pastries, chips, crisps, refreshments or juices with sugar. These foods are low in nutrients and their consumption is not considered as essential. They have good taste and are usually consumed as delicacies and treats, so we like to have them in our diet. If we consume them in moderation (not everyday, small quantities), we can include them in our diet, as long as we do not replace foods from other groups which are necessary.

The following table, presents the indicative quantities recommended from each food group for boys and girls, according to the U.S. Department of Agriculture (USDA):

| Recommended servings for each food group per day by gender and age in adolescents |            |                         |                      |                      |                           |                    |
|---|------------|-------------------------|----------------------|----------------------|---------------------------|--------------------|
| Gender  | Age(years) | Cereals                 | Fruits               | Vegetables           | Meat                      | Dairy              |
| Girls   | 9-13       | 5 servings <sup>1</sup> | 1 ½ cup <sup>2</sup> | 2 cup <sup>3</sup>   | 5servings <sup>4</sup>    | 3 cup <sup>5</sup> |
|   | 14-18      | 6 servings <sup>1</sup> | 1 ½ cup <sup>2</sup> | 2 ½ cup <sup>3</sup> | 5servings <sup>4</sup>    | 3 cup <sup>5</sup> |
| Boys  | 9-13       | 6 servings <sup>1</sup> | 1 ½ cup <sup>2</sup> | 2 ½ cup <sup>3</sup> | 5 servings <sup>4</sup>   | 3 cup <sup>5</sup> |
|   | 14-18      | 8 servings <sup>1</sup> | 2 cup <sup>2</sup>   | 3 cup <sup>3</sup>   | 6 ½ servings <sup>4</sup> | 3 cup <sup>5</sup> |

### Explanation of servings

<sup>1</sup>1 serving of *cereals* = 1 slice of bread (30 g.) = ½ cup. boiled rice or pasta = one cup. of breakfast cereals

<sup>2</sup>1 cup of fruit = 1 cup. fresh fruit or fresh juice = ½ cup. dried fruits

<sup>3</sup>1 cup of vegetables= 1 cup fresh or cooked vegetables or vegetable juice = 2 cups. green leafy vegetables

<sup>4</sup>1 serving of protein = 30 g. meat / fish = 1 egg = ¼ cup. boiled legumes = 15g. nuts / seeds

<sup>5</sup>1 serving of dairy = 1 cup of milk = 1 xxx of yogurt = 45 g. yellow or mozzarella cheese = 1 cup of frozen yogurt or ice cream

\* With the term "cup" we mean the cup of tea (240 ml)

## Section II

### 4. Put into practice

#### 4.1. Factors that influence the dietary behavior of adolescents

The adolescent is at a stage of his life, where he tries to take his own decisions about his nutrition , indicating this way his autonomy towards the family and society. The food choices of adolescents are a function of many factors such as gender, family environment, social standards, the characteristics of the foods, the place of consumption and are often associated with their body weight. They may also play a role in the determination of their identity and we often see that for this reason, they avoid or accept food , they slim down or get fat.

Some of the factors that influence the food choices of adolescents are:

- the structure and characteristics of the family and mainly the dietary habits of parents,
- advertising,
- social and cultural values as well as the body standards ,that the industry promotes,
- the body image,
- the psychosocial development,
- personal experiences (eg, what they have tried)
- the taste and appearance of foods,
- the convenience of preparation or availability of foods.



## 4.2. Problems related to nutrition and body image

### 4.2.1. Obesity

Obesity in children and adolescents has become a global epidemic and a serious problem for public health. According to the World Health Organization (WHO), obesity is defined as the excessive accumulation of body fat, to an extent that will affect the health of the individual. Estimations of the IOTF (International Obesity Task Force) for the World Health Organization in 2005, show that 1 in 5 children in Europe are overweight while Greece has one of the highest rates of obesity and overweight in children and adolescents in Europe.

Adolescence is one of the most critical periods for the development of obesity together with fetal age and age of 4-6 years.

#### 4.2.1.a Factors that cause the development of obesity

The regulation of body weight depends on many factors: genetic, environmental, social, psychological. The *genes* the parents inherit to their children determine largely their weight. . Also, the *family*, which influences the eating habits of its members and the availability of food at home. However, *dietary habits and physical activity* will finally determine the weight of the teenager. The intake of more calories than the ones consumed leads to fat accumulation and to body weight gain. The abundance of food and the ease of its gain in modern societies in combination with reduced physical activity are important factors predisposing *to* increased body weight. The following behaviors seem to contribute to weight gain in adolescents:

- Overconsumption of food. The quantity and quality of food can influence how much we eat. Generally, large portions and frequent consumption of energy "dense" food (high in fat or/and sugar) lead to overconsumption.
- Omission of breakfast
- Food away from home
- Over-consumption of refreshments, processed juices or other beverages with added sugar
- Low frequency of family meals
- Reduced physical activity. Due to the increased number of school obligations quite few adolescents stop or reduce their athletic activities.
- Time of involvement with screens (TV, PC, video games). It seems to affect in two ways: it reduces physical activity and increases food consumption (mainly snacking, snacks).

#### **4.2.1.b Impacts of obesity in adolescence**

Adolescent obesity increases the likelihood of adult obesity and consequently the risk of various diseases such as cardiovascular diseases and diabetes mellitus. Apart from the health problems in adulthood, adolescent obesity can cause problems and to adolescents, both physically affecting most body systems (orthopedic, respiratory, cardiovascular, diabetes mellitus, early puberty, etc.) and psychosocial (eg isolation-less friends, low self-esteem, eating disorders).

#### **4.2.1.c Assessment of obesity**

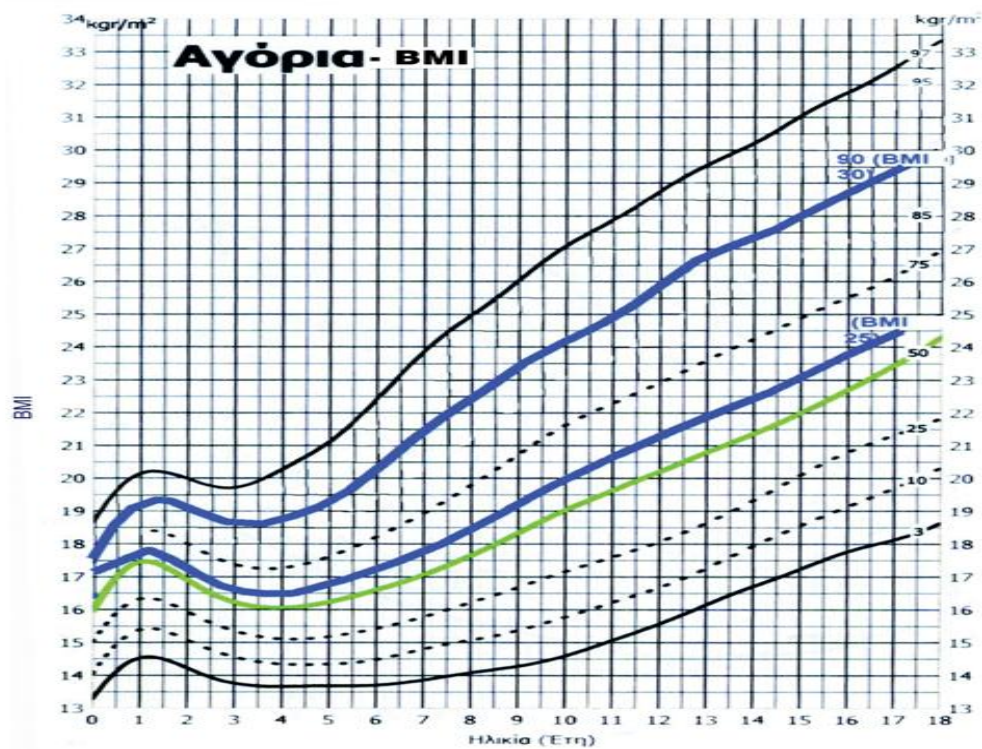
To evaluate the weight of children and adolescents we usually use the growth curves (Figure 1) for Body Mass Index (BMI). On these curves, which are different by gender, is illustrated BMI and age. BMI shows the relationship between weight and height and is calculated as follows:

**BMI = Weight (in kilograms, kg)**

**Height x Height (in meters, m)**

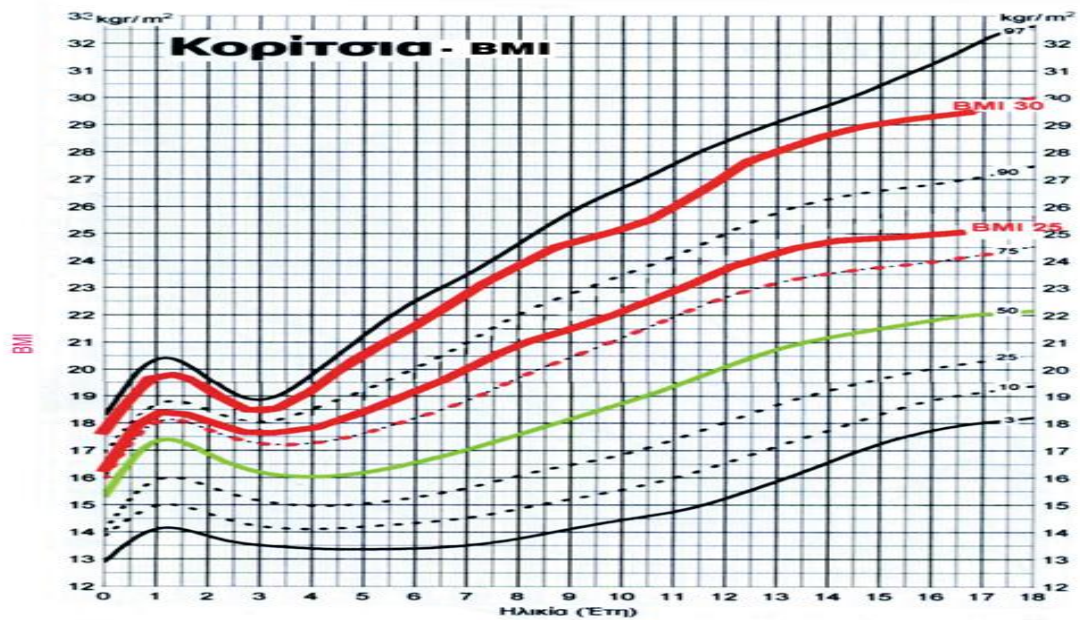
For each age, BMI values that lie between the two blue (boys) or red (girls) lines correspond to the "overweight" (more weight than the healthy) and the values which are above the highest blue or red line correspond to "obesity" (much more weight than the healthy).

Figure 1. Growth curves for BMI by gender and age



ΕΚΑΤΟΣΤΙΑΙΕΣ ΘΕΣΕΙΣ (ΕΘ) BMI ΣΤΙΣ ΔΙΑΦΟΡΕΣ ΗΛΙΚΙΕΣ. ΜΕ ΕΝΤΟΝΗ ΔΙΑΓΡΑΜΜΙΣΗ ΠΑΡΙΣΤΑΝΤΑΙ ΟΙ ΕΘ ΠΟΥ ΔΙΑΤΕΜΝΟΥΝ ΤΙΣ ΤΙΜΕΣ BMI 25 ΚΑΙ 30 ΑΝΤΙΣΤΟΙΧΑ ΣΤΗΝ ΗΛΙΚΙΑ ΤΩΝ 18 ΕΤΩΝ ΚΑΙ ΔΙΑΧΩΡΙΖΟΥΝ ΑΝΤΙΣΤΟΙΧΑ ΤΟ ΥΠΕΡΒΑΡΟ ΚΑΙ ΠΑΧΥΣΑΡΚΟ ΑΠΟ ΤΟ ΦΥΣΙΟΛΟΓΙΚΟ ΑΤΟΜΟ.

9



ΕΚΑΤΟΣΤΙΑΙΕΣ ΘΕΣΕΙΣ (ΕΘ) BMI ΣΤΙΣ ΔΙΑΦΟΡΕΣ ΗΛΙΚΙΕΣ. ΜΕ ΕΝΤΟΝΗ ΔΙΑΓΡΑΜΜΙΣΗ ΠΑΡΙΣΤΑΝΤΑΙ ΟΙ ΕΘ ΠΟΥ ΔΙΑΤΕΜΝΟΥΝ ΤΙΣ ΤΙΜΕΣ BMI 25 ΚΑΙ 30 ΑΝΤΙΣΤΟΙΧΑ ΣΤΗΝ ΗΛΙΚΙΑ ΤΩΝ 18 ΕΤΩΝ ΚΑΙ ΔΙΑΧΩΡΙΖΟΥΝ ΑΝΤΙΣΤΟΙΧΑ ΤΟ ΥΠΕΡΒΑΡΟ ΚΑΙ ΠΑΧΥΣΑΡΚΟ ΑΠΟ ΤΟ ΦΥΣΙΟΛΟΓΙΚΟ ΑΤΟΜΟ.

9

#### **4.2.1.d Prevention and treatment of obesity- adolescents weight regulation**

The need for prevention and treatment of obesity in adolescents is so great both because of the potential impact on health and of the increasing number of overweight and obese adolescents. The lifestyle changes by adopting balanced dietary habits and regular physical activity constitute the main principles for the prevention and treatment of adolescent obesity. In some cases of severe obesity in adolescents or inability of weight loss using these ways, surgical weight loss methods could be used or medications use always under the guidance of a doctor.

#### **4.2.1.e When is recommended the weight loss?**

Weight loss depends on how much increased the adolescent weight is, on possible coexisting health problems and as well on the age and stage of development of each adolescent.

- If the adolescent is overweight, it is recommended the weight maintenance or mild loss so that with increasing height his weight will normalize.

- When the child's weight is greatly increased (obesity) or/and when health problems coexist, then the weight loss is recommended, which can range from 0.5 to 4 kilos a month, depending on the seriousness of the situation, the stage of development etc.

#### **4.2.1.f What can the adolescent change?**

- **Diet**

- i. **Reduction of energy "dense" foods**

Adolescents often consume food outside the home (mainly fast food) and snacks from foods high in fat or sugar as packaged food (eg chips, crisps), pastries and refreshments. These foods are not banned but should be consumed in moderation and as part of a balanced diet.



## **ii. Serving size**

The control the quantity of food is one of the most important factors in the regulation of body weight. Try to reduce slightly the quantity of food (not the salad). Also, in fast food restaurants is good to choose the smaller portions and the smaller packs in supermarkets as well.

## **iii. Consumption of breakfast**

Eating breakfast is associated with better regulation of the body weight and better performance in school.

## **iv. Number of meals**

By allocating food into small and regular meals, you avoid overeating that usually follows when 6 or more hours have passed from the last meal. You could eat 4-5 meals a day, 2-3 larger (main meals) and 1-2 smaller (snacks). This helps to meet the nutritional needs and to prevent snacking.

## **v. Complete meals**

It is important for the health and proper development of the child, that the main meals (breakfast, lunch, dinner) are "complete". This means that they should contain foods from three basic food groups: starch (cereals), protein (meat, fish, eggs, dairy), and fruit / vegetables. Each of these groups contributes in its way to the proper functioning of the organism.

## **vi. Meals with the family**

Family meals in a pleasant and quiet environment, are associated with better dietary habits and better weight control.

- **Physical activity**

### **i. Increase of physical activity**

By various international organizations, it is recommended that the adolescent exercises at least one hour a day. This may include daily activities such as walking to and from school, walking with the dog, walking up and down the stairs, working in the garden, cycling, dancing and organized activities such as sports and recreational games. The involvement of parents in activities is important.



## ii. Reduction of sedentary activities

Usually includes time the adolescent spends in activities in front of a "screen" such as TV, video games, computer, mobile phone. It is recommended the reduction of sedentary activities up to 2 hours a day and their replacement by kinetic activities.

### 4.2.1.g Advice for adolescents parents

The parents and the family in general, play a determinant role in the effort of changing dietary habits and increasing physical activity of adolescents by creating the suitable environment for their adoption. In the effort to manage their weight, adolescents need support and encouragement from their parents. As they are growing up, adolescents choose for themselves what they will consume at school and other places outside the home while they affect family food shopping.



Some indicative advice for parents follow:

- Aim for gradual change of the habits of the whole family concerning the diet and exercise.
- If the parents are overweight too, they should themselves control their body weight.
- Avoid to comment on adolescents weight or body image as well as the comparison with other family members or friends.
- Make sure they are available at home nutrient-rich foods such as fruits and vegetables, milk and yogurt.
- Avoid to have at home food rich in fat or sugar such as croissants, biscuits, sweets, chips.
- It is good to become a "*model*" for your children, keeping yourselves first the principles of proper diet and doing exercise.
- Avoid the pressure for any change , it may have the opposite effect.
- Reward every effort of the adolescent to change.
- Aim to consume at least one meal of the day the whole family together.



#### 4.2.1.h Weight loss diets

While on the one hand, as mentioned above, there is abundance and overconsumption of foods, promoted in modern societies, on the other hand, it is also promoted as a model the slim body, particularly in women, affecting many teenage girls. The projection of this model through the fashion, the advertising and the media, puts pressure on teenage girls to keep up with these physical standards while they often feel dissatisfied with their bodies. As a result they try to lose the supposedly extra kilos resorting to weight loss diets, which usually are restrictive (quick fix diets) are based on the exclusion of certain foods from their diet and on improvisation, influenced by diet regimens advertised in magazines. On the contrary, the boys rarely diet.

Apart from social standards, engaging with diets may indicate a reaction of adolescents to various stress factors such as family discord or changing environment. In any case, the problem with these diets is that they usually are not rational, they are not compatible with the adoption of healthy dietary habits and can have serious health effects, preventing the normal development of the organism.

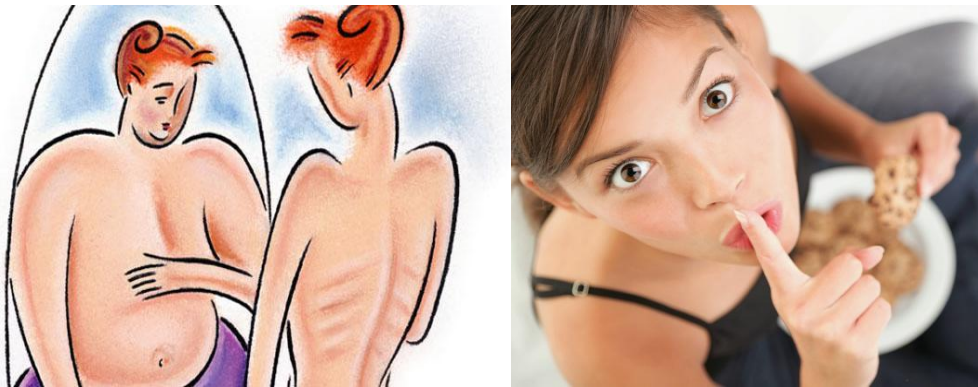


#### 4.2.2. Eating disorders

The eating disorders are considered psychiatric disorders because they concern the behavior and not a disorder in the metabolism of food. The most common symptoms like the starvation, the binge eating disorder (continuous eating usually in secret) and bulimia are usually due to psychological and emotional difficulties. They concern almost exclusively teenage girls (or shortly after adolescence) and less often boys, except in some cases of boys who participate in sports which require a low body weight.

Eating disorders are classified into:

- **Anorexia nervosa:** central symptoms are weight loss and intense preoccupation with weight and body shape. These people fear that they are or will become fat even if they are thin, avoiding foods and gradually losing much weight (weight <85% of normal). In women it is usually observed amenorrhea (cessation of period).



- **Bulimia nervosa:** is characterized by recurrent episodes of binge eating, excessive preoccupation with the control of body weight, fear of weight gain which leads to paradoxical ways of reducing it (self induced vomiting, use of laxatives, anorectic drugs, diuretics). These people usually have normal weight and the women regular period.
- **Binge eating disorder:** is characterized by constant eating at a certain time and at a rate faster than normal and in secret (because of shame). Usually it does not concern adolescents but mainly women at older ages (45-55 years).

The eating disorders are a way of *seeing* life and the problems that the teenager boy or girl have and seem difficult and unresolved. Through the control of food, they feel that there is some area of their lives which they control. While they seem to be a "solution" in the beginning, gradually due to poor nutrition, complications are presented which can be serious for health like: a negative impact on growth, on brain development and on bone density, dehydration, abnormal menstruation (period), low self esteem, anxiety, stress, etc.

Their early diagnosis is critical both because of the destructive health effects and the problems caused *to* the family.

### 4.2.3. Nutrition advice in special situations

#### 4.2.3.a Nutrition advice during the examination period

The exam period is a difficult and challenging period, when the organism has increased needs. Think of this period as a "spiritual" marathon, where endurance plays a great role. A proper and balanced diet can help you to have sufficient energy, better memory and also increased performance! On the other hand, the wrong dietary practice can make you feel weakness and nervousness.





#### **i. Start your day with a good breakfast**

It is the first meal of the day which will give you energy, will keep you alert and enhance your performance. Good breakfast choices are:

- Milk + cereals + natural fruit juice
- Milk + bread / rusks + fruit + honey
- Natural fruit juice + toast with cheese-turkey
- Natural fruit juice + boiled egg + bread + cheese + dried fruit

#### **ii. Frequent and small meals**

The distribution of meals throughout the day will provide you with the required energy throughout the entire time. The brain constantly needs "fuel" to function properly. It is best to avoid large (especially fatty) meals as they make difficult and slow down the digestive process and may make you feel sleepiness. You can eat breakfast, two main meals (lunch, dinner) and 2-3 smaller snacks during the day, without this number to be binding.

#### **iii. Complete meals - food variety**

It is good for the main meals to be complete, that is to contain foods from the three main groups: vegetables (salad / cooked) or fruit, protein (meat / fish / cheese / egg / legumes) and starchy foods (bread / rice / potatoes / spaghetti). It is better to have variety in fruits, vegetables, protein and starchy foods as this way you will get more vitamins, minerals and antioxidants, which are necessary for the proper functioning of the organism and the reduction of fatigue.

#### **iv. Snacks-the small and precious meals**

"Snacks", that is the in between small meals, will provide you with energy and vitamins. Good choices are:

- Fresh or dried fruit or fruit salad
- Natural fruit juice
- Yogurt with honey or oats

- 1-2 handfuls of nuts (walnuts, almonds, hazelnuts, sunflower seeds) without salt
- 1 small candy (eg 1 cup /trays of rice pudding, 1 small dark chocolate, 1 scoop of ice cream)
- Smoothies / milkshake with: milk, honey, fruits

#### **v. 'Good' fat sources**

There are fats that help the functioning of the organism and the brain, and which is necessary, known as omega-3 and omega-6 fatty acids. These are found in oily fish (salmon, sardines, anchovies) and also in nuts (walnuts, sunflower seeds, almonds, sesame seeds). Olive oil is also a good source of fatty acids and also antioxidants.

#### **vi. Adequate hydration**

Proper hydration helps to the invigoration and alertness of the organism and protects you from fatigue and loss of concentration. It is good to drink plenty of water, but also foods that contain enough water will help you, such as fruits, vegetables, juices and milk. It is good when reading or during the examination to have beside you, a bottle of water in order to remember to drink some regularly. If you wait until you feel thirsty to drink water, that means you are already dehydrated!

#### **vii. Coffee**

Coffee consumption (often *large* quantities) is common in examination periods. The alertness caused to the nervous system and the brain may keep you awake, but it does not help you relax and sleep sufficiently. Beware of excessive consumption because it can cause you additional tension.

#### **viii. Sugar**

It is true that sugar provides instant energy and food in the brain. However, the same function have the most carbohydrates (fruits, juices, honey, cereals, bread, etc.), which will offer you many other nutrients, which the sugar and sweets in general will not, such as vitamins, fiber and minerals.

On the other hand, the *moderate* consumption of chocolate or a small candy can improve your mood and help you to read.

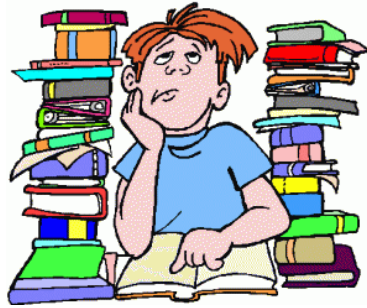
#### **ix. Supplements-superfoods**

In recent years many food supplements circulate in the market. The truth is that if you follow a balanced diet, supplements are not necessary for you. However, often the diet of many adolescents (and adults) do not cover all the necessary ingredients. If you decide to use a dietary supplement, it is advisable to consult your doctor / pharmacist / nutritionist before. Some known supplements- superfoods circulating are spirulina, royal jelly, sea buckthorn and many multivitamin supplements, which reinforce the body's defenses, offer wellness, energy, many vitamins, minerals and trace elements.

#### x. Exercise- Rest

Low physical activity (eg walking, walk, bike, swim, dance) can refresh you, relax you and regenerate you of many consecutive hours of reading. Try anything you like and gives you pleasure that can defuse you.

Also, sufficient and calm sleep is essential to be refreshed and full of energy in order to recall everything you have studied the previous days but also assimilate the new information that follow.



#### xi. What to avoid during the examination period

- The **weight loss diets** or extreme dietary behaviors.
- The consumption of **alcohol**, which can cause you sleepiness, headache and fatigue.
- The **testing** for the first time of new foods, beverages or dietary supplements because you do not know how your organism will respond to them. Anything you want to try, you can do it before this period so as not to find yourself "surprised."
- The **"big" meals**. It is good to eat as much as you need to fill your stomach, but not as much to feel "bloated" as you may feel sleepiness and weakness since your body will spend more energy to the digestive process rather than the functions of the brain.
- The **omission of meals**. If you do not skip meals, you will constantly have "your batteries full." Many times, it is reasonable to forget absorbed by the study, so you can have at your side a small healthy snack (like see above) or take short breaks to rest and eat something.
- The **overconsumption of sweets or fast food** (often high in fat), assuming that will give you quick energy without losing time. It may be delicious but they are usually indigestible, very poor in nutrients and may affect body weight if the exam period is great.

***It is good to remember that during this period your time is precious, so you need to have good planning not only in reading but also in your diet!***

#### **4.2.3.b Advice for eating away from home**

Studies show that from the beginning of adolescence until the end the number of meals consumed by the adolescent outside the home increases, a fact that proves his need for autonomy and desire for free time away from home and family. Output with friends for fast food is one of the favorite dietary habits of adolescents and usually includes pizzas, crepes, sandwich, pancakes, sandwiches, desserts or frozen yogurt (more common in recent years). The problem is that most of these foods are rich in fat or sugar and thus rich in calories. At the same time, it is usually poor in nutrients such as vitamins, minerals and fiber. Also, the adolescent program (school, tutorials, activities) requires several hours outside the home resulting in the consumption of smaller meals (snacks) outside.

The truth is that the "homemade" food is usually healthier and more nutritious than the one we eat outside, but this does not mean that we can not consume fast food or snacks outside the home. The question is how often an adolescent is eating out, what he is choosing and in what quantities. Fortunately, nowadays, fast food restaurants offer many choices, with little fat (eg salads) and rich in fat (eg french fries). The consumption of fast food in moderation, can integrate in the context of a balanced diet and in the context of weight regulation. If you like fast food, they follow some tips to make smarter and quality choices:

##### ***i. At fast food restaurant***

- **Be aware of portion sizes**

Usually at the restaurants the same food or portions of a dish is available in two or three different sizes (eg small-large or small-medium-large). Large portion means more calories and probably more fat, salt or sugar. For most people, small or medium portion is enough. It is good to prefer the smaller portion or the "kids menu" and avoid the large ones even if it is more economical, which is a trick of advertising (marketing). Alternatively, you could share a larger portion with a boyfriend or girlfriend.

- **Think before you order**

It is good to study well the list for available options and consider how much you need to fill your stomach. Beware of promotional questions like whether you want fries or some refreshment with your meal.

- **Avoid sauces**

Most sauces are used to accompany the dishes or salads. It is good to avoid those that are based on mayonnaise, ketchup or cheese sauces and to prefer those which are based on yoghurt, vinegar, lemon juice and mustard.

- **Prefer choices with less fat**

Grilled food as a way of cooking contain less oil than fried. There are two considerations referring to frying. On the one hand, food absorb too much oil and therefore contain more calories and on the other by frying the quality of the oil degrades while frequently in fast food restaurants, the quality of the oil used is not good. You can choose grilled instead of fried chicken, baked instead of fried potatoes and lean pie . Also, the straw is more lean meat from the skewered (both in pork and chicken), the same with turkey compared to bacon or ham.

- **You can form your options**

When you are about to order pizza, sandwiches, pancakes or hamburgers you can choose the materials to be put. For example, for the pizza, it is good to prefer a lot of vegetables, thin crust and a type of cheese or cold cut.

- **Remember that there are many options**

For example, at all the fast food restaurants you can now find salads. Also, sandwich or pita, or grilled chicken are lighter options from burgers or flaky pastries (pies, croissants etc.). You can order a salad to accompany your food to sate and share food with your friends.



## *ii. At school/tutorial*

- **Prepare something from home**

The planning and the preparation at home of small meals (snacks) will provide you with more nutritional choices and at the same time you will save money. Easy and convenient snack for transportation could be a toast, a fruit, one cereal bar, few unsalted nuts or homemade pies (eg, cheese pie, spinach pie).

- **From the canteen what to choose?**

If you did not get something from home, the canteen is a good solution. It is preferable to choose bagel, toast or sandwich, cereal bar or natural fruit juice.

#### **4.2.3.c Advice for adolescents who follow vegetarian diet**

Adolescents and especially girls, often follow vegetarian diet, many times as an incorrect method in their effort to lose weight or in the context of experimentation or of awareness for the animals and the environment. In the vegetarian diet is usually excluded the consumption of meat and fish (*lacto-ovo-vegetarians*, who eat dairy products and eggs), or only meat (fish-vegetarians, who eat fish and seafood in addition to the lacto-ovo-vegetarians) or all food of animal origin are excluded (*only vegetarians*). Due to the exclusion of animal origin food or some of them (meat, fish, seafood, dairy, eggs) the intake of several important nutrients may be inadequate like: proteins of high quality (high biological value), omega-3 fatty acids (necessary for the organism), iron, calcium, vitamin D, vitamin B12 and zinc. So we need to find alternative plant sources of these components. The intake of these nutrients is usually adequate in the diets of fish vegetarians -and lacto-ovo-vegetarians while more attention is needed to exclusively vegetarians.



As already mentioned, adolescence is a special period, with increased nutritional needs. However, when a vegetarian diet is well planned and balanced can meet the adolescent needs of the in nutrients, especially if it includes eggs and dairy products. The nutrients, to which should be given special attention in a vegetarian diet are:

- **Proteins:** The teen should get sufficient quantities of high quality proteins (high biological value). He can meet his needs from milk, dairy products, eggs and fish (if consumed). Plant sources of protein (grains, legumes, vegetables, nuts, soya) are generally of lower quality than animal. For exclusively vegetarians, soy and its products (soy milk, meat substitutes, tofu - product like cheese from soy milk) is a good option as it can meet the protein needs like animal sources. It is also good to

make combinations of the above plant protein sources, for example rice with lentils, because in this way they increase the value of the protein of plant origin they intake.

- **Omega-3 fatty acids:** Their main sources are fatty fish like salmon, sardines, herring, mackerel and from plant sources oils of plants and seeds (especially of walnuts and rapeseed) and also some soy products. It may be required and intake of supplement in vegetarians who do not eat fish.

- **Iron:** Good sources of iron are both animal foods (meat, offal, poultry, fish) and plant (legumes, green leafy vegetables, nuts, dried fruit). However, the best absorbed form of iron by the organism is found in meat, poultry and fish. Soya is also rich in iron, in a form which appears to be directly absorbable. To increase the absorption of vegetable sources of iron (eg, legumes, spinach), it is good to combine them with sources of vitamin C (eg orange, lemon, strawberry).

- **Zinc:** Meat, offal, shellfish and mollusks, dairy, egg constitute rich animal sources of zinc. Plant foods rich in zinc are whole grains, soy products, nuts, peas, corn and mushrooms, which can be consumed by exclusively vegetarians.

- **Calcium:** Vegetarians who consume dairy products, can easier cover calcium intake. The only vegetarians would be good to consume plant sources of calcium such as almonds, fish eaten with the bones, legumes, green leafy vegetables (broccoli, spinach), tahini and also soy or almond milk fortified with calcium.

- **Vitamin D:** Rich sources of vitamin D are egg, liver, milk, fatty fish like salmon and margarines. The only vegetarians may have a low intake of vitamin D, which in combination with low intakes of protein and calcium, can adversely affect bone health. The needs can be met by eating margarine products fortified with vitamin D (eg breakfast cereals), exposure to the sun and also by supplement intake if needed.

- **Vitamin B12:** It is the nutrient that needs greater attention to exclusively vegetarians, as it is only found in animal foods (meat, eggs, dairy products, fish, offal). However, there are breakfast cereals and soy milk fortified with vitamin B12. Supplement intake may be needed.

## Questions

1. Which are the main changes in the body during adolescence?
2. In which nutrients may adolescents have increased nutritional needs?
3. Could you name the role and the main characteristics of “protein” group?
4. Which are the factors that contribute to the development of obesity?
5. What should an adolescent reduce in order to lose weight?
6. What is meant by physical activity?
7. How can parents help adolescents to manage their weight?
8. Which are the main categories of eating disorders?
9. What should an adolescent avoid during the examination period?
10. Which are the nutrients that should be given special attention in a vegetarian diet?



## Are you interested?

### 5. Further readings

- [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov)
- [www.choosemyplate.gov](http://www.choosemyplate.gov)
- [www.bda.uk.org](http://www.bda.uk.org)
- [www.kidseatright.org](http://www.kidseatright.org)
- <http://eyzin.minedu.gov.gr/>
- [www.eufic.org](http://www.eufic.org)
- [www.indi.ie](http://www.indi.ie)

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Teaching Unity

**HEALTHY DIET FOR CHILDREN -  
CHILDHOOD OBESITY**

**Pigi Matzouratou, Dietician-Nutritionist**

## **Table of Contents**

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1 We talk to children about healthy diet**

#### **3.2. We talk to parents - how to help your children?**

#### **3.3. Childhood obesity in general**

### **4. Put into practice**

#### **4.1. Childhood obesity in general**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>HEALTHY DIET FOR CHILDREN- CHILDHOOD OBESITY</b>   |
| <b>Area</b>  | Healthy nutrition   |
| <b>Main Target Audience</b>  | <p>The end users of the module are:</p> <ul style="list-style-type: none"> <li>➤ Students of the participant institutions</li> <li>➤ Trainers in the partner' institutions</li> <li>➤ Consumers' associations</li> <li>➤ Adult training centers</li> <li>➤ Parents of minors and pregnant women</li> <li>➤ Pupils</li> </ul>  |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand:</p> <ul style="list-style-type: none"> <li>- The 10 secrets of healthy diet</li> <li>- How we eat</li> <li>- Physical activity and health</li> <li>- Principles of a balanced diet – Recommendations</li> <li>- General tips for the enhancement of proper child nutrition</li> <li>- Behavior-techniques of the parents to change children's dietary habits</li> <li>- How to motivate a child to exercise?</li> <li>- Childhood obesity – how it appears</li> <li>- When the child needs to lose weight and how much</li> </ul>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours</p> <p>24 hours theoretical training</p>  |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.</p> <p>Once you have completed this course you will be able to:</p> <ul style="list-style-type: none"> <li>- Understand the importance of affecting the dietary habits for a healthy life during childhood</li> <li>- Understand how to speak and guide children for a balanced diet</li> <li>- Teach children about what and where we eat</li> <li>- Understand the importance of physical activity</li> <li>- Understand the importance of paradigm</li> <li>- Be careful in order to prevent children to face the danger of obesity</li> </ul> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme</p> <ul style="list-style-type: none"> <li>- Knowledge of the nutritional needs of children</li> <li>- Knowledge of how to guide children towards healthy nutritional habits</li> <li>- How to be careful about the danger of obesity and how to face it if it happens</li> </ul>  |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>- Face to face teaching</li> <li>- Online learning</li> <li>- Suggestion of additional websources and bibliograpy</li> </ul>  |

## 1. Abstract

This unit is structured into two main sections: (1) addressed to children and is more simply written and (2) addressed to parents and refers specifically to childhood obesity. In the first section stresses on understand the importance of affecting the dietary habits for a healthy life during childhood. It teaches children about what and where we eat. The second section consists on factors to prevent children to face the danger of obesity.

**Key words:** food groups, breakfast, complete meals, regular and steady meals, snacks, food quantity, water, servings, physical activity, exercise, child nutrition, balanced diet, childhood obesity, overweight

## 2. Introduction

It is obvious that the dietary habits acquired by children follow them for the rest of their lives as adolescents and adults. It is also known that at younger ages parents have greater power to influence children in all aspects of their behavior and therefore to those related to their diet.

But in order to guide children to the direction of healthy nutrition (nutrition that ensures health) parents should believe that proper nutrition ensures health for themselves and for their children. The role of the family to the formation of habits of nutrition and exercise for proper development and to the regulation of the child's body weight is crucial. The proper informing of the parents and the practices they follow are the best supplies for the children to be healthy and to adopt good lifestyle habits.

Concerning the regulation of children's weight, regarding the diet, the emphasis is given to the variety of food choices in moderation, to the reduction of the quantity of food, to the increase of consumption of fruits and vegetables, to the limitation of sweets and soft drinks and also to the improvement of the conditions of the meals (how we eat).

Regarding the exercise, it is recommended that the children are more physically active every day, either in the form of organized activity (eg sports) either in a game or daily activities (works, walking).

At the same time is recommended the reduction of the time of involvement with the "screens"(eg TV, video games). We note that where we mention advice for "parents", they might concern people within or outside the family involved in the children's diet.

In recent years, obesity has taken on epidemic proportions, as described by the World Health Organization. The increasing rates of childhood obesity are worrying and our country has one of the highest in Europe. Obesity is caused by many factors, with diet and exercise to be particularly important and for this reason they constitute the main goal of change to address the problem. The need for prevention and treatment of childhood obesity is high due to the negative impact on children's health, the high probability of obese children to become obese adults, and also because the efforts of treating obesity in adults do not have good results. The treatment of obesity is more successful in children than in adults because children grow (tall), so they do not necessarily need to lose weight to improve the height-weight ratio, they are more flexible in changing wrong dietary habits and they have more opportunities for physical activity compared to adults.

## Section I

### 3. Core contents

#### 3.1. We talk to children about healthy diet

In order to be healthy to regulate your weight, to have energy for playing and reading, it is important to obtain good dietary habits and proper physical activity habits (eg exercise, play, dance, sports, walking). Let's see them one by one. Concerning the dietary habits, what is important is **what** you eat, **how much** you eat but also **how** you eat!

##### 3.1.1. The 10 “secrets” of proper diet

###### 1. I have variety - I eat from all food groups

Foods are divided into groups according to their common characteristics. In order to be healthy, hale and strong, we need to eat foods from all groups, that is to have **variety**, as they offer us different substances such as vitamins, minerals, proteins, fats and more. Unfortunately no food contains all the nutrients we need. This means that it is good to choose foods from all groups and different foods from each group. Also, all the food is not needed in the same quantities, so we should eat of all in **moderation**. Therefore, when we eat of everything and in the right quantity we achieve **balance**. Food groups are usually divided as follows:

###### *Cereals: the group of energy!*

In this group belong bread, rice, pasta, potatoes, corn, breakfast cereals and all grains and their products. These foods give us energy that is they are like gasoline for our body, so we need to eat them every day to have energy for reading, sports and endurance to play. It is good to prefer whole grains, such as brown bread, whole meal pasta and brown rice.



### ***Fruits and vegetables: the multicolored group!***

Fruits and vegetables are very important in our diet because they offer us a lot of vitamins, minerals, trace elements and fiber, substances necessary for most functions of our organism. To this group belong all fresh, cooked and baked fruits and vegetables as well as dried fruits and juices. Prefer the fruits than juices because they will sate you better. Every day we need about 5 servings of fruits and vegetables. To achieve this, it is good to eat:



- Fruit as snacks (brunch, afternoon meal) and
- Vegetables with main meals (at lunch and dinner) either as a salad or cooked (eg beans, peas, briam (Greek mixed roasted vegetables), greens).

To remember easily the 5 servings, 5 are the primary colors of fruits and vegetables (red, green, yellow, orange and purple). It is good to eat a variety of fruits and vegetables of all colors!

*1 serving of fruit = 1 cup \* of fresh fruit or fresh juice = ½ cup of dried fruit*

*1 serving of vegetables = 1 cup \* of fresh or cooked vegetables or vegetable juice = 2 cups of green leafy vegetables*

*\* where we refer to cup, we mean cup of tea*

### ***Dairy: the group that strengthens bones and teeth!***

In this group belong the milk and dairy products that is cheese and yogurt and also desserts based on milk such as frozen yogurt and creams. It is a very important group for children because these foods are



rich in calcium, which is essential for their development and for to have strong bones and teeth. You need 2-3 servings of dairy a day.

*1 serving of dairy = 1 cup of milk = 1 cup of yogurt = 1 small piece (45 g.) of cheese = 1 cup of frozen yogurt or ice cream*

### ***Meat and meat products, fish, eggs, legumes***

This group is often called the "protein" group because the foods that belong to it are rich in protein and iron. Proteins are important components of foods that help us to "build" our bodies, to grow and to be strong. Iron is a mineral that is necessary for oxygen transport in the body. To this group belong the various types of meat, fish, seafood, eggs and legumes.

The types of meat are divided into "red" and "white."  
As "red" we mean beef, goat, pork whereas as "white" chicken, turkey, rabbit, fish and seafood.

In legumes they belong lentils, beans, chickpeas, butter beans and fava bean. In addition to the above ingredients, they are rich in fiber, which helps the intestine to function better.



You do not need to eat daily the foods of this group, but few times per week each one. More often it is best to eat fish (1-2 times / week) which help to have strong bones, healthy eyes and protect our heart, legumes (1-2 times / week) and poultry while less red meat and even less its products (sausages, ham, parizer meat etc.).

### **Fats and oils**

In this group belong the different types of oils and also foods consisting mainly of fat. That is all the oils (such as olive oil, corn oil), margarine, butter, mayonnaise and sauce based on mayonnaise, olives, nuts and bacon. We use them in cooking, salads and also in sweets. As in other food groups, all foods in this group do not have the same quality in our country. Olive oil is more beneficial, abundant and in excellent quality. However, because the oil and fat provide a lot of energy, caution is needed in their quantity.



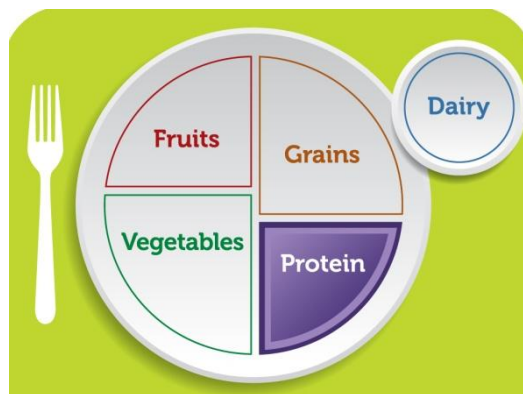


### ***Sweets, soft drinks and salty snacks***

In this group belong mainly some sweets and snacks like biscuits, croissants, cakes, pastries, chips, crisps, soft drinks or juices with sugar. They have nice taste and they are normally consumed as snacks, delicacies and treats. These foods are rich in sugar and fat (usually of bad quality) while on the contrary low in vitamins. It is good then to eat them in moderation for both your health and the health of your teeth and for the regulation of your weight. As a snack, it is better to prefer first a food from the group of fruit and less often some sweet (up to 2-3 times / week)



### **How to put the food groups on my plate?**



**Image1.1. Food groups on my plate.**

**Source:** United States Department of Agriculture (USDA), ChooseMyPlate.gov

- ✓ The plate in this image helps you see the advice for food groups all together.
- ✓ One healthy plate contains foods from all groups.
- ✓ Half plate is good to consist of vegetables and fruit
- ✓ Prefer whole grain cereals (starchy foods) (eg bread, whole meal pasta, brown rice).
- ✓ Remove the skin from the chicken and the fat from the meat.
- ✓ The quantities vary from child to child according to age, gender, growth and how active the child is.

## **2. I start my day with breakfast**

Breakfast is the first meal of the day and it has great significance. You may wonder: " *For what reason should I eat breakfast?*"

|   |
|---|
| <b>Why should I eat breakfast?</b>  |
| <b>To "fill batteries" after the night fast (due to sleep) and to have energy</b> |
| <b>Better concentration and alertness</b>   |
| <b>Better performance in school</b>   |
| <b>Better regulation of appetite and weight control</b>                           |
| <b>Opportunity for the family to be together</b>                                  |
| <b>It is a long-term healthy habit</b>  |
| <b>Ideas for breakfast</b>  |
| <b>Milk and wholegrain breakfast cereals</b>                                      |
| <b>Yogurt with fruit and honey</b>  |
| <b>Milk and whole grain bread with honey or jam</b>                               |
| <b>Fresh juice and toast (cheese-turkey-tomato) with whole grain bread</b>        |

Therefore it is good to spend even five minutes for breakfast at home before you leave for school.

### 3. Complete meals

It is important for the health and proper development of the child, the main meals of the day (breakfast, lunch, dinner) to be "complete." This means that they should contain foods from three basic food groups: the group of cereals, protein (meat, fish, eggs, legumes, dairy) and fruit and vegetables. It is good with lunch and dinner to have salad always (or cooked vegetables eg beans). Each of these groups contributes in its way to the good function of the organism. The groups which constitute a "complete meal" are vividly sketched in the following image (1.2):



**Image1.2.** Complete meal= 1 + 2 + 3

Examples of **complete meals**:

- ☉ Breakfast: milk + cereal + fruit
- ☉ Lunch: chicken + potatoes + salad
- ☉ Dinner: Eggs + bread + salad

#### 4. Regular and steady meals

By the apportionment of food at regular meals, you can avoid eating large quantity, something that usually happens when six or more hours have passed from the previous meal. You could eat 4-5 meals a day, 2-3 larger (main meals) and 1-2 smaller (snacks, brunch at school and afternoon meal). Also, if these meals are steady (not omitted, approximately the same hours) they help to meet the nutritional needs and to avoid snacking.

#### 5. Snacks

Snacks are small meals (at school, afternoon meal) we eat between main meals (breakfast, lunch, dinner) to give us energy and not feel weakness, fatigue and intense hunger. Snacks are very important as the day of a child is very tiring because of school, reading, activities and sports. Unfortunately the favorite snacks of children are often various pastries (eg biscuits, croissants), chips, crisps and soft drinks. All this is not prohibited, but because they have too much fat, sugar and salt should be consumed in moderation (up to 2-3 times / week and in small quantities). Some good options for snacks at school and at home are:

| At school...   | At home...                           |
|--|--------------------------------------|
| Fruit (bananas, apples, mandarins, apricots, grapes which do not need peeling or it is easy with the hand) | Fruits or vegetables                 |
| Cut vegetables (cucumbers, carrots)  | Yogurt with fruit or honey           |
| Toast (cheese, turkey) and whole grain bread   | Milk with whole grains               |
| Cereal bars  | Nuts                                 |
| Dried fruits   | Fruit salad                          |
| Bagel with sesame seeds  | Crackers with cheese and turkey      |
| Homemade cheese pie or spinach pie   | Rice pudding                         |
| Homemade cake or cookies   | Milk shake with yogurt, fruit, honey |

#### 6. Food away from home

It seems that when children consume food outside the home, and especially overweight children they eventually eat more during the day. Usually, food options away from home are fast food type (pizza, various ready flaky pastries eg cheese pie, ham and cheese pie) or packaged foods like chips, crisps, croissants, biscuits, chocolates, either from the canteen either from corner shops or bakeries. These, as we mentioned above, are rich in fat and sugar and among other things, their frequent consumption does not help in weight regulation.

To avoid such temptations it would be good to get some snack (food or fruits) from home with you to school or in the tutorial at the afternoon or at your walk, from the above good options.

#### 7. When I'm thirsty I drink...water!

The human body is composed mainly of water (more than half of our weight!), which is essential for life. A sign that we need water is thirst, but thirst is often delayed, so we need to drink enough water even if not thirsty. We need more water in hot weather or when exercising or doing some other physical activity and we sweat. Almost exclusively of water consist and all liquid foods (e.g., juice, milk, *soft* drinks), as well as fruits and vegetables, so when drinking or eating them we get water. However, plenty of liquids such as soft drinks and some juices contain sugar and it is good to avoid them and do not drink them to quench your thirst. Our first choice when we are thirsty should be water!



#### 8. Sweets are allowed ...in moderation!

The pastries and various desserts, as mentioned in food groups, contain a lot of sugar and often a lot of fat, and for this reason they are delicious! In the effort to regulate your weight and to stay healthy in general, they are good to be eaten in moderation, in small amounts (up to 2 times / week) and not at the expense of other foods such as fruits, which offer important and beneficial ingredients for the organism. Of course, not all the candy are the same, there are some healthier options you can prefer, also in moderation, such as:

- 🌀 The rice pudding
- 🌀 The pasteli (sesame honey candy)
- 🌀 The jelly
- 🌀 The ice lolly
- 🌀 The preserve sweets
- 🌀 Yogurt with honey or preserve sweet
- 🌀 The frozen yogurt
- 🌀 The dark chocolate

## 9. Food quantity- I eat as hungry

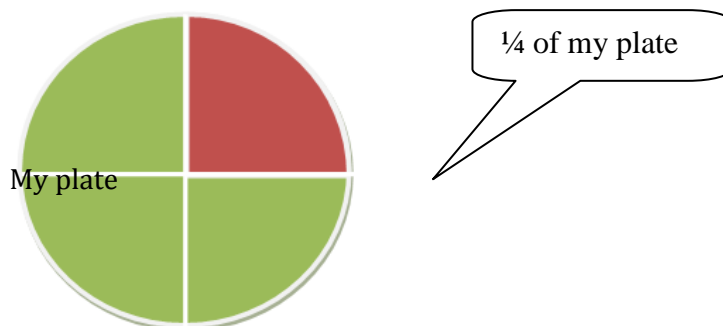
Among the most important factors in weight control is the control of the quantity of food. As we saw on the scale above, if you eat more than what you need, your weight will increase.

The quantity of food should be such as to sate you and not be hungry, without feeling stomach ache (bloating) when you finish eating. To better control the quantity of food, it is good to start eating with the salad and eat calmly, slowly and chewing food thoroughly. At the same time you should follow the rules that you will see in the next section "how we eat."

## 10. Servings

Apart from eating as hungry you can control the quantity of food also from serving size. Did you know that children over 4-5 years, the bigger their serving is the more they eat? So if you put from the beginning less on your plate, you are likely to eat less. The reduction in the quantity should be small, for example reduced by one fourth (as shown in image 1.3) and not from the group of fruits and vegetables.

You can remove it from the beginning by placing less or leave food on the plate. If you eat it and you are still hungry, then you can put back some food.



**Image 1.3.** Reduction of the quantity of food by  $\frac{1}{4}$ .

Apart from the serving size of the food, it is good to choose smaller servings when eating out and smaller packages of food or beverages. In this effort, you could ask your parents or those who serve you for help.

### 3.1.2. How do we eat?

Did you know that the way and the place we eat can affect the quantity and the type of food? For better control of meals, it would be better that the following conditions are met:

#### 1. I eat seated

It may be considered obvious but unlikely it often happens to eat lying in bed or on the couch or even standing (in haste). So I eat sitting on the chair and:

- @ Not standing
- @ Not in a haste
- @ Not walking / playing / dancing



## 2. I eat in an appropriate area

Each area of the house has its own role and not everyone is appropriate to eat. We eat at places we consider as appropriate like the kitchen or the dining room both meals and snacks and we avoid eating at places like the bedroom, the sofa in the living room, etc. So:

### @ *Where do we eat?*

In the kitchen / dining room, → eating area

On the table (kitchen / dining room) → dining room furniture

**NOT** in the bedroom, living room, bathroom

**NOT** on the couch, bed, desk

### @ *For what reasons?*

- In the appropriate area we have our attention on food and we eat in peace.
- We enjoy the food and we give it the attention needed. The other areas cover other needs.



## 3. I eat from and by appropriate utensils.

With this condition you avoid eating from the pot, the platter or large packages without control.

@ ***From where?***

Suitable utensils: dish (to eat), glass, bowl for liquids / sweet / yogurt / pudding / fruits

**NOT** from the pot, sheet pan, platter, package (eg bag, box)

@ ***With what?***

Suitable utensils: fork, knife, spoon

**NOT** with your hands, cooking spoons and forks



@ ***For what reasons?***

- We control better what and how much we have eaten, by having the right quantity on our plates.
- We avoid snacking.

**4. I eat without doing something else at the same time**

Dinner time is important. You concentrate on your food; you eat calmly and enjoy it. You avoid to do other activities such as watching TV, playing computer games, running / dancing / walking, reading, listening to music and more.



***For what reasons?***

1. Because we do not think of the food but our attention is on the activity we do. So we may eat more or without being hungry.



2. Each time we do the one thing, we want to do the other as well (eg when watching TV, wanting to eat). The two actions "*go together*" in our minds.

### 5. I eat when I'm hungry

It is one of the most important conditions! Hunger is a signal from our organism that we need energy, that is food, as the car needs fuel - gas. So if we eat without being hungry, it means that the food we ate was unnecessary and our body will store it for later use as "fuel". Think that every time you eat without being hungry may increase your weight. There are many reasons for which we eat (except when hungry) and lead us to eat without being hungry, as shown in the following image (1.4):



**Image 1.4.** Reasons we eat for.

Seek yourself the reasons for which you eat, which may also be different from the above and think about how often you can eat without being hungry.

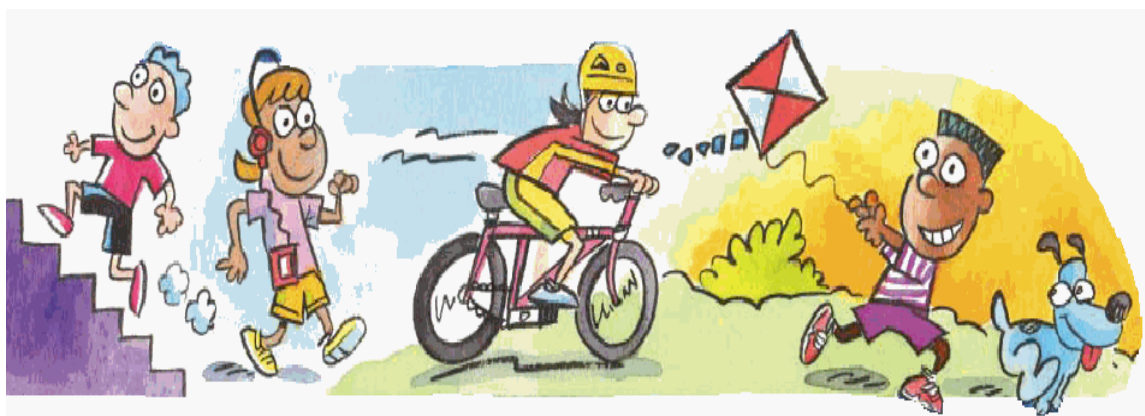


### 3.1.3. Physical activity

For the regulation of body weight, but also for overall good health and wellbeing, a balanced diet should be accompanied by daily physical activity. The term "physical activity" means all kinds of movement and exercise, such as walking, games that involve action and sports. Regular physical activity offers many benefits for physical and mental health of children and it seems that children who are physically active have better performance in school.

#### 1. Why should I exercise?

- In order to have healthy bones, muscles and joints.
- To strengthen the function of the heart and lungs.
- To increase my strength and my muscle strength.
- To have better reflexes, better motor control and synchronization.
- To maintain a healthy body weight.
- People who exercise generally follow a healthier lifestyle.
- It offers me psychological benefits such as reduction of stress and avoidance of depression.
- It helps me to increase my confidence and to be more social.
- To have fun and nice time with other children or with my parents.



#### 2. Increase of physical activity

According to the World Health Organization and other international organizations, it is recommended that children exercise at least 60 minutes (1 hour) per day in moderate or vigorous intensity (sweating a bit). Even if you lose some time from your homework, daily exercise is very important for the reasons mentioned above. This can include everyday

activities such as walking to and from school, walk with the dog, walking up and down the stairs, bike and organized activities such as sports and recreational games. It is important to be active also at school (fitness class, breaks, free time in the all-day school). It is best to choose something that you enjoy in order to have nice time during exercise and to do it for a long time!

Did you know that you also exercise when you do household chores such as:

- Work in the garden (gardening)
- Washing and arranging dishes
- Cleaning and tidying of a room
- Arranging and tidying toys
- Car wash

Apart from work, there are many other activities to choose from:

---

**Individual or team sports ( eg. basketball, football, tennis)**

**Swimming**

**Dance (with music at home or outside the home)**

**Bicycle**

**Walking from or to school or tutorial or shopping**

**Stairs instead of elevator**

**Running**

**Walk with the dog or family**

**Participation in gym class at school**

**Play at the break in the schoolyard or in the evenings or weekend in the park, at the playground or in the house garden**

**Classic childhood games like hide and seek, chase, jump rope, thieves and robbers etc.**

---

### **3. Reduction of sedentary activities**

In addition to the increase of physical activity it is also very important the limitation of time involvement with the "sedentary activities," which often "steal" time from motor activities. Sedentary usually include time the child spends in activities in front of a "screen" such as TV, video games, computer, mobile phone and tablets. For children older than 2 years, it is recommended a reduction in sedentary activities in to two hours time a day and their replacement with motor activities.



#### 4. **Why to reduce time spent in front of the screen?**

- Because it reduces my time available for physical activity.
- Because it can increase food consumption. Especially television, it appears to affect the increase of the food and particularly of various snacks (such as soft drinks, potato chips, candy), in two ways:
  - When we watch TV while eating, we are not thinking about the food, but our attention is on what we watch.
  - Through food advertisements, which are usually of low nutritional value.

Therefore, it is good to choose what to watch on TV (eg your favorite series or movie) and what game you will play on the computer / tablet so that not to exceed 2 hours per day. If you already exceed the 2 hours by far you can decrease them gradually by setting a target along with your parents about how and what to see or play.

### 3.2. We talk to parents - how to help your children?

#### 3.2.1. Principles of a balanced diet – Recommendations

Dietary recommendations for children are similar to those for adults and are summarized in the following (according to the American Heart Association):

- ☺ For the maintenance of normal growth, there should be a balance between energy intake (food consumption) and energy expenditure (how much energy "spends" the organism for its basic functions and physical activity).
- ☺ Prefer vegetable oils and margarines and limit the consumption of animal fats such as butter, creams, mayonnaise, cold cuts, full-fat cheese and red meat.
- ☺ Remove visible fat from meat and skin from poultry.
- ☺ Prefer olive oil as the main source of fat in cooking and salads.
- ☺ Eat daily at least five servings of fruits and vegetables (restricted juice consumption).
- ☺ Eat daily 2-3 servings of dairy products, preferably low in fat.
- ☺ Prefer cereals and whole grain products such as breakfast cereals, whole meal

pasta and bread and brown rice.

☞ Limit the consumption of foods and drinks containing sugar such as sweets, soft drinks, fruit drinks and nectars in less than 3 per week.

☞ Eat salt wisely, including standardized - processed foods like salts, pickles, canned foods, salty snacks (eg crisps), cold meats, most cheeses, which contain a lot of salt (sodium). Keep in mind that salt is 'hidden' in our most common foods such as bread.

☞ In line with the recommendations of the Mediterranean diet, concerning weekly frequency of food, the child it is recommended to consume 2 times a week fish, 2-3 times legumes and foods in olive oil, 1-2 times per week poultry and 1 time per week red meat (beef, lamb, pork).



### **3.2.2. General tips for the enhancement of proper child nutrition**

☞ It is important to eat a variety of foods from all groups and to experiment with different recipes until you find the favorite of your children.

☞ When you want your child to try a new food, you can combine it with an already beloved. It is very likely that the child will not accept it from the beginning, so you need to have a lot of patience and try several times until finally the child tries it.

☞ Avoid making “special” food for children, that is different from yours. To eat the same food as you help to the formation of better dietary habits.

☞ Help the child to achieve the goals mentioned in the section "Child-what can I change?". For example, if you have prepared something for breakfast, it is more likely that the child will eat breakfast at home before leaving for school. Also, if you are away at mealtimes, it's nice to have food cooked and chopped salad. Similarly, you can prepare a nutritious snack for school or for afternoon so that the child avoids snacking.

☞ The control of the portion and the quantity of food is very important in weight regulation. If you serve the food to the child, you can reduce the quantity and put supplement only if the child is still hungry.

② Limit the purchase of various standardized snacks, sweets and soft drinks at home while you have available in a visible spot with easy access healthier choices such as fruits and vegetables.

② The change of dietary habits but also physical activity habits is difficult and takes time, so move on step by step, making small changes each time.



### **3.2.3. Behavior-techniques of the parents to change children's dietary habits**

#### **1. Check of the availability of foods**

The basic precondition for the consumption of a food is to be available. In the home environment the parent is responsible of foods supply and the provision of “healthy” choices. For example, if there are no fruits and vegetables available at home the children will not consume them. On the contrary, if there are available sweets, crisps, biscuits and especially if they are in a visible spot with easy access then there is a risk of overconsumption.

#### **2. Frequent exposure of children to the desired foods**

Even if food is available, it does not necessarily mean that the child will consume it. A key prerequisite is that the child is exposed to this food several times. Repeated exposure makes the food familiar to the child and appears to be the most effective technique for the child to accept some food and then consume it. It increases the liking and consumption of a food more than other techniques such as rewards or information (how good is this food) or the non-application of a technique. Exposure to food concerns the visual contact with the food and the taste (trial) as well. If the child rejects some foods (e.g. vegetables, legumes), then the parent may help by exposing these foods on a daily basis or even, if possible several times a day. The exposure should not be accompanied by encouragement or pressure of the parent for consumption. It is good to have patience and not to be discouraged since the acceptance of a food is learned slowly. It seems that more than 10-

15 times repeated testing is needed to be more effective and for the child to learn liking a food that initially did not like.

### **3. Presentation of food**

Children are affected by the appearance, presentation and also cooking of the food more than adults. They like more foods that are tender and juicy, crispy and colorful and do not prefer the hard and dry foods. Also, they usually prefer food to be separated on the plate and not mixed (eg separate the meat from the pasta or rice). In addition, children are more sensitive to the taste so it is likely not to like strong flavors like food with a lot of spices, herbs and salt and do not want to consume them. You can try to cut fruits and vegetables (for which there is often difficulty in consumption) in different figures, shapes or faces to be more attractive to children.



### **4. Yes to reward but not with food**

The reward is generally a tactic that encourages and urges further effort or the adoption of a behavior. The child is happy and feels good about its choice so there is an increased possibility of a repeat. However, the reward should be used with caution in order to have good results, as far it concerns the feeding of children:

- Parents often reward right dietary choices of children with another food, ultimately causing confusion in children. For example, if the parent insists that the child eats the lentils (which the child tries to avoid) and as a "gift" he uses ice cream ("If you eat lentils, after you will eat ice cream"), then in the eyes of the child the ice cream appears as the "good" -tasty food since it is offered as a gift and lentils as the "evil" - not tasty food since the child is offered a gift to eat it. So ultimately, parents achieve the opposite effect, that is they increase the desire for the "gift"-food (ice cream) and the dislike for "target"-food (lentils).
- Therefore, it is good to avoid using a food reward. Similarly, avoid the punishment also through food eg "If you don't turn off the TV, you will not eat chocolate."

- To avoid the above expressions, try to put a priority or a series on how to eat them that is for example, "food first, then sweet."
- If the reward is used, it is preferable to be verbal and not material, eg "Bravo, you did it!".
- Also, it is better to be small and not big, so it does not constitute the child's only motivation to eat.
- The reward should concern the quality rather than the quantity of behavior. If the child tries, even little of the lentils, this is a success ,it is not necessary to finish the whole dish from the first time!



## 5. Become a "model" for your child

Children have the characteristic of imitation to a great degree and also the need to function based on models, such as parents, teachers, their favorite heroes, persons of television and also peers-friends. The parents are the strongest influence factor, especially in young children. It seems that it is ***not enough that the parents simply inform*** the children on what food is nutritious and its importance but its ***consumption by the model-parent*** himself is required. Parents can be a "good example" to children by eating themselves the same foods they would like their children to eat, even bringing up how delicious they are. If the parents do not eat fruits and vegetables, for example, how do they expect their children to eat them? Children adopt the dietary habits of parents concerning the food they eat but also the overall eating behavior and attitude towards food. However, as children grow, the impact-imitation of peers grows as well. Nevertheless, parents can play a key role to the formation of the eating behavior of their children and also their involvement with the exercise.

### **Practical tips for parents:**

- Sit the whole family together at the table to eat as often as you can.
- Eat some food as snack (eg fruit) saying how delicious it is.
- Avoid the consumption of food and drinks in front of the TV (especially snacks like crisps, sweets, soft drinks).



- Always have salad with your meal.
- Play with the kids while exercising or exercise yourselves.

## **6. No pressure to eat**

The pressure on food consumption by the parents or grandparents is very common. The pressure concerns both foods children refuse to eat (eg, legumes, vegetables, fruits, milk) and the quantity of the food, like "Eat all of your food or otherwise you will not get up from the table", "Eat it for not to be wasted, it is a pity", "Come on, finish the last bite" and many others. It seems that the pressure for consumption usually brings negative results because:

- When children are forced to eat some food, they mainly express negative comments and feelings about it than positive.
- The result ultimately is the reduction of consumption of the food instead of increase and often repulsion.

However, the increase of the consumption of a food after pressure is observed only in children who were not familiar with the pressure for consumption by parents.

As in other matters so in food pressure is not a good tool for the modification of children's dietary choices. It would be better to try to use other techniques to help the child.



## **7. No to the restriction - yes to the limits**

Another common practice of parents is the restriction of consumption of certain foods such as crisps, chocolate and sweets as well as the quantity of food in an attempt to control the diet and often the weight of their children. Such a practice makes food more attractive in the eyes of children resulting in increased liking for them and their consumption even without being hungry, and especially in the absence of parents. Consequently, this may result in weight gain in children. It seems, indeed, that the greater the restriction the greater the consumption of food and various snacks and therefore it should be avoided. It is good that the parents have in mind that there are no "good" and "bad" foods, but foods that should be consumed more (eg fruit-vegetables) or less frequently (eg sweets). Therefore, for this reason, the sweets ARE NOT prohibited but the child could consume 1-2 sweets a week.



To avoid such a practice, you can give the child the freedom of choice within certain limits, helping your child to set a goal, eg how many portions of sweets the child may consume a week or by how many portions the child can reduce the consumption of such foods compared with last week. The targets set by the child should be realistic, achievable and small (one step at a time) but also provocative *in a way* (a difference must be made). Also, you can use milder expressions such as “less” or “more” than the “all or nothing”.

## **8. Family meals**

Nowadays, due to the working conditions of parents, children consume more and more meals alone. Even eating one meal a day with family is associated with better dietary habits of children. Parents can influence what and how much will be consumed by what they will serve and the atmosphere of the meal. It is good to care about having a calm and pleasant environment with the TV turned off and with discussion about issues that are not related to food (eg no negative comments about the child's weight or the quantity and the way he eats).



### **3.2.4. How to motivate my child to exercise?**

As we mentioned above, the family plays a key role in the formation of the character and habits of children. Parents should initiate their children from an early age in physical activity through games and activities in which it is good to be involved themselves, showing that with the exercise they have fun all together. The aim is to develop an active lifestyle through group or individual activities that are fun, creative and non-competitive. Also, as in the diet, they should be models of healthy lifestyles and exercise for their children, exercise with them, exercise themselves, motivate them to exercise by themselves and slowly teach them the importance of exercise for their health and also the quality of their life.

## Section II

### 4.1. Childhood obesity in general

#### 4.1.1. Definition - What does obesity mean?

According to the World Health Organization (WHO), obesity is defined as the increase in body weight beyond the normal as a result of excessive accumulation of fat in the body to an extent that affects the health of the individual.

Fetal age, age 4-6 years and adolescence are the most critical periods for the development of obesity.

Childhood obesity, according to WHO, is one of the most serious public health problems of the 21st century. In 2010, in the 27 members of the European Union, 20% of school children were overweight or obese (World Obesity Policy and Prevention). Greece has one of the highest rates of childhood obesity in Europe. In Greece, in the decade 2001-2010, 1 in 10 children, aged 1-12 years were obese and 3 out of 10 were overweight. Also, according to a recent study in children aged 6-12 years, 23.9% were overweight and 7.3% obese. The ever increasing rates are alarming and the need for intervention and lifestyle change is imperative.

#### 4.1.2. How does the obesity appear?

Think of obesity as a puzzle consisting of several pieces which all together play a role in its appearance. The most important of these pieces are the family, our genes (heredity), diet and exercise, as shown in image 1.

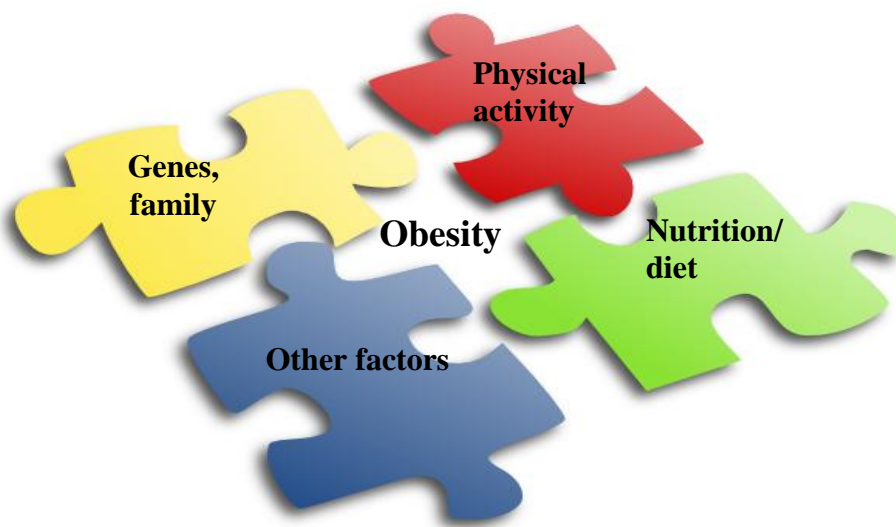


Image 3.1. Factors contributing to the appearance of obesity

Of the above factors, the dietary and physical activity habits are those that we can mainly change and which will ultimately determine the weight of a child. How, then, is happening the accumulation of fat mentioned above that results to obesity? Think of one scale. On one side of the scale is the energy that we give our organism with food (how much we eat) and on the other side of the scale the energy the organism "spends" for its various functions, movements and exercise. How much we eat and how much we spend form our weight. That is, depending to which way the scale tilts, the weight increases (tilts to the left), reduces (tilts to the right) or remains stable (the scale is balanced), as shown in image 3.2. When we eat more than what we "spend" mainly through exercise, then fat is concentrated in the body and weight increases.

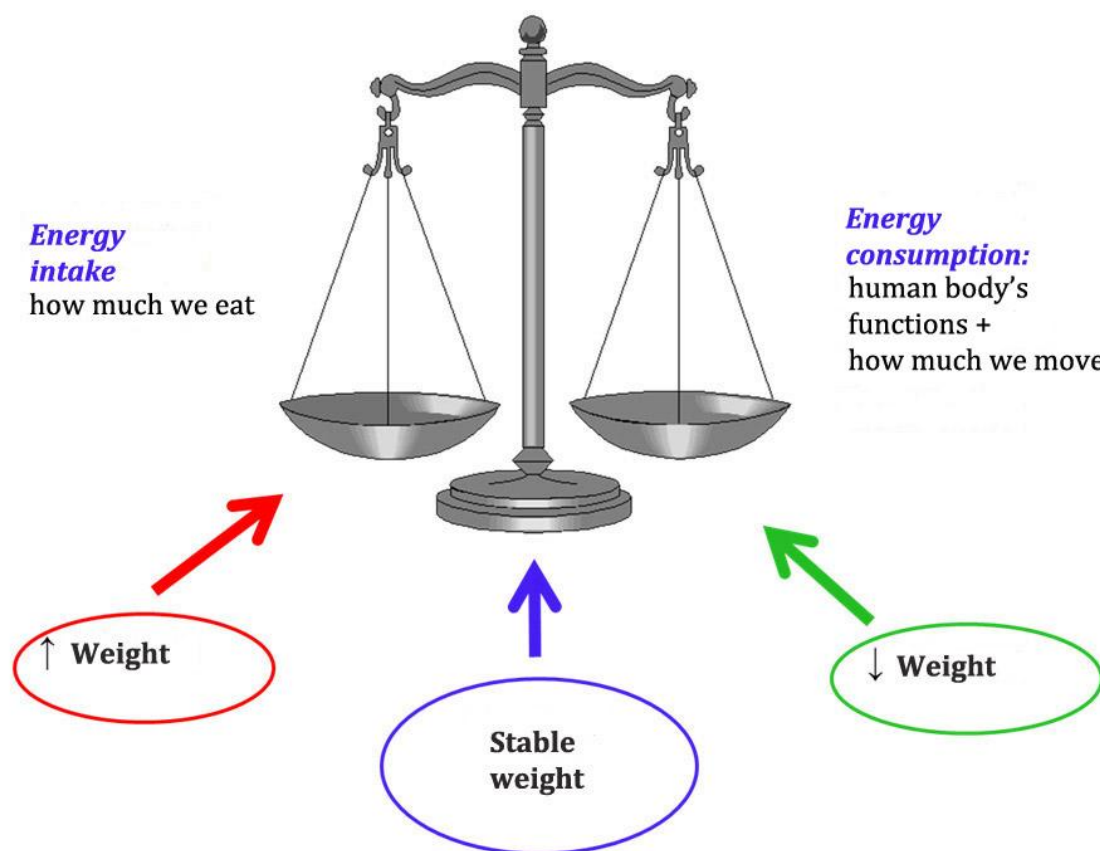


Image3.2. When the scale balances, the weight remains stable. Depending to where it tilts, it can increase or decrease.

#### 4.1.3. What problems can obesity cause to the child?

Childhood obesity can affect almost all body systems. Summarily, the effects are shown in the following table:

|  |
|--|
| Basic problems of childhood obesity                        |
| Greater potential for obesity as adults                    |
| Health problems  |
| Respiratory (apnea, asthma)                                |
| Metabolic (diabetes type 2, precocious puberty)            |
| Cardiovascular (hypertension, dyslipidemia)                |
| Musculoskeletal (osteoarthritis)                           |
| Behavioral problems (anxiety, isolation, eating disorders) |
| Psychological problems (depression, low self-esteem)       |

#### 4.1.4. Is my child overweight?

In order to evaluate the weight of children we usually use the growth curves (Image 1.3) for Body Mass Index (BMI). On these curves, which are different by gender, is illustrated the BMI and age. BMI shows the relation between weight and height and is calculated by a division, as follows:

**BMI= Weight (in kilos, kg)**

**Height x Height (in meters, m)**

For each age, BMI values that lie between the two blue (boys) or red (girls) lines correspond to the "overweight" (heavier than healthy) and the values which are above the highest blue or red line correspond to "obesity" (much heavier than healthy). For example, for a girl 9 years old, with weight 42 kilograms (kg) and height of 1.33 meters (m), BMI is calculated  $42 / 1.33 * 1.33$ , that is equal to 23,7 kg / m<sup>2</sup>. From the curves it appears that this number corresponds to the range of "overweight", between the two red lines.

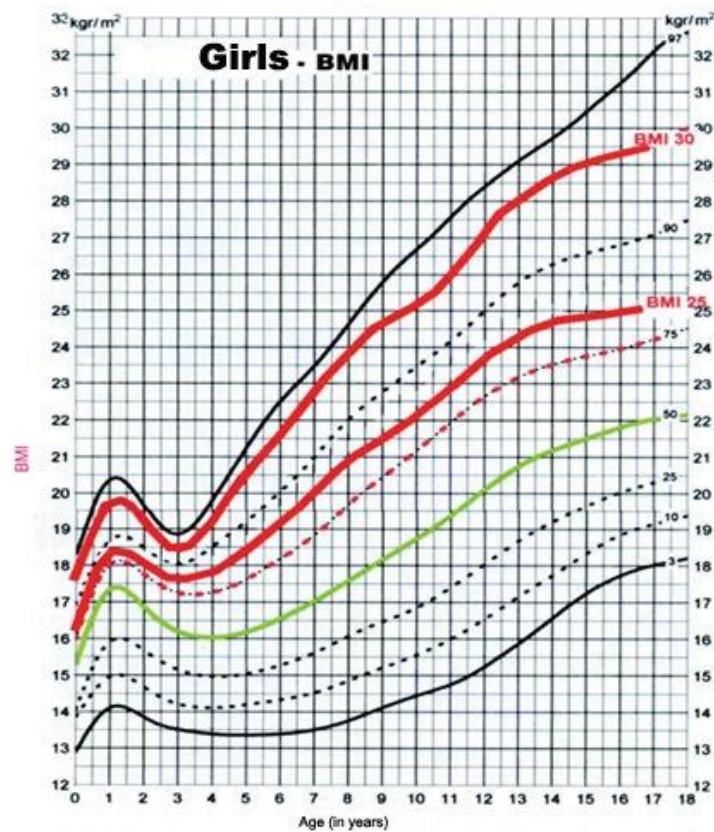
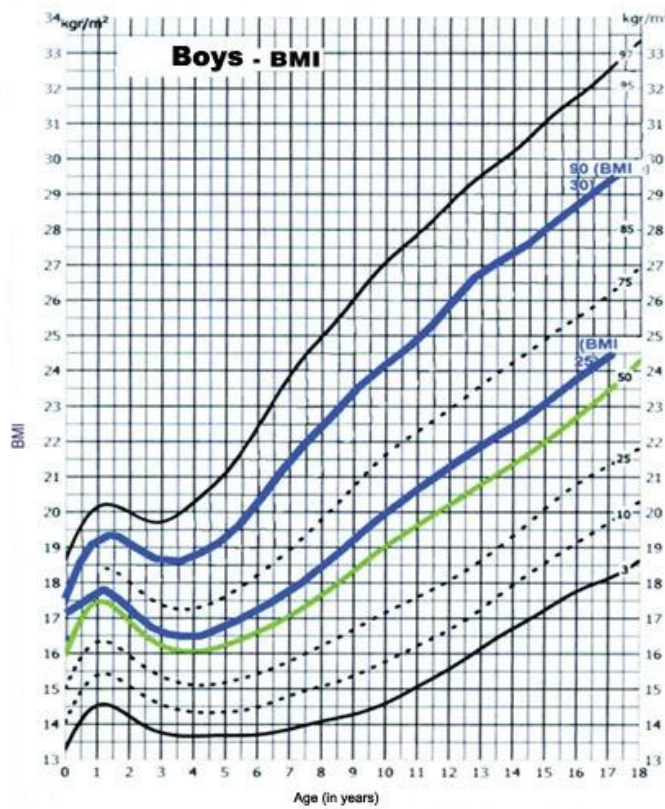


Image3.3. Growth curves for BMI by gender and age

Source: Child Health Booklet

#### 4.1.5. When the child needs to lose weight and how much?

The weight regulation in children needs special attention as they are in the stage of development and they need all the necessary nutrients. The main objective is not to reduce weight and is not always recommended. The primary objective is to ensure the good health and development of children and also the change of wrong attitudes concerning nutrition and exercise that caused the weight gain.

The advantage of children compared to adults is that they still tall. This means they do not necessarily need to lose weight but the **maintenance of body weight** while the height is increasing improves gradually the relation of weight to height (BMI reduces) and the weight is normalized. More specifically:

- For children who are *overweight*, the goal is **weight maintenance** or a mild loss rate (if there are coexisting health problems in children over 7 years old) so that with the gradual increase in height, the weight is normalized.
- For children who are *very overweight* (obesity) and / or *health problems* coexist (such as diabetes, hypertension, elevated triglycerides, etc.) then **weight loss** is recommended. The weight loss depends on the age, the degree of overweight and generally the severity of the situation and may range from 0.5-4 kg per month.

## Questions

1. Why is it essential to have variety in our diet?
2. Which are the 5 primary colours of fruits and vegetables?
3. For what reason should I eat breakfast?
4. What is meant by a "complete" meal?
5. Why should we avoid eating and doing something else at the same time?
6. How much time is recommended to spend children in front of a "screen" such as TV, video, games and computer?
7. What could we do if you want your child to try a new food?
8. What is meant by "exposure to food"?
9. Which behaviour-techniques of the parents have a positive and which have a negative effect to change children's dietary habits?
10. How can we find out if a child is overweight?



## Are you interested?

### 5. Further readings

- World Health Organization (WHO):  
<http://www.who.int/dietphysicalactivity/childhood/en/>
- World Obesity Policy and Prevention:  
<http://www.worldobesity.org/iotf/obesity/obesitytheglobalepidemic/>
- US Department of Health and Human Services: [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov)
- US Department of Agriculture (USDA): [www.choosemyplate.gov](http://www.choosemyplate.gov)
- British Dietetic Association: [www.bda.uk.org](http://www.bda.uk.org)
- Academy of Nutrition and Dietetics (website for kids and teens): [www.kidseatright.org](http://www.kidseatright.org)
- EYZIN (National Health Action for the life of young): <http://eyzin.minedu.gov.gr/>

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## Teaching Unity

### Eatable Gardens

cultivate your own herbs



## Table of contents

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

3.1. The Role of Herbs in Food

3.2. The use of herbs in food

3.3. The importance in cooking

3.4. Herbs most commonly used in Europe

3.5. Nutritional and functional properties of herbs

### **4. Put into practice**

4.1. From Theory to Practice: Your Eatable Garden

4.2. Building your eatable garden

### **5. Further readings**

### **6. Bibliography**

## The unity

|  |   |
|--|---|
| <b>Title</b>   | <b>Eatable gardens... cultivate your own herbs</b>  |
| <b>Area</b>  | Organic, small scale production   |
| <b>Main Target Audience</b>  | <p>The end users of the module are:</p> <ul style="list-style-type: none"> <li>• Students of the participant institutions</li> <li>• Adults interested in issues related to organic</li> <li>• City residents.</li> <li>• Adult training centers</li> <li>• Amateur gardeners</li> </ul>  |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand:</p> <p>The role of herbs in food</p> <p>The use of herbs in food</p> <p>Their importance in cooking</p> <p>Herbs most commonly used in Europe</p> <p>Nutritional and functional properties of herbs</p>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training;</p> <p>- 8 hours for visits (farms, processors, markets)</p> <p>- 8 hours of practical work.</p>   |
| <b>Learning Objectives</b>   | <p>In this training unit it is intended for the student to acquire knowledge about:</p> <ul style="list-style-type: none"> <li>- some of the herbs more commonly used in European cuisine,</li> <li>- their features and benefits to health</li> <li>- the cultivation and use of eatable gardens.</li> <li>- some methods and ways to create an eatable garden in small spaces, re-using materials creatively and in that way, contributing to global sustainability.</li> </ul> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme:</p> <ul style="list-style-type: none"> <li>- Understanding of main benefits of the herbs used in European food</li> <li>- some techniques to create an eatable garden in small urban spaces.</li> <li>- the re-use of materials and to create new features in vacant spaces.</li> </ul>   |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning /blended learning/: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- group discussions</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- workshop</li> <li>- self study</li> </ul> </li> </ul>  |

## 1. Abstract

The module aims to introduce the main benefits of the herbs used in European food and identify some ways and techniques to create an eatable garden in small urban spaces. These techniques also aim to encourage the re-use of materials and to create new features in vacant spaces.

**Key-Words:** Healthy food, nutrition, recycling, sustainability.

## 2. Introduction

The increased demand for a healthier life coupled with a progressively aging European population, has tendentially encouraged citizens to take a growing awareness about food.

The European market is the second largest consumer of spices, seasonings and herbs, being the most important the parsley, the thyme and the oregano. The use of natural products cultivated at home without pesticides therefore is an interesting alternative in Europe and also in the rest of the world.

Nevertheless, the use of urban space becomes increasingly expensive and complicated due to the growing world population and its agglomeration in large cities. Then come some questions: Why not cultivate your own food instead of buying it? How to do it with the constraints in the existing space today?

The cultivation of herbs at home or in small spaces demonstrates that it is possible, even in small spaces, producing at least part of own food and have fresh and healthy food always available on table.

There are several models and cultivate procedures that can be adapted to every need, so, after the presentation of some of these, it is expected to learn about obtaining a better use of available spaces as well as how to take advantage of natural foods in diet, using recycling materials.

## Section I

### 3. Core contents

#### 3.1. The Role of Herbs in Food

Known since ancient times, herbs have been used in the kitchen mainly due to their medicinal value. Religious traditions and the flavor and good taste given to the recipes and dishes are other reasons.

In the Middle Ages, the culinary use of spices intensified, becoming a way to color and decorate the dishes. The Romans, through their travels, were responsible for the introduction of rosemary, thyme and savory in Central Europe and for bringing the Middle parsley, basil and sage. Also the discoveries of Marco Polo and the intensification of trade routes with the East led to the discovery of more herbs.

Currently in Europe, herbs remain essential in food and the choices of chefs are oriented to their innovative uses and for the more traditional combinations of each country. In the latter case, examples are the use of tarragon, thyme, bay leaves and garlic in France, the frequent use of basil, sage and rosemary in Italy or the oregano and parsley in Greece and also the use of parsley, oregano and the coriander in Portugal or sage and thyme in Britain.

#### 3.2. The use of herbs in food

Herbs can be divided into several categories: fresh, fragrant, citrus, sugary, spicy, bitter and pungent. Normally they are mainly used to impart fragrance and flavor and are not responsible for the dominant flavor of the dish. Nevertheless, when added early in the cook, they release their aromas. If placed at the end of the recipe or in the own dish before serving, the herbs retain their freshness, flavor, texture and color.

According to their characteristics, to obtain the best result and benefit, the herbs should be used in different culinary moments, as appears below.

In addition to the leaves, flowers and also the seeds of herbs have use in cooking to enhance the flavor of foods. It should also stress the importance of their use in fresh rather than frozen or dried.

## Moments of Use

Dried herbs : always at the beginning of cooking  
Tough herbs (rosemary, lavender and thyme): Before or during the cook process.  
Because their resistance to long cooking processes, to recover flavor may also be added bites at the end.

Strong herbs (mint, tarragon, marjoram and lovage): added during cooking.

Re-use of materials.

Waste production decrease.

### 3.3. The importance in cooking

Herbs positively transform the food and some combinations seem even exist to be used. Examples are the basil with tomato, tarragon with chicken, thyme and rosemary with lamb meat and oregano with cheese and eggs. Yet to reveal the fragrance of fresh herbs in salads or cooked vegetables scattered about and the importance and uniqueness of the aesthetic and decorative effects of different types and formats leaves in specific recipes and dishes. While the farming of fresh herbs at home is not usually related to the presentation of the dish but with concerns about the taste and health, it is a fact that the aspect can be considerably improved with the resources of some herbs. Even the best stews, casseroles or soups can become more appetizing and attractive when the fresh herbs are chopped and spread at the last moment. Moreover, the herbs also make them different, more attractives and embellish the broths and sauces.

### 3.4. Herbs most commonly used in Europe

There are several herbs included in gastronomy, outstanding among which are the more frequently used in Europe .

- **Chives** – The chive goes well with almost everything giving it a very special flavor. Can be used from salads to cooked meat, being good companion of many dishes. Chives should not be used chopped. Must be cut with scissors and added only between 2-5 minutes before the dish be served to maintain its characteristic flavor.
- **Coriander** - Together with the parsley, coriander are one of the herbs most commonly used in the South of Portugal, being an integral part of the

Mediterranean diet. Originating from southern Europe and the Middle East, coriander distinguished by flavor, and taste that give the recipes.

- **Peppermint** - Probably the herb with the most striking aroma. Originally from Asia, the peppermint is used for various purposes, ranging from the confection of teas and juices (eg pineapple and mint), to its addition to fruit salads, among others.
- **Laurel** - The laurel is identified by the particular smell and the intense flavor that distinguishes it from other aromatic herbs that usually does not have a strong flavor. When used in high doses or prolonged cooking intensifies the flavor. Thus, moderation in their use and their removal before serving is recommended due to the bitter taste that can instill. It is usually associated with meat recipes and fish.
- **Oregano** - Oregano are excellent ingredients for salads, pizzas or snails, where are considered the main secret of its magnificent flavor. It comes from a plant that likes a lot of sun and is very resistant and very good for growing at home.
- **Parsley** - With white flowers and aromatic leaves with a particular smell is the main aromatic herb used in Portugal and gives the characteristic and special taste to many dishes of Portuguese cuisine. While in some countries is traditionally used only for garnishing food, the fresh parsley is also an excellent activator of flavor in soups and sauces. When added to a bit of crushed garlic and flavored extra virgin olive oil is a finishing touch to meat dishes and grilled fish.
- **Basil** - Basil has in its leaves (green leaves) an astonishing aroma and pungent flavor. Widely used in Italian and French cuisines to flavor the tomato, is also mixed in salads and various sauces like Italian pesto. The leaves should be torn with fingers into small pieces so do not lose their color (just in case the pesto they shall be cut off).
- **Thyme** - It is suitable for long cooking and stews and can be used in dry and cool, with no loss of flavor. It is a good combination with meat (lamb, pork, chicken), fish and eggs. Its important to have attention to the amounts of thyme used in order to its flavor not overpower all the other ingredients in the recipe.
- **Pennyroyal** - It has aroma and refreshing taste, similar to that of peppermint. It is ideal with fruit salads or vegetables, lamb, dishes, sanils, juices, cocktails and teas. It is often used in fish stews and other cooked, such as the more traditional soup in Alentejo region-Portugal ("açorda").



- **Tarragon** - The flavor of tarragon leaf is sweet and slightly spicy at the same time, similar to anise. Incorporates a special touch in salads, fish and meat dishes, sauces, olive oils and vinegars. It is used to flavor soups, sauces, stuffings, fish dishes, poultry dishes, roast beef, steaks and also for omelets, asparagus, crab, boiled eggs and white cheese.
- **Rosemary** – The rosemary combines with pork and poultry meat, in fish roasts, lamb, goat and calf, and, in baked potatoes and sausages (sausages). Can also be used in sauces and grilled. It has fresh and sweet taste and is recommended in the preparation of meat, especially pork and lamb and potatoes and flavored butters. Your sprigs are also very decorative.

### 3.5. Nutritional and functional properties of herbs

“Let food be the medicine and the medicine be the food”, is an advice with more than three thousand years, assigned to the father of western medicine, the greek Hippocrates which clearly demonstrates the link between nutrition and its medical benefits. Thus, an healthy diet is the basis of a good life.

Generally, herbs are known to be able to replace salt even in marinades, making healthier foods. Individually, however, earn very distinct features, some proven and others culturally transmitted, as listed as follow.

- **Chives** – Accelerates digestion, stimulates the appetite and, strengthens the stomach. Lowers blood pressure. Containing vitamins A and C is used in addressing the deficiencies of these vitamins.
- **Coriander** – The seeds are rich in retinol, thiamine, riboflavin, niacin, calcium, phosphorus, iron and ascorbic acid. The fruit also contains vitamin C. The coriander are warmers, carminative and stimulant of the digestive functions. Help disguise the breath when chewed immediately after the consumption of garlic. They are rich in magnesium, calcium, iron, phosphorous, fibers and ascorbic acid. The coriander tea relieves stomach pains and flatulence problems. Some cultures believe they are aphrodisiacs and increase the mammary glands.
- **Peppermint** – The peppermint tea, made from the leaves, is a known diuretic and dewormer and an excellent stress reliever. It is also used to combat the stomach pains. The leaves contain vitamins A, C and B complex , minerals as calcium, phosphorus, iron and potassium.

- **Laurel** – The laurel is rich in iron, Vitamin A and Vitamin E. The tea from its leaves have the power to relieve menstrual cramps, regulate menstrual cycle, help heal skin infections and ear, combat the fatigue, the hemorrhoids, the rheumatism and the bruises and also help make better digestion and act as appetite stimulator. The oil made with laurel berries is know for its anti-inflammatory properties.
- **Oregano** – The active components of oregano helps fight dyspepsia, nausea and flatulence, by stimulating the gastric and biliary functions. In addition is diuretic and a good source of nutrients such as iron, manganese, fiber, calcium, vitamins (A and C) and omega 3. It can also be used to reduce cholesterol levels and treating cancer colon. The oregano tea effectively helps fight the toothache, colds, cough and hoarseness.
- **Parsley** – Considered an anthelmintic, carminative and stimulant of the digestive functions is indicated in cases of flatulence and diarrhea. Helps to disguise the breath when chewed immediately after the consumption of garlic. The parsley other functions such as diuretic action, stimulating and antiseptic, especially in urinary tract infections. If it is consumed raw is rich in vitamins A, B, B2, C and D.
- **Basil** – Stimulates the appetite, accelerates digestion, prevents the swelling and improves kidney function and mucous. The gargling with Basil relieve sore throat, mouth ulcers and bad breath. In some cultures, it is believed that Basil is great for people with problems of aggression and that their tea helps timid people to release the contained love. Also prevents the entry of negative energies when placed in the front door.
- **Thyme** – This herb is considered a healthy salt substitute. It is rich in vitamins C and B complex and magnesium. It is considered digestive, anthelmintic and stimulant, while helping to relieve headache. In oil is used to rinse your mouth against bad breath, sores or inflammation. The thyme tea is indicated for the treatment of coughs, colds and flu. It is also considered a good companion in times of hangover.
- **Pennyroyal** –In some areas of Portugal the pennyroyal tea remains a highly recurrent remedy in case of flu, constipation, coughs and bronchitis. Also acts as a digestive.
- **Tarragon** - The tarragon stimulates the appetite and speeds up digestion. It has a diuretic and anti atherosclerotic effect. The Tarragon leaves are rich in iodine, in minerals and in vitamins A and C. The tea of tarragon is a digestive and tonic,

relieves menstrual cramps , helps in proper functioning of the digestive system and is a good stimulant to the brain, heart and liver. The tarragon is also known as "dragon herb".

- **Rosemary** – It acts as a digestive and diuretic. As tea, helps digestion, is a great sudorific, revives the memory, helps to combat fever and pains, and is also suitable for colds and bronchitis and to alleviate hair loss and the dandruff. Originally from the Mediterranean, rosemary is a symbol of fertility and in the Middle Ages it was used to purify the sick's rooms. As its odor is stimulating, the Greek students wore branches in their hair to alert the memory during exams.

## Section II

### 4. Put into practice




#### 4.1. From Theory to Practice: Your Eatable Garden




After presenting the main herbs used in gastronomy and their nutritional and functional benefits, this second part, more practical, intends to show how to achieve one own eatable garden and its advantages.




The habit of consuming food grown in small gardens, helps to provide a good physical and mental development and offers people who grow a better quality of life and a healthier diet. Additionally, all the food collected at home is rich in nutrients and is generally not treated with pesticides. Also, there are other benefits as those which are listed below.



It is not possible to list all the ways to achieve your own eatable garden. Thus, here are presented some options on how to grow, care and manage each one of the varieties of herbs previously presented.

|   | Characteristics   | How to cultivate   |
|---|---|--|
| Chives  |   |  |
|    | <p>It has very thin, tall, green and cylindrical leaves. It is an onion family member with more attenuated taste. Yellow leaves on the plants may appear due to lack of light or only of natural causes in the inner sheet. It is a plant that has a very vertical growth.</p>              | <p>In spring and summer it is advisable to have the chives abroad and practice a proper watering, several times and with a little amount of water (almost every day). In the autumn, the plant can be removed and placed in a window, to continue to develop even in winter. Harvesting should be moderate because the foliage is fragile and weakens easily. The cut should not exceed 1/3 of the leaves. Supports low and high temperatures and temperature fluctuations, provided no less than 5 ° C and above 25 ° C.</p>  |
| Coriander   |   |  |
|   | <p>Plant with green leaves, more rounded but similar to parsley. It is a plant with a smell and a taste characteristic and soft leaves. In case of big temperature fluctuation the plant has a tendency to condensation in the bags.</p>  | <p>This plant needs a lot of care (is quite sensitive). It should be irrigated with little water quantity and often (when the surface of the compound is dry) it should be placed in a warm place. It needs light and be protected from wind or dries and dies. Inside home their growth is limited and takes some time. To one guaranteed success, the plant can be transplanted to the garden during the warm months.</p>  |
| Peppermint  |   |  |
|  | <p>The Peppermint is a lively and vigorous herbaceous plant that has erect leaves and a strong and pleasant aroma. From a cut, several branches can born. You can have black or yellow leaves at the base when there is lack of light in the center of the plant from a certain height.</p> | <p>It is a plant resistant to high and low temperatures, but it does not tolerate frost neither the minimum temperature which ensures the vitality of 5 degrees.</p> <p>It grows best in humid conditions and should be irrigated constantly although the roots can not get flooded because they can rot. Thus, a drainage system should be included to prevent water accumulation. The plant can be successfully cultivated outside home, preferably into a clay vessel, maintaining the compound wet to the touch.</p> <p>Depending on their development, the highest leaves and stems should be removed so that light reaches leaves growing. It is recommended to keep the temperature above 10 ° C.</p> <p>It should be planted always alone. "Its roots are aggressive killing nearby plants or suffer for a lack of space."</p> |

|   | Characteristics  | How to cultivate  |
|---|--|---|
| Laurel  |  |   |
|    | <p>It is a species native of the Mediterranean. It varies between 5 and 10m although it may reach up to 20 m high. The leaves are showy, leathery and with a very characteristic odor and therefore widely used in cooking. The fruit is a berry with black color when is mature. Furthermore, the wood from laurel is of excellent quality. Some of the most common trees have conical or pyramid format.</p> | <p>The plant needs a lot of sun to grow and therefore before planting should be chosen the most appropriate place for you to receive the sun's rays. Also take into account that frost may damage the plant so, if you live in an area prone to cold, it should be protected in winter. It requires good drainage so that the roots do not waterlogged and become rotten. Although possible their reproduction in cuttings, the growing takes a long time. Thus, it is recommended its purchase and posterior replace into a larger pot or a place in the garden. Watering should be moderate because its features allow the plant to resist very well to drought. As for pruning, we emphasize that laurel is an ideal tree to offer different ways options.</p> |
| Oregano   |  |   |
|  | <p>The oregano are herbaceous and perennial plants with erect stems, opposite leaves, oval format and dark green color with approximately 35mm in length. It is characterized by their very aromatic smell and bitter taste. With an typically horizontal development may present, in longer days, flowers and some vertical stems.</p>  |   |
| Parsley   |  |   |
|  | <p>Parsley is a biennial herbaceous plant with white flowers and aromatic leaves that are either crinkly or flat. It forms a rosette of very divided leaves whose mild flavor, it makes the plant one of the most populars.</p>  | <p>Parsley survives both in summer and in winter (since sheltered from the cold or taken to the interior window sills). It is a plant that withstands temperature fluctuations.</p> <p>The parsley likes a reasonable irrigation to maintain the wet compound. Excessive watering leads to the formation of fungi. So it is convenient irrigate frequently but in small quantities.</p> <p>Sensitive to plagues, in order to prevent its exposure to plagues, the parsley should be placed next to the chives, asparagus or tomatos.</p>  |

|   | Characteristics   | How to cultivate   |
|---|---|--|
| Basil   |   |  |
|    | <p>The basil is a herbaceous plant, green leaves and oval, very aromatic and fragrant. The shoots and leaves the smaller center are more wrinkled than the others.</p>  | <p>Very sensitive plant where a leaf pinch creates a contusion (turns black) within 10 minutes. At the same time, it does not like extreme temperature changes, or very low temperatures (up to 12 degrees).</p> <p>The best way to take care of the basil is watered in small amounts so as not to flood.</p> <p>The basil grows rapidly and assumes its appearance as plant increasing the content of essential oils produced, which improves the flavor.</p> <p>It should be placed in a warm place and plenty of light. Its aroma get away flies and mosquitoes. The temperature should be maintained above 12 ° C.</p>  |
| Thyme   |   |  |
|  | <p>Thyme is a semi-shrubby plant with creeping stems, leaves and small flowers (pink or white) and a strong and intense aroma. It is a Mediterranean species that, despite be a creeping herb can be similar to a vine species.</p> | <p>The thyme likes well-drained soils but it adapts well to very dry soils. The very wet winters and waterlogged land can contribute to rot and die early. The watering in the peak hours should be avoided and be done only if the soil is very dry.</p> <p>In order to prevent the basis lignification and to remain strong and healthy for much longer, should be pruned right after flowering. Pruning should be frequent when growth is very vigorous. It's a great companion plant to other plants in the garden. Live well with the rosemary. It can be harvested at any time of year. Exists even in the colder months of the year when protected or placed inside home. Prefer temperate locations, although it is resistant to frost. The thyme withstand temperatures between 4 ° C and 25 ° C.</p> |
| Pennyroyal  |   |  |
|  | <p>It is one of the most known species of the genus Mentha. It has erect stems quadrangular, highly branched and leaves lance-shaped, in color from medium and dark green. The flowers are small and pink.</p>                      | <p>It is an aromatic herb that prefers mild climates and places with plenty of light. Prefer moist soils, requiring quite irrigation. Can loom up to 50 cm, with rapid growth. The Pennyroyal requires temperatures above 7 ° C. It is considered a great flea repellent and moths</p>   |

## 4.2. Building your eatable garden

There are ways to mount an eatable garden suitable for the size of the available space, be it indoors or outdoors. This section will present some models that can help to implement alone an eatable garden.



### Vertical garden with PVC

Can be inserted into balconies, windows or outdoor areas.



#### Materials needed:

3 rails PVC;  
6 covers or PVC  
trim; 2 steel cables  
of 1/8 cut to the  
desired extent; 6  
rivets; 2 2 hooks to  
attach;

The tools: drill, tape  
measure, pen for  
tagging and  
protection for the  
eyes.

#### Step by step:

1. With the help of the tape and pen, mark a straight line from end to end of the gutter. Then, with the drill, make distant holes 5-10 cm from each other;
2. Choose the location where the garden will be suspended (can be a wall or wooden stand) and attach the two hooks - for the correct distance between them, grab the gutter and calculate the distance between third holes of the two ends;
3. Then pass the two steel cables through third holes on each end of the rail. In the bottom of the stand, attach the steel tube with a rivet and finish with a metal semi-ring. Then, attach the cables to the hooks.
4. Finally, just slide the PVC caps.





The same technique can be used for indoor and outdoor.

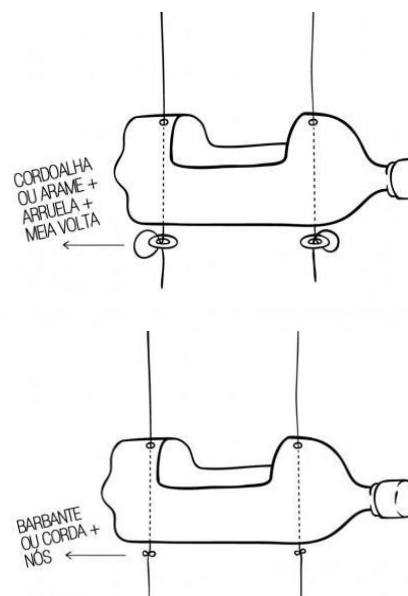


### Materials needed: Setp by step:

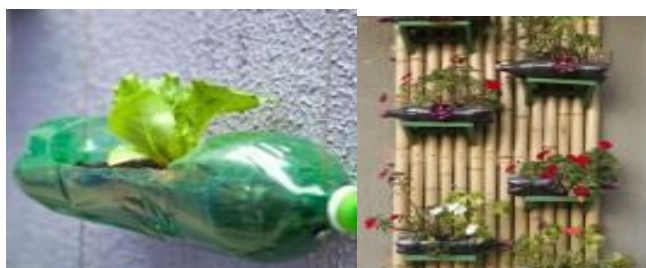
Scissors; Rope  
or clothing line;  
Cordage or wire;  
Seeds or small  
plants;

PET bottles of 2  
liters (clean and  
empty).

1. With scissors cut a piece of the side of each of the PET bottles to be used. The cut must be similar to a window.
2. Near each of the openings, make one hole with the tip of the scissors. Remember that it is important the bottles maintain their symmetry to be hanging on the wall.
3. Make a small hole at the bottom of every bottle to drain excess water in the soil after the irrigation.
4. At the extremities of the PET bottles pass string and tie a knot more or less in the place where the pet bottle will stay hanging.
5. Place the compound, preferably fertilized and, then, the seed or the plant. Remember to put a layer of clay stones or newspaper in the bottom of the bottles, to allow water to drain.
6. Drizzle daily for the plants to grow properly and healthily.



This technique can also be used in different formats as shown below.



### 3

## Shoe rack

This technique can be placed indoors or outdoors and is easy to perform.



#### **Materials needed:**

A shoe rack to hang;  
Potted seedlings or just seedlings;  
Soil/Humus;  
Hooks for hanging.

#### **Step by step:**

1. Hang the shoe rack at the desire location with the help of hooks;
2. Attach the pots with seedlings in pocket or, if you prefer, just put the seedlings;
3. Complete with the soil/humus;
4. Drizzle with a spray bottle of water to prevent its accumulation in the pockets and the deterioration of the material.

# 4

## Other creative and simple ideas

These techniques can be used in very small spaces and do not require much material or are difficult to build.



### Questions

1. Name two benefits of producing your own herbs.

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2. How long an eatable garden should be exposed daily to the sun?

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3. How can retain longer the characteristics of herbs after harvest?

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4. What is the main advantage of using aromatic herbs in food?

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5. Why re-use materials in the construction of an eatable garden?

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6. During cooking, in what moment should dried herbs be placed?

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7. Give two examples of the main uses of herbs in the southern of Portugal, specially related with the Mediterranean diet.

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8. Which herbs presented here have omega 3 and are known to reduce cholesterol?

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# Are you interested?

## 5. Further readings

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## Teaching Unity

### How to stay healthy ... With Grandma Remedies



## **Table of contents**

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. Natural/Traditional Medicine**

#### **3.2. The Mediterranean diet and health maintenance**

#### **3.3. The various uses of plants**

### **4. Put into practice**

#### **4.1. From theory to practice**

#### **4.2. Application of herbs for treatment**

### **5. Further readings**

### **6. Bibliography**

# The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>How to be healthy with grandma's medicines... natural medicines</b>  |
| <b>Area</b>  | Healthy Diets   |
| <b>Main Target Audience</b>  | The end users of the module are: <ul style="list-style-type: none"> <li>• Adults interested in healthy and organic nutrition issues</li> <li>• City Residents</li> <li>• Adult Training Centers</li> </ul>  |
| <b>Description of the module and general aims</b>                                | This module allows the participant to understand: <ol style="list-style-type: none"> <li>(1) Traditional and natural medicine principles</li> <li>(2) Traditional and natural medicine recipes. <ul style="list-style-type: none"> <li>- ingredients characteristics</li> <li>- their health benefits</li> </ul> </li> </ol>  |
| <b>Learning Time and Duration</b>  | Learning time and maximum duration for the training related to the module:<br>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training;<br>- 8 hours for visits (farms, processors, markets)<br>- 8 hours of practical work.  |
| <b>Learning Objectives</b>   | Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module.<br>In this training unit it is intended for the student to acquire knowledge about natural / traditional medicine in a practical way, while learning of the ingredients used in traditional pharmacopoeia. It is intended for the student to get to know about plants and herbs as well as about the preparation of recipes at home. |
| <b>Competences achieved</b>  | Specific competences related to the project theme: <ul style="list-style-type: none"> <li>• knowledge about the health value of different ingredients and herbs;</li> <li>• how to prepare natural medicines for the most common ailments</li> <li>• how to use natural medicines for the most common ailments</li> </ul>   |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | Type of activities considered useful for the training of this module: <ul style="list-style-type: none"> <li>• Theoretical learning /blended learning: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- group discussions</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- workshop – preparing the recipes</li> <li>- self study – exercises</li> </ul> </li> </ul>                          |



## 1. Abstract:

This module presents traditional medicinal recipes for the most common ailments and that are proven to work. These recopies, as a practical training component, serve the purpose of teaching ways to use the products to maximize the effects and minimize undesirable effects, contributing to maintain a healthy and balanced body condition.

**Keywords:** Natural Medicine, Homemade Medicine, Traditional Medicine, Medicinal Plants

## 2. Introduction

The History of Natural Medicine goes back to the beginnings of the History. Since ancient times people have sought remedies in nature for the relief of their diseases. The beginning of the use of medicinal plants was instinctive and plants were the basis of medical treatments through much of human history. In earlier times there was insufficient information on the reasons for the disease or on which plant and how it could be used as a cure, so everything was based on experience. Over time, the reasons for the use of specific medicinal plants for the treatment of certain diseases has been discovered; thus, the use of medicinal plants gradually abandoned the empirical framework and became based on explainable facts.

By the sixteenth century, the plants were the source of treatment and prophylaxis. Modern medicine uses many compounds of vegetal origin as the basis of tested and approved drugs and herbal therapy operates to apply modern standards to test for the efficacy of herbal medicines that are derived from natural sources. The decreasing effectiveness of current synthetic drugs and the increase on their contraindications make the use of natural drugs popular again. So the use of medicine that is based on plants has become an accepted part of modern medicine. Treatment with medicinal plants stimulates the immune system, making it able to fight disease more holistically. However, it should be borne in mind that the natural medicines may not be sufficient or suitable for all people or all diseases.

In this module some recipes of natural medicines that are used most commonly are presented

It is important to know that "natural" does not mean "harmless". Certain plants that can be found commonly in our woodlands, parks and gardens are dangerous, sometimes mortal, if consumed by humans (every year people die in Portugal due to an improper use of plants and mushrooms most often by lack of knowledge or identification error).

## Section I

### 3. Core contents

#### 3.1. Natural/Traditional Medicine

*“Natural medicine and modern medical care are not mutually exclusive”*

Homemade / natural remedies are being increasingly used due to several factors which include the pronounced side effects of conventional medicine and the development of resistance of microorganisms to conventional drugs.

The cure with medicinal plants is as old as humanity itself. The connection between man and his search for drugs in nature dates back to the distant past. The awareness of the use of medicinal plants is a result of many years of struggle against diseases in which man learned to collect drugs in shells, seeds, fruits and other plant parts. Modern science has recognized its effects and has included in modern pharmacotherapy a range of products of plant origin, known to ancient civilizations and used over the millennia.

The development of knowledge related to the use of medicinal plants as well as the evolution of consciousness increased the ability of pharmacists and medical doctors to meet the challenges that have arisen that can not be answered adequately by synthetic drugs.

From immemorial times people have tried to find drugs to relieve pain and cure different diseases. In each period, each successive century of the development of humanity and advanced civilizations, the healing properties of certain medicinal plants have been identified, examined and passed on to next generations. The benefits of a society were transferred to another, which updated the knowledge and discovered new properties, to the present day. The continuous and perpetual interest of people in medicinal plants, today culminated in a fashion with a more modern and sophisticated aspect in their processing and use.

#### 3.2. The Mediterranean diet and health maintenance

The Mediterranean diet is recognized as Intangible Heritage of Humanity by UNESCO, and this distinction reveals both its importance in healthy eating, but also its importance as oral tradition of the people.

The traditional pharmacopoeia also reflects the principles of the Mediterranean diet since there are several studies showing that people who keep the Mediterranean diet

are among those whose average life expectancy is among the highest, with lower rates of heart disease and certain types of cancer.

This diet is rich in foods with high concentrations of complex carbohydrates, fibre, vitamins and minerals and numerous antioxidants that protect health. As well the low consumption of foods high in saturated fat and high-calorie foods, which is key to helping prevention of diseases.

Home remedies for colds, cough, throat inflammation, stomach ailments or diarrhoea were usually exchanged between family members. Older generations had invaluable information transmitted to the next generation via matriarchal lines.

### **3.3. The various uses of plants**

The products that are part of the natural Mediterranean Pharmacopoeia, form part of the local landscape and are characterized by being what the land produces and is available for use.

Currently we study the properties of certain foods that can be seen as medicines. The term Nutraceutical (a term formed by combining the words "nutrition" and "pharmaceutical") is used to refer any substance which is considered as part of a food or food that provides health benefits beyond the basic nutritional value found in food. During the last decade, a large number of nutraceuticals has been identified from natural sources, some of which are present in the Mediterranean diet. Depending on the products they can prevent chronic diseases, improve health, delay the aging process, increase life expectancy and improve structures or functions of the body. People's lifestyle has been associated with the development of neuro degenerative disorders, including Alzheimer's disease, Parkinson's disease, multiple sclerosis, meningitis and brain tumour. Extensive research in recent years indicates that nutraceuticals derived from spices such as coriander and garlic target inflammatory pathways and thus can prevent neuro degenerative diseases.

In this module we will deal with some foodstuffs and / or plants present in the Mediterranean diet that can be used as natural medicines or which consumption / use constitutes a health benefit.

#### **Garlic (*Allium sativum*)**

Clinical evidence of the value of garlic, both on the prevention and the treatment of many diseases, is justified both by its content of minerals and vitamins and for its therapeutic effects as well as by the presence of some substances capable of reducing the levels of lipids and blood cholesterol. Garlic also functions as a hypotensive agent that helps control blood pressure without causing side effects. It has Selenium - a mineral that protects the

heart, preventing the formation of atheroma, which leads to clots, and normalizing blood pressure.

The garlic also has allicin, alina, both with antibacterial and anti-inflammatory effects.

- Prevents coronary and circulatory diseases. Hypotensive effect due to peripheral vessel expansion especially the legs, eyes and brain. Recommended for treating cerebral sclerosis.
- Prevents heart attacks
- Reduces blood clotting
- Reduces blood pressure
- Prevents platelet aggregation; useful in atherosclerosis and thrombosis.
- Anti-bacterial, viral and fungal infections (such as *Candida albicans*).
- Reduces the risk of cancer of the stomach, gastric, and others.
- Reduces sugar and glucose levels, aiding in the treatment of diabetes.
- Hypo-cholesterol effect (lowering cholesterol).
- Soft anti anthelmintic effect (treatment of intestinal parasites).
- Expectorant effect.
- Rubefacient and vesicant in external use.

It is also used to combat arthritic problems, including in external use, and in chilblains and warts. In some places it is used also as a preventive of cancer.

Garlic contains fructosanos (chains of fructose molecules) in abundance which gives it a clear diuretic action. It contains vitamins A, B1, B2, C, an amine of nicotinic acid, choline, hormones, alicetofina I and II sulfocianic acid, iodine and traces of uranium. This complex composition causes the garlic to have a very diverse action in the body.

### **Olive Oil**

Olive oil is a widely used product in the culinary of various countries, is extracted from the olives, grown mainly in the Mediterranean region. Since thousands of years ago that the oil is present in food and is also from antiquity that the medicinal properties of this miraculous oil are recognized. Egyptian women realized that olive oil was an excellent emollient for skin. In turn, the Greeks used the oil extracted from the olives to massage, believing that it had effects on the health of the body and the mind.

Today we know that our ancestors were right. In addition to serving as a spice, leaving other foodstuffs tastier, olive oil has many medicinal properties derived from its composition because it has vitamins A, D, K and E, and antioxidants, which slow the aging of cells. The most striking is that even though is a food rich in fat and calories, the oil

contributes to the reduction of blood cholesterol levels and also for the reduction of fat accumulation in the abdomen area.

These benefits occur for its richness in monounsaturated fats, helping to reduce bad cholesterol. Studies published by the American Diabetes Association showed how the regular consumption of olive oil helps prevent fats that accumulate in the belly. It's not just an aesthetic issue, but also a health issue because fat cells that stick to belly hinder the production of insulin by the pancreas, causing diabetes. Other diseases are also related to the accumulation of fats, such as high blood pressure and cardiovascular problems. Therefore, olive oil intake is highly recommended by medical doctors and nutritionists.

To take advantage of these properties, experts recommend consuming 2 tablespoons of olive oil daily. It is important to remember that olive oil cannot be subjected to high temperatures, as with heating it loses its main properties.

#### **Dairy thistle** (*Silybum marianum*)

Liver protector helps the liver cells to regenerate more rapidly, has essential oils and in poultices reduces pain associated with varicose veins and facilitates healing of leg ulcers.

#### **Coriander** (*Coriandrum sativum*)

Stimulates appetite and combats indigestion, have anxiolytic activity, has anti nociceptive effect, improves memory, and also reduces cholesterol.

#### **Peppermint** (*Menta x piperita officinalis*)

Peppermint contains Vitamin A and Vitamin C, is used as a topical analgesic, has anti-inflammatory and soothing properties, helps relieve stomach and normalize gastrointestinal activity, increases the bile levels and their solubility, inhibits the growth of micro-organisms (Candida albicans, Herpes simplex, Staphylococcus aureus, Pseudomonas aeruginosa and influenza A and other viruses, etc.), prevents congestion of blood in the brain and stimulates circulation.

#### **Lemon** (*Citrus limon*)

Lemon has a high level of Vitamin C (which increases the immunological activity), stimulates appetite and has a slight antibacterial and antiviral effect and is particularly important during colds and flu because its mucolytic qualities allow anti-inflammatory effect. It helps to increase the resistance of the veins and arteries and regulate blood pressure, and it is also effective in reducing calcium deposits (kidney stones or bladder).

### **Honey**

Honey contains about 200 substances, including amino acids, vitamins, minerals and enzymes, has bactericidal activity against many microorganisms, accelerates wound healing, has anti-inflammatory and protective effect on gastrointestinal infections caused by bacteria and rotavirus. Honey has been commonly used for treating wounds before the advent of antibiotics but even today, despite the variety of existing antibiotic creams, in some cases, honey may be more effective in treating poorly healing wounds that resist to conventional treatments. By removing moisture from the wound through its high sugar content, honey inhibits bacterial growth and proliferation and blocks the passage of harmful external contaminants. And, as is inexpensive, can be the ideal choice in countries without access to modern medicines for the treatment of wounds. Studies have shown that burns covered with honey heal faster and with less pain and scarring than the burns treated with conventional medicines. There are already on the market curative solutions honey-based for wound care.

### **Oregon (*Origanum vulgare*)**

Relieves diarrhoea and flatulence, its essential oils fight stomatitis and pharyngitis, reduce cough, relieve sore throats and reduce toothache.

### **Parsley (*Petroselinum crispum*)**

Prevents kidney stones, has diuretics and anticonvulsants effects, stimulates appetite and the production of saliva and gastric juices. In poultice relieves pain and swelling associated with sprains. 15g a day ensure the needs of important vitamins. In high doses can be toxic.

## Section II

### 4. Put into practice

#### 4.1. From theory to practice

Presented the principles of Natural Traditional Medicine, we will go to the practical part of how to use the plants and how to consume or apply them on the body. Many home remedies are better when fresh ingredients are used, although some medications may be stored for some weeks in suitable containers, often in cold weather.

There are different forms of preparation which vary according to the intended purpose and are also conditioned by the characteristics of the products:

- **Infusion:** water is heated to boiling and then poured on top of the plant material in a container that can be a cup, sometimes is left to stand for a few minutes and finally it is drunk.
- **Decoction:** In the process of decoction, the herbs are boiled with water to extract the active ingredients from the plant. Generally, this method is used for tougher parts of the plant such as root, stem and the shell. During preparation, the herb is mixed with water in a container that is brought to the boil. The mixture is boiled for a few minutes, normally less than 5 minutes, but can reach 15 minutes, with the container partially capped. After boiling strain the material and is ready to drink.
- **Juices:** are obtained from fresh plant material squeezing the fruit, leaves or roots, and must be consumed immediately.
- **Cooking and bathing or washing:** it is a prolonged cooking of the plant material (during several minutes, far more prolonged than the rapid boiling of tea) and then with the water wash up the affected area or allow to cool slightly this water then dip the affected area in this lukewarm water.
- **Gargle:** do a prolonged cooking of the plant material (as above), allow to cool a little and then make up the throat gargle with this water.
- **Application of soaked rags:** make a long cooking of the plant material (as above), then soak up cloths / wipes (some people refer linen cloths) in that hot water and apply these cloths on the affected area. Keep soaking the cloth in the hot water when they cool down.
- **Vapours:** do a long cooking of the plant material (as above), then this water is placed in a container (bowl, bucket, bowl), and the person places he affected area over it and receives the vapours released by the hot water.

- **Poultice or plasters:** the plant material is applied directly to the affected area and kept there with a patch, a cloth, handkerchief or a bandage.
- **Direct application:** the vegetable material is applied directly to the affected area, but unlike the above, the application is not too long and not is bind.
- **Syrup:** The plant material is typically boiled for a while with honey or sugar resulting in a thick liquid which is usually taken with a spoon (soup, tea, one or a few tablespoons per day, often before eating). It can be stored in a container to consume until is gone.
- **Maceration:** the plant material is placed in a liquid (water, alcohol, spirits) that is put up to stand for a while; in some cases when using alcohol or spirits the solution can be stored in a container (jar) for many months or even years; often the resulting liquid is used to frictions in which the liquid is placed and rubbed into the affected area.
- **Smokehouse:** the plant material is burned (in the fire or coals), the vapours of the burn are allowed to spread around the house, or the person or its cloths are placed to receive these vapours.

## 4.2. Application of herbs for treatment

1

### Respiratory System

#### Colds and Flu States

- **Carrot Syrup**

2 medium carrots

4 table spoons of brown sugar

Start by peeling the carrots. In a bowl or cup, cut carrots to very thin slices and cover the bottom of the bowl, then add a spoon of sugar and continue the process alternating carrot slices and sugar until finish the carrots. Wait a few hours until the carrots begin to pour its juice. One to two tablespoons every day is holy remedy for the cough to go.

- **Flu**

Infusion of Mullein White + Horehound + Herb-bear + Coltsfoot+ Veronica: 1 pinch of each plant to a pint of water. Boil for 2 minutes and leave to infusion for 15 minutes. Take 3 to 4 cups daily.



- **Headaches**

Infusion of Lemon Balm: 20g of leaves for 1 liter of boiling water. Leave to infuse for 15 minutes. Drink 2 cups a day sweetened with honey.

Infusion of a preparation containing 10 g of each plant: Queen of the Meadows (Flowers) + Willow Bark (bark) + official Valerian (root) + Lavender (flowers) + Butter Rose (*primula elatior*) (flowers): Use 1 or 2 pinches of the above mixture in a cup of water. Boil and let steep 10 minutes. Drink 2 or 3 cups per day

Infusion of Valerian + Butter Rose (*primula elatior*) + *Thymus serpyllum* + Thistle + Verbena: 1 or 2 pinches of each plant in 1 liter of water. Boil for 1 minute and allow to infuse 15 minutes. Drink 2 or 3 cups per day.

- **Laryngitis**

Infusion of Elecampane (*inula helenium*) + Escabiosa + Agrimonia + *Hippophae rhamnoides*: 1 pinch of each plant to a pint of water. Boil for 2 minutes and infuse for 15 minutes. Take 2 to 4 cups daily.

Infusion of 15g ginger rhizome in 1 liter of cold water. Leave for 15 minutes to infuse. Drink 2 cups a day.

Gargles of Large Malva infusion (leaves and flowers): 20 g for 1 liter of cold water. Boil for just 1 minute. Leave to infuse for 10 minutes. Gargle 5 times daily.

Gargles of sauge (sheets): 20 g for 1 liter of cold water. Boil for 15 minutes. Leave to infuse for 10 minutes. Gargle 5 times daily.

- **Bronchitis**

Infusion of Eucalyptus: 10g of dried leaves for 1 liter of water. Leave to infuse for 10 minutes. Take three cups per day.

Coltsfoot Infusion: 10g of leaves or flowers to 1 liter of boiling water. Leave to infuse for 10 minutes. Take three cups per day.

Infusion of Pansies: 10g of roots for 1 liter of cold water. Boil 3 minutes and infuse for 15 minutes. Take 2 hot cups a day.

Infusion of pine shoots: Let to macerate in cold and then boil 3 minutes and allow to cool. Take three cups per day for 8 to 10 days.

- **Asthma**

Infusion of Coltsfoot flower: 10g of flowers for 1 liter of boiling water. Leave for 15 minutes to infuse. Filter and take four cups per day.

## 2

### Circulatory System

#### **Regulation of blood pressure**

- The consumption of 3 to 5 raw garlic per day appears to have a regulatory effect in blood pressure.
- Infusion of olive tree leaves: Place the olive tree leaves in a cup and cover with boiling water. Let cool properly covered, strain and drink immediately afterwards, to ensure a higher concentration of the active ingredient. It is recommended to take 3 to 4 cups of this tea per day.

#### **Regulation of blood pressure, arrhythmias and circulatory insufficiencies stabilization**

- Infusion of White Hawthorn: Place 1 teaspoon of dried leaves and flowers of White Hawthorn in a cup and cover with boiling water. Let cool properly covered, strain and drink immediately. It is recommended to take 3 to 4 cups of this tea per day for at least for 4 weeks.

## 3

### Digestive and Liver System

#### **Flatulence**

- Infusion of Celery + Juniper + Angelica archangelica+ Wild Pennyroyal : 1 pinch of each plant to a cup of water. Boil and leave to infuse for 20 minutes. Take three cups per day.
- Infusion of Angelica-archangelica: 10g of root for 1 liter of cold water. Boil for 2 minutes and infuse for 15 minutes. Take three cups per day.
- Infusion of anise-green: 10g of crushed seeds for 1 liter of boiling water. Leave for 15 minutes to infuse. Take 2 cups a day.

#### **Diarrhoea**

- Infusion of Horsetail: 20g of herb for 1 liter of boiling water. Take 1 or 2 cups a day before meals.
- Infusion of oregano: Pour a cup of boiling water over 3 tablespoons of dried oregano. Let to infuse for approximately 15 minutes and then strain. Take 2 to 3 cups per day.

- Infusion of Strawberry: 15g of plant for 1 liter of boiling water. Take 2 cups a day.
- Loquat bark infusion: 10g of bark for 1 liter of boiling water. Take 2 cups a day.
- Use half teaspoon of locust bean crushed and reduced to flour sprinkled on foods such as with spices.

### **Liver Protection**

- Pour 1 cup of boiling water over 1 teaspoon of fruits of Dairy-Thistle and strain after 15 minutes. Drink 3 cups of this tea during the day, on an empty stomach in the morning, before lunch and at bedtime.

### **Bladder Disorders**

- Pour 1 cup of boiling water over 1 teaspoon Rosemary leaves. Let this infusion covered for 10 minutes and then strain. Drink 3 cups of this infusion during the day.

### **Stimulator of appetite**

- Crush 1 teaspoon of coriander seeds. Pour a cup of boiling water on the grounded coriander, leave to infuse for ten minutes and then strain. Drink a cup before meals.

## **4**

## **Urinary System**

### **Cystitis**

- Infusion of Juniper + Blueberry + Elecampane (*inula helenium*)+ Thyme + Lavender +Mauve: 1 pinch of each plant for 1 cup of water. Boil and let stand for 15 minutes. Take 4 cups daily.
- Infusion of white birch: 10g of dried or fresh leaves in 1 liter of boiling water. Let stand for 10 minutes. Drink three cups per day.
- Infusion of common Juniper: 30g of berries for 1 liter of boiling water. Let stand half an hour. Drink 2 cups a day.

### **Kidney Stones Prevention**

- Pour 1 cup of boiling water over 2 teaspoons of chopped leaves of parsley. Leave to infuse for about 15 minutes covered and strain. Drink three times a day before meals.

**Eczema**

- Patch of Escabiosa (*Scabiosa succisa*) + Chamomile infusion: Make an infusion with 2 pinches of each plant for half a liter of water. Boil and leave to infuse for 20 minutes. Apply to compress or clay poultice in the morning and evening and keep for about 20 minutes.
- Compress of Aristoloquia common (*Aristolochia clematitis*) infusion: Make an infusion of 10g of plant for 1 liter of cold water. Boil 1 minute and let stand 30 minutes. Apply compresses 1 or 2 times a day and keep for about 10 to 15 minutes.
- Walnut tree infusion: Make an infusion of 20g dried leaves for 1 liter of cold water. Boil and let stand for 10 minutes. Take 2 cups a day. you may also apply compresses 1 or 2 times a day and keep for about 10 to 20 minutes

**Impingens**

- Infusion of Labaca + Elecampane (*inula helenium*)+ Escabiosa + common fumitory or earth smoke (*Fumaria officinalis L*)+ Hops: 1 pinch each plant for 1 liter of water. Boil and let steep for 15 minutes. Take 3 to 4 cups daily.

**Warts**

- Daily rub the warts with flowers of Stud Marigold.
- Apply daily on the warts the juice of fresh Quelidonia (*Chelidonium majus*) (also called herb of warts) .
- Apply daily of fresh garlic juice on the warts.

**Varicose ulcers in the legs**

- Use in poultices: pour 1 cup of boiling water over 2 tablespoons of the fruits of thistle-milk and let steep 10 minutes. Dip a linen cloth in this decoction and tie around the lower leg. Leave covered with a towel until the cloth is cool. Repeat several times a day.

**Treatment of difficult to heal wounds**

- Put impregnated non-woven with sterile honey directly in the woundon and and replace every 2 days.

## Questions

Choose the right answer.

1. Garlic has properties:
  - a. antifungal
  - b. anti-bacterial
  - c. vasoconstrictor effect
  - d. points a and b are correct
2. Olive oil has the following properties:
  - a. Olive oil has vitamin C and K
  - b. Olive oil is low in monounsaturated fats
  - c. Olive oil contributes to the reduction of cholesterol levels in the blood
  - d. Olive oil contributes to increased abdominal fat.

In each of the following points mark the wrong answer.

3. Lemon:
  - a. It is effective for colds
  - b. It has bacteriostatic effect
  - c. Facilitates digestion
  - d. It has anti-inflammatory effect
4. Lemon:
  - a. Is rich in vitamin C
  - b. Has mucolytic effect
  - c. Hampers digestion
  - d. Fights warts
5. Parsley
  - a. Is rich in Vitamin A and C
  - b. Prevents the formation of kidney stones
  - c. Prevents loss of appetite
  - d. Is low in Potassium
6. Peppermint:
  - a. Stimulates blood circulation
  - b. Is low in vitamin C
  - c. Has bacteriostatic effect
  - d. Is topical analgesic.
7. Rosemary
  - a. Has antiviral effect
  - b. Is desirable to facilitate digestion

- c. Stimulates blood circulation
- d. Has bactericidal effect

**8. Coriander:**

- a. Facilitates digestion
- b. Prevents the formation of kidney stones
- c. Prevents loss of appetite
- d. Does not have hepato-protective effect

**9. Oregano:**

- a. Causes flatulence
- b. Has bactericidal effect
- c. Fights Stomatitis
- d. Has antitussive effect

**10. Rosemary**

- a. Has Antiviral effect
- b. It has bactericidal effect
- c. Stimulates blood circulation
- d. Can be used in pregnant

**11. Mark the true statements.**

- a. Natural medicines are harmless.
- b. Natural medicines have a more holistic performance.
- c. Natural medicines usually have less side effects.
- d. There are natural remedies for all diseases
- e. Nutraceuticals can prevent chronic diseases

## Are you interested?

### 5. Further readings

<https://www.facebook.com/media/set/?set=a.452200221572934.1073741853.149469411846018&type=1>

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## Teaching Unity

### How to Eat Healthily

... With Traditional Cuisine from Alentejo





## **Table of Contents**

### **1. Abstract**

### **2. Introduction**

### **3. Core contents**

#### **3.1. The Traditional Cuisine from Alentejo**

#### **3.2. Ancestral wisdom for food equilibrium**

#### **3.3. The Mediterranean diet**

#### **3.4. The basic ingredients**

### **4. Put into practice**

#### **4.1. From Theory to Practice**

### **5. Further readings**

### **6. Bibliography**

## The Unity

|  |   |
|--|---|
| <b>Title</b>   | <b>How to eat healthy... with traditional cuisine from Alentejo</b>   |
| <b>Area</b>  | Healthy Diets   |
| <b>Main Target Audience</b>  | <p>The end users of the module are:</p> <ul style="list-style-type: none"> <li>• Students of the participant institutions</li> <li>• Adults interested in issues related to organic food, nutrition and healthy eating;</li> <li>• City residents.</li> <li>• Adult training centers</li> </ul>   |
| <b>Description of the module and general aims</b>                                | <p>This module allows the participant to understand:</p> <p>(1) The Mediterranean diet and its relation with traditional cuisine of Alentejo and</p> <p>(2) Alentejo traditional recipes.</p> <ul style="list-style-type: none"> <li>- ingredients characteristics</li> <li>- their health benefits</li> <li>- how to plant a herb garden at home</li> </ul>  |
| <b>Learning Time and Duration</b>  | <p>Learning time and maximum duration for the training related to the module:</p> <p>The maximum duration of training is 24 hours, distributed as follows - 8 hours of theoretical training;</p> <ul style="list-style-type: none"> <li>- 8 hours for visits (farms, processors, markets)</li> <li>- 8 hours of practical work.</li> </ul>  |
| <b>Learning Objectives</b>   | <p>Specific learning goals, i.e. what is going to be trained and will be learnt by the target after a successful completion of this module:</p> <p>In this module it is intended that participants increase their knowledge about healthy eating through the discussion and learning of traditional Alentejo recipes, heritage of the Mediterranean diet. This is aims to provide knowledge on foods and herbs of the region, as well as on the gardening of some ingredients on a "homemade eatable garden". The understanding of the whole process, from the soil to the table, will enable participants to get the most out of their food.</p> |
| <b>Competences achieved</b>  | <p>Specific competences related to the project theme:</p> <ul style="list-style-type: none"> <li>• knowledge about nutritional value of different ingredients of the Mediterranean diet ;</li> <li>• how to cultivate several vegetables and herbs organically in small scale</li> <li>• how to prepare healthy foods with traditional recipes</li> </ul>   |
| <b>Pedagogical methods used (selfstudy, group work, distance learning, etc.)</b> | <p>Type of activities considered useful for the training of this module:</p> <ul style="list-style-type: none"> <li>• Theoretical learning /blended learning/: <ul style="list-style-type: none"> <li>- face to face;</li> <li>- group discussions</li> <li>- online learning.</li> </ul> </li> <li>• Practical learning: <ul style="list-style-type: none"> <li>- workshop – cooking the recipes</li> <li>- self study – exercises and cooking</li> </ul> </li> </ul>  |

## 1. Abstract

This unit is structured into two main sections: (1) The Mediterranean diet and the traditional cuisine of Alentejo and (2) Traditional recipes.

In the first section the basics of a healthy diet based on the Mediterranean food traditions and on the traditional Alentejo cuisine and of the ancient wisdom associated with it are discussed. The second section consists on the presentation of various recipes of traditional Alentejo cuisine and on the discussion of the ingredients characteristics and their health benefits. Some guidelines on how to plant a herb garden at home are also given in this section.

**Keywords:** Alentejo Traditional Cuisine, Nutrition, Healthy Diet, Organic Products.

## 2. Introduction

Eating habits are always changing, and diets can be varied, from the healthiest to the most detrimental to health. These habits can be influenced by several factors, such as culture, religion, knowledge about food, food availability and economic situation and etc. However, one of the factors that weight more on our food choices is, without question, the knowledge that we have on the benefits and prejudicial properties of food products. Therefore, increasing this knowledge will definitely contribute to a healthier diet.

Since its establishment as a country there has been an evolution of the Portuguese diet, both in terms of food preparation techniques as well as of food products introduced over time. These changes occurred through the influence of other cultures, as a result of the Discoveries between the fifteenth and seventeenth centuries and, more recently, of the globalization and new the distribution systems. Nowadays, all year long consumers have at their disposal an enormous variety of vegetables, fruits, meat, and fish that come from different parts of the globe – people do not need to travel to sample flavours from all around the world.

Despite all this wealth, and of the food products from other countries that enter Portugal, there is a wisdom and immense richness in the traditional Alentejo cuisine. This in spite of, or even due to, major food shortages experienced in the last century, particularly by the rural population. Is this ancient wisdom that forms the base of this module, which, in its first section, briefly discusses the traditional Alentejo diet, closely linked to the Mediterranean diet and, on the second part, introduces several recipes for vegetable soups, bread soups and porridges? In this second section we also teach how to enjoy some of these food products in the comfort of your home, growing an authentic edible garden with pots filled aromas and flavours. In short, shall we learn, from farm to fork, how to eat in a healthy way with the traditional Alentejo cuisine!

## Section I

### 3. Core contents

#### 3.1. The Traditional Cuisine from Alentejo

Some say "Tell me what you eat, tell thee who thou art," and that is not something that strays far from reality. People's diet can not only give indications of their culture, as of the place where they reside, the influences to which they are exposed and of their physical condition. Proof that the type of diet can indicate where someone resides, is the fact that in Portugal, for example, there is a wide variety of diets in the various regions of the country, from north to south. The Alentejo is a region where the diet is quite characteristic and of which we will examine the benefits it can bring to your health. This diet is deeply rooted in the Mediterranean diet, even if the country is not in the Mediterranean coast.

*"We have adopted and embraced, we Portuguese, culturally Mediterranean embedded in Atlanticism, a reinvigorating and superbly gluttonous broth coming from far away. But we knew how to transform it in the Mediterranean way: First, we added small pasta or noodles, and then rice; We coloured it with mint leaves; we tamed it with a few cloves of garlic and some onion rings."*

Emílio Peres

The traditional Alentejo cuisine is full of influences from other cultures that occupied the Portuguese territory, as it was the case of the Arab civilization. The Greek culture and diet also had great influence on the Portuguese gastronomy, particularly in Alentejo. The ancient Greek diet has been adapted and enhanced with aromatic herbs that are grow spontaneously on the farm lands, the fish of the Alentejo coast, and vegetables who arrived in Portugal, accompanied by spices, brought by the navigators that went to discover the world during the fifteenth to the seventeenth centuries. All these influences have contributed to enrich the diet of the people of Alentejo and build knowledge that became tradition.

Diets are constantly changing, and is not intended to return to the past, but understand that the food practices of the past, although the result of necessity, can nowadays be beneficial and contribute to the reintroduction of recipes that are quick and

easy to prepare and also very healthy. They are rich in nutrients, vitamins, and with unique flavours and aromas.

### ***3.2. Ancestral wisdom for food equilibrium***

The food habits on 40s to the 60s of the twentieth century are a good example of the connection of the Portuguese diet to the Mediterranean diet and of the principles of healthy eating. Unfortunately, this reality did not come out, always, for the best reasons. Those were years were of great food shortages, especially for the most humble people of the rural Portugal, as was the case of the landless wage earners, who suffered food deficiencies, particularly with respect to food products of animal origin. However, that situation, led to a search for food that grew spontaneously in the field, for products that they could grow in small scale such as vegetables and fruit, and for vegetables that could best replace the protein from the meat they didn't have. Many of the decisions were based on experience and not on the scientific knowledge to which we have access today. Still, judgments were based on the health of the individuals and in the power and energy they could get out of the food in order to work on the fields. The fact is that current science and nutrition knowledge confirm the choices of those times as correct and beneficial to health. Due to the economic and social conditions, the diet of that time is full of principles that are now believed as the key to healthy eating. Obesity, which is becoming an alarming problem of our time, was not frequent in 40-60s, it just happen in affluent families with resources well above the common people. As such, the diet was regulated as follows:

- ◆ Small portions per person;
- ◆ A breakfast that nowadays we would call lunch;
- ◆ Low prevalence of sweets and deserts;
- ◆ High consumption of fruit, vegetables, legumes, and fish;
- ◆ Highly water consumption during the day, and the usual glass of wine with a meal;
- ◆ Boiled food or cooked through and other simple methods;
- ◆ Low consumption of fats, being olive oil the more common fat (even if scarce).

It is necessary to take into account the very wide knowledge that people had about the plants and herbs that constitute the typical landscape of the cork habitats of the region. Those plants and herbs set the tempo of landscape throughout seasons, leading to variations in food habits during the year, and to the search for plants and herbs that fulfil specific nutritional needs and also help in fighting and prevention of particular diseases.

### **3.3. The Mediterranean diet**

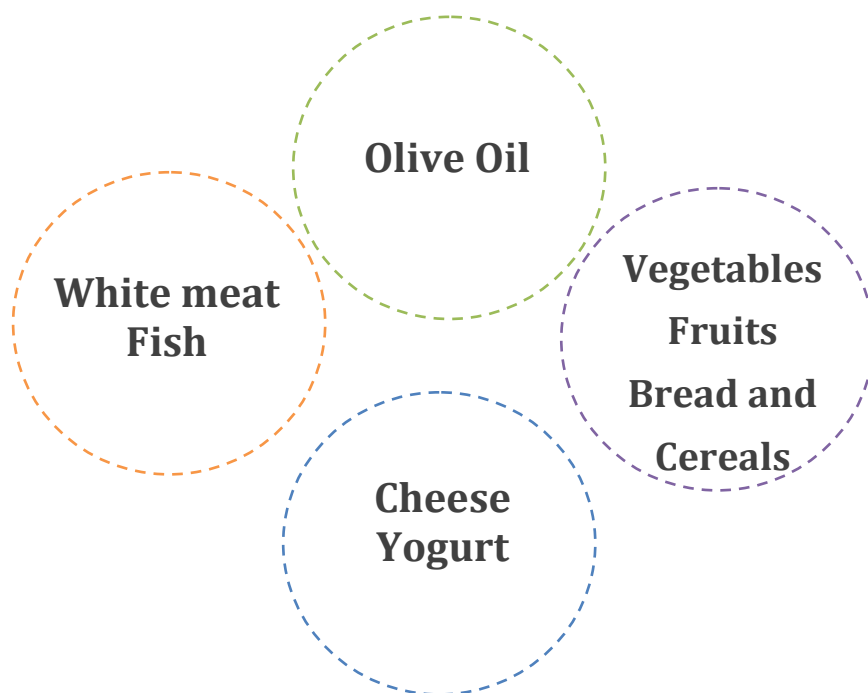
The Mediterranean diet is recognized as Intangible Cultural Heritage of Humanity by UNESCO. This distinction reveals not only its importance on the healthy diet issue but, mostly, its importance as popular knowledge transmitted orally that is important to preserve and share. This module is a contribution to this goal with the presentation of traditional food recipes from Alentejo very a rich in the components of that diet.

The traditional Alentejo cuisine reflects the principles of healthy eating, rooted in the Mediterranean diet. In this case traditional refers to the dietary patterns of Crete and many other regions of Greece and southern Italy. Several studies show that the average life expectancy of adults in these regions was of the highest in the world. These were also the regions in Europe with the lowest rate of coronary heart disease and of certain types of cancers.

This diet is rich in food products with high concentrations of complex carbohydrates, fibre, vitamins and minerals and numerous antioxidants that protect the health of the heart. At the same time there is a low consumption of food products high in saturated fats and of high-caloric foods, which is fundamental in the prevention of cardiovascular diseases.

### **3.4. The basic ingredients**

Foods products that make up this diet are part of the local landscape. The gastronomy is based on what is available in each season in the fields and on what can be locally produced. That is the case of the basic ingredients of Alentejo Cuisine:



## Section II

### 4. Put into practice

#### 4.1. From Theory to Practice

Once discussed the principles of traditional Alentejo cuisine, we will deal with the practical component of the module where we want to speak more in depth about some traditional recipes from Alentejo, focusing on vegetable and bread soups, and the typical bread porridges. The plethora of existing soups in Portugal results from several adaptations to the cultural and territorial environment, the legacy of people who passed through the region and of the herbs and other edible wild resources, which provide unique flavours to soups in different areas of Portugal. Soups are part of the Alentejo food identity, along with wheat bread, it's structuring element. Bread soups, gazpacho, broths, bread porridges, stews and vegetable soups are all based on those components (soup and bread) and good representatives of that identity

In most cases the concept of soup may be associated with its ancestral meaning, in that the term referred to "bread soup", which means the bread soaked in a "seasoned broth." The use of the broth makes a more digestible, tasty, enjoyable, and most nutritionally rich dish. Its distinctive flavour comes from the herbs used, leading to an easy distinction of the Alentejo cuisine from the cuisine of other regions of the country.

The recipes presented here are based on two key principles that contribute to enhance the quality of the food products used and provide a wealth of flavour and aroma that helps reduce the amount of salt on dishes, making for light and pleasant flavours to the palate.

##### Principle 1

Cooking times reduced, and above 70 °C, temperature at which the food should be cooked safely. The boiling point that is used in the preparation of soups allows keeping a constant boiling temperature to prevent degradation of fats and nutrients.

##### Principle 2

The cooking in water causes the release of a certain amount of starch which the broth thickens, conveying and concentrating the flavors generated during cooking using the different elements diluted in water

## Alentejo Bread Soups

### Bread porridges

Season: All year long  
Region: Low Alentejo

#### Ingredients:

1 bunch of  
coriander ( add  
pennyroyal )  
2 to 4 garlic cloves  
1 tablespoon of sea  
salt  
4 tablespoons of  
olive oil  
1.5 l of boiling  
water  
400 g of homemade  
bread (hard)  
4 eggs

#### Preparation:

Step in a mortar, reducing them to soft  
pulp , coriander ( or pennyroyal or both )  
with the cloves of garlic and coarse salt .  
Pour this soft pulp in the terrine or bowl .  
Watering up with olive oil and scald with  
boiling water, where previously coddled  
eggs and where withdrew. To serve put  
up this broth over the bread into slices or  
cubes. Eggs are laid on the plate or on the  
soups in terrine.



|                  | <i>Health Benefits</i>   | <i>How to Plant: Coriander</i>   |
|------------------|--|--|
| <i>Coriander</i> | <ul style="list-style-type: none"> <li>• Contributes to better control of blood glucose levels</li> <li>• Hold relaxing and calming properties , improving the quality of sleep</li> <li>• • antiseptic and antifungal agent</li> <li>•</li> </ul> | <p>Choose a flower pot or container which has at least 46 cm wide and 20 to 25 cm deep . This does not like to be moved, then the pot needs to be large enough to contain the adult plant.</p> <p>Plant the seeds. Fill the pot with some soil and fertilizer. Moisten the soil with a little water . Sprinkle the seeds on the soil lightly to disperse uniformly. Cover with plus 0.6 cm of soil .</p> <p>Place the pot in a sunny location . Need direct sun to grow, then place it on a parapet of a sunny window or greenhouse. The seeds should germinate in 7-10 days. Keep the soil moist by using a spray bottle to spray the soil. If you pour water on the ground , you can move the seeds.</p> |
| <i>Garlic</i>    | <ul style="list-style-type: none"> <li>• Help in the prevention of cardiovascular disease</li> <li>• • contains sulfur which facilitate blood flow</li> <li>• • Help reduce the presence of triglycerides in the blood</li> </ul>                  |  |



## Bread Soup de Peixe da Ribeira

*Season of the year : Between June and March*

*Region: Alentejo Central*

### **Ingredients:**

2 large barbel ( 1.5 kg total)  
4 tablespoons olive oil  
1 mint sauce river  
1 bunch of pennyroyal  
2 bay leaves  
1 onion  
4 garlic cloves  
1 medium glass of white wine  
1 vinegar stroke  
3 ripe tomatoes  
½ green pepper  
2 wheat flour  
Coarse salt qs  
water  
regional bread

### **Preparation:**

After arranging the fish salt it a while before cooking . Fry the spices in the oil , together with the chopped garlic , onion, bell pepper slices and the sliced into thin flakes . Add the white wine and peeled and chopped tomatoes . Leave fry a little. Add enough water and let boil . Add the previously undone flour in water, stirring well to not crumble and cook . Add the fish , leaving it cook without letting undo . Correct the salt. Serve pouring the broth in a bowl on the finely falquejado bread.

The fish is served on platter apart



|                            | <i><b>Benefit for Health</b></i>   | <i><b>How to plant: Mint</b></i>   |
|----------------------------|--|--|
| <i><b>Fish</b></i>         | <ul style="list-style-type: none"><li>• Rich Source of Omega -3</li><li>• Reduction of Inflammation</li><li>• clots Prevention</li><li>• Cholesterol Reduction</li></ul> | The Mint is a plant resistant to high and low (max. 5 ° C) temperatures , but does not tolerate frost .<br>Can be purchased at supermarkets and transplanting the plant to a larger vessel.  |
| <i><b>Green pepper</b></i> | Large concentrations of vitamin C and beta-carotene that prevent cataracts   | Should water the mint plant constantly , but it is also very important that the roots are not flooded . Place a drainage system on the vessel to prevent water be accumulated , keeping it moist to the touch compound , it grows better in wet conditions . Remove the upper leaves and stems so that the light reaches the other leaves growing. |

## Clamps Bread Soup

### **Ingredients:**

500 GRAMS of  
clamps  
1 liter and Water  
Environment  
1 coriander  
branch Or  
pennyroyal  
qs salt  
garlic  
olive oil  
2 eggs

### **Preparation:**

Open 500 grams of clamps in half liters of boiling water. Make a floor with coriander or pennyroyal , salt and garlic. Pour two per person tablespoons of olive oil . Beat two whole eggs on the floor. When pouring the water over the floor , stir well so that the eggs do not get into yarn .

Use the water in which the clamps have opened . The clamps are served in shell .

Serve breaking bread sliced putting them in the bottom of a bowl and basting with broth and clamps.

*Época do Ano:* all year  
*Região:* Alentejo Litoral



|                  | <b><i>Benefit for Health</i></b>   | <b><i>How to plant: Pennyroyal</i></b>  |
|------------------|--|---|
| <i>Olive Oil</i> | <ul style="list-style-type: none"> <li>• Fat monounsaturated , not contributing to the increase in " good" cholesterol (HDL )</li> <li>• It has anti -inflammatory properties</li> <li>• Strengthens nails and moisturizes hair</li> </ul> | <p>Just need a place that has an average exposure to sunlight and holding on situations enough shade.</p> <p>Need a place with these characteristics, a vessel and a mixture of garden earth, sand mixed with a land, the land ratio of two parts to one part of sand and fertilizer.</p> <p>The spread of pennyroyal is by cutting , taking advantage of the fact that this plant naturally emit roots along the stem.</p> <p>Even in sprigs of pennyroyal that can be bought, it is common to bring these white roots and these are the stems one to use as cutting, arranging them horizontally on the surface of the earth, only the roots within this .</p> <p>In other situations in which more favor the stem that provision may also burying them in the ground leaving out one or two nodes with leaves.</p> <p>Do not miss it with water for the first few days and will soon begin to see the new plants to form , not delaying having your pennyroyal vessel ready to harvest when needed scissors to avoid damaging the roots and always continue to produce .</p> |

## Soups

### Tomato Soup

#### Ingredients:

1.5 kg of ripe tomato  
2 onions  
3 cloves garlic  
1/2 green pepper  
1 bay leaf  
2 dl olive oil , stale  
bread qs  
1 bunch of parsley,  
mint and oregano  
water q.s.  
qs salt  
4 eggs

#### Preparation:

Peel the garlic and onions . slice the onion to half moons and pokes up the garlic. Peel and chop - the tomatoes into small pieces . Get yourself up the peppers into strips . In a pan is made a stew with olive oil , onions , garlic and bay leaf, joins the tomato pepper the bouquet garni , salt and water and allow to cook. Finally , the eggs escalfam and lies down the prepared covers the toasted bread sliced and lox.

Season: Summer

Region: High Alentejo



|               | <i>Benefit to Health</i>  | <i>How to Plant: Tomato</i>  |
|---------------|---|--|
| <i>Onion</i>  | <ul style="list-style-type: none"> <li>• Contributes to the increase in HDL</li> <li>• Relieves congestion</li> </ul>   | <p>Choose a cool, well in direct sun location. Ideally tomato plants have at least 4 hours of sunlight per day, to enhance the quality and quantity of fruit. The vessels should be about 40 cm.</p> <p>They must be sown from early spring (April, May and June ), in the final vessel. They need plenty of water. It is important that between waterings, let the earth dry on the surface, so it does not get too wet, allowing the fungus and other diseases. Avoid wetting the leaves and flowers.</p> <p>We recommend frequent use of fertilizer throughout the growth of tomato plants. Once the tomatoes have branches with flowers, the upper main stem should be cut to stimulate the ripening of fruits. Accompanying the growth of the plant, secure the tomato to a stake, to help support the weight of tomatoes without bending.</p> <p>To harvest the tomatoes , without damaging the tomato stems, should run the tomatoes until they loosen.</p> |
| <i>Tomate</i> | <ul style="list-style-type: none"> <li>• Power supply and vitality</li> <li>• Contains lycopene which acts as an antioxidant ( concentrated in the prostate may help prevent diseases in this body )</li> <li>• Large amounts of Vitamin C and A and potassium</li> </ul> |  |

## **Dogfish soup**

*Season: All year*  
*Region: High Alentejo*

### **Ingredients:**

8 slices of dogfish  
2 L of water  
3 garlic TEETH  
1 onion  
1 tablespoon vinegar  
1 tablespoon paprika  
tea  
1.5 dl olive oil  
1 bunch coriander  
50 g of wheat flour  
Crusty bread  
qs salt

### **Preparation:**

Prepare the dogfish and slice in to pieces. Peel the onion and garlic and cut the up. Slice the bread and place it in a bowl. In a pan sauté the onion and garlic in olive oil, Join bay leaf, paprika and water. When it starts boiling gather the dogfish. Dissolve the flour in a little water and mixed with the vinegar in the soup - rectify the seasonings added with chopped coriander or in branches. Serve by pouring the boiling broth over the bread.



|                 | <i><b>Benefits for health</b></i>  | <i><b>How to plant: Bay</b></i>   |
|-----------------|--|---|
| <i>Vinegar</i>  | <ul style="list-style-type: none"><li>• Can be used to reduce the amount of salt , or replacement</li><li>• Helps reduce glucose , contributing to the prevention of diabetes</li></ul>  | <p>Ideally, a mild climate. Can withstand low temperatures protected from wind and frost. Farm with direct sunlight, but can grow well in partial shade, provided that the light is good.</p> <p>Get a small plant , or use a branch.</p> <p>Transplant and keep the soil moist until the plant root, and go composting frequently.</p> <p>When the plants are well developed leaves can be harvested when necessary. In late summer or early fall, some of the leaves can be harvested and left to dry in the shade. Dried leaves have a stronger flavor, but this will fade with time.</p> <p>The berries can also be harvested and left to dry in the shade.</p> |
| <i>Bay Leaf</i> | <ul style="list-style-type: none"><li>• Very rich in vitamins A, B , C and D</li><li>• Very rich in minerals: calcium, iron , potassium and magnesium</li><li>• The strong smell stimulates the production of saliva and other digestive enzymes</li><li>• has antibacterial properties and acts as a cleaning agent</li></ul> |   |

### **TIPS**

To make this soup more healthy skip the sauté, opting to gather all the ingredients in very low heat, simmer

## **Purslane Soup**

*Season of the Year: Autumn  
Region: Lower Alentejo*

### **Ingredients:**

purslane  
qs oil  
1 large onion  
Garlic qs  
1 bay leaf  
2 fresh cheese  
(sheep)  
4 eggs  
fresh tomato  
2 cutlet cod  
coriander  
potatoes

### **Preparation:**

The purslane are gathered in the field, are chosen and washed. Next, put in a pan an oil portion , bay leaves, chopped garlic , chopped fresh tomato , chopped coriander and chopped onions . It is left to simmer for about 8 minutes. Once sautéed, join the purslane and leave for about 5 minutes . then joins some water , 2 sliced potatoes , fresh cheese and cod and let it cook for about 20 minutes. Once you have prepared confecionado , are cut the bread slices to a bowl , in which lies the prepared.



|                            | <b><i>Benefit for Health</i></b>  | <b><i>How to pick: Pursulane</i></b>  |
|----------------------------|---|---|
| <b><i>Fresh cheese</i></b> | <ul style="list-style-type: none"> <li>• Rich in minerals such as phosphorus and calcium</li> <li>• Low fat</li> </ul>                        | <p>The purslane ( <i>Portulaca oleracea</i>), also known as common - purslane, purslane - of -gardens and veldorega , is an uncertain source of plant that grows wild today. However, you can have it in your garden.</p> <p>Grows between 15 °C and 35 °C. Does not support very low temperatures and frost. Need direct sunlight .</p> <p>Sow in a pot and cover with a light sieved soil or thin layer of sawdust . When transplanting the seedlings have 4 to 6 leaves.</p> <p>The harvest of the branches and leaves of purslane can be made from 60 to 80 days after planting. Remove the branches or leaves individually when necessary or crop monthly cutting branches approximately 10 cm above the ground.</p> |
| <b><i>Pursulane</i></b>    | <ul style="list-style-type: none"> <li>• The succulent leaves are rich in omega -3</li> <li>• High in fiber, vitamins and minerals</li> </ul> |   |

## **NOTA HISTÓRICA**

A relatively inexpensive recipe, since many locals had sheep, gardens and manufactured cheese. Purslane were caught in the field this time of year (in the fall). olive oil was a product with a certain abundance since they are harvested olives and exchanging them for a few mills in the oil bottles. The bread were also made in their homes was passed many times as staple food in Alentejo dishes. this recipe can be made without cod and without potatoes. (in Charter Gourmet Alentejo, page 691)



## Cold Bread Soup

### **Ingredients:**

Cucumber  
Olive oil  
salt  
onion  
vinegar  
homemade bread  
fresh water  
tomato  
cod

### **Preparation:**

The preparation has two variants:

- I. Cold Bread Soup for the poor, pokes the onion and cucumber and these joins salt, oil, vinegar, homemade bread soup and fresh water;
- II. Cold Bread Soup rich, the preparation mentioned above also adds up niggling sliced tomato and shredded raw cod.



|               | <i><b>Benefit for Health</b></i>  | <i><b>How to plant: Cucumber</b></i>   |
|---------------|---|--|
| <i>Pepino</i> | <ul style="list-style-type: none"><li>• Composed of silica and large amount of water, which promotes healthy skin</li><li>• rich in fiber, vitamin C, potassium and magnesium</li><li>• Contains steroids that contribute to reducing the "bad" cholesterol</li></ul> | <p>Opting for creeping plant, can transplant the plant for a large pot, as this suit up. Make sure, in the purchase, that does not have yellow leaves. Choose an airy place, a soil rich in nutrients and direct sun. It should be planted in late spring and with a distance of about 30 cm between each plant.</p> <p>Care: requires a lot of water, preferably warm, avoid wetting the leaves. If you see yellow leaves, place fertilizer and keep the earth moist. In the summer will be ready to eat!</p> |

## Bread Porridge

*Season of the year: All Year*  
*Region: Lower Alentejo*

### **Ingredients:**

1 cup olive oil  
2 cloves garlic  
bread  
qs salt  
q.s wat.

### **Preparation:**

Pour the olive oil in a frying pan and cup chopped garlic cloves. Cut the bread into thin slices and join olive oil and garlic. After the garlic alourarem a little, add a little water and let it cook on low heat, stirring occasionally with a wooden spoon. When the bread is toasted, gives up the back and pokes up with the spoon until into small pieces. Migas curl-swinging frying pan until very consistent. Serve / display usually serve up accompanied by coffee.



### ***Benefits for Health***

#### *Salt*

Consumed in moderation and daily doses indicated, this ingredient not harmful to health. However, it should be done right choice with regard to the type of salt. Ideally, the use of unrefined salt:

- Sea salt: it dry naturally in the sun, not suffering any process of refining. Provides very important minerals to the body, especially iodine.
- Salt Flower: are the first crystals that form and remain on the surface in saline. Never plays in the background not containing impurities. It is natural source of iron, zinc, magnesium, fluoride, sodium, iodine, calcium, potassium and copper

### Bread Porridge off asparagus

#### **Ingredients:**

300 g of wild asparagus  
200 g lean meat  
200 g of bacon  
300 g ribs  
8 garlic cloves  
2 dl olive oil  
Paprika qs  
Qs white wine  
150 g of bread crumbs  
qs salt  
4 eggs  
water q.s.

#### **Preparation:**

Peel the garlic and chop. Chop the asparagus. Fry- the meat (previously seasoned with garlic, salt, paprika and white wine) in olive oil and reserves. Fat frying of meat, join the chopped garlic and let browned, mix the asparagus, let it simmer, and add the bread and lean meat chopped very drizzling and eggs and engages well. Serve / submit .They found themselves on a platter and serve with the remaining meat around.

*Season of the year: Spring  
Region: High Alentejo*



|                  | <b><i>Benefit for Health</i></b>  | <b><i>How to pick: Asparagus</i></b>  |
|------------------|---|---|
| <i>Asparagus</i> | <ul style="list-style-type: none"><li>• Rich in amino acids and minerals (potassium, phosphorus and calcium), responsible for their regenerative properties and nutritious</li><li>• Rich inulin which contributes to development of microbial flora, bifidobacteria and lactobacilli responsible for the good functioning of the large intestine</li></ul> | <p>The Wild Asparagus (<i>Asparagus Lenuifolius</i>) develop at the time of spring during the rainy season.</p> <p>These can be found in the concave land areas, typically wet and cold.</p> <p>It should be collected with the aid of scissors or a knife.</p> |

#### **TIPS**

The crumbs can be prepared without the meat, using only olive oil, healthy and enhancing both the taste of wild asparagus. It should be added for lemon juice to a balance of flavors.

Although the traditional recipe is accompanied fried meat, this may be replaced by meat stuffed previously seasoned with pepper mass.



## Questions

1. The knowledge about the food and its properties contribute to a more correct nutrition.
  - a. True
  - b. False
  
2. O Alentejo is not washed by the Mediterranean, so it can not be the diet of this region a 'Mediterranean diet'.
  - a. True
  - b. False
  
3. The traditional cuisine from Alentejo, although healthy, has the disadvantage of only present confection dishes quite time consuming.
  - a. True
  - b. False
  
4. Herbs are a supplement that helps to decrease the amount of salt in cooking.
  - a. True
  - b. False
  
5. Indicate the **two key principles** that contribute to enhance the quality of food used and provide a wealth of flavor and aroma that helps reduce the amount of salt dishes:
  - a. \_\_\_\_\_  
\_\_\_\_\_
  - b. \_\_\_\_\_  
\_\_\_\_\_
  
6. Name 8 key ingredients of the Mediterranean diet:
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
  - g. \_\_\_\_\_
  - h. \_\_\_\_\_

## Are you interested?

### 5. Further readings

<https://www.facebook.com/media/set/?set=a.452200221572934.1073741853.149469411846018&type=1>

<http://www.insite.pro.br/2008/31.pdf>

<http://www.uff.br/ensaiosdemarketing/artigos%20pdf/2/AIMPORTANCIADAPROMOCAODEVENDASPARAAAFIDELIZACAODECLIENTES.pdf>

<http://www.infoescola.com/ecologia/horta-urbana/>

<http://obrassustentaveis.com.br/>

<https://www.facebook.com/obras.sustentaveis?ref=stream>

<http://www.greenfarmco2free.com.br/wp/horta-suspensa-de-garrafa-petpasso-a-passo/>

<http://www.rosenbaum.com.br/tag/horta-vertical/>

<http://morarkallas.grafikonstruct.com.br/index.php/2013/04/a-ideia-de-criar-uma-horta-vertical-ganha-nova-aliada-a-sapateira/>

### 6. Bibliography

Gastronomic map of Alentejo

<<http://www.visitalentejo.pt/pt/imprensa-media/carta-gastronomica-do-alentejo/>>

How to grow herbs and vegetables

<<http://re-planta.pt/>>

Mediterranean diet

<http://www.apdietistas.pt/nutricao-saude/alimentacao-na-saude/dieta-mediterranea>

## This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## Partners:



**Agricultural University – Plovdiv**

<http://www.au-plovdiv.bg>



**Universidad Politecnica de Madrid**

<http://www.upm.es>



**Universidade de Evora**

<http://www.uevora.pt>



**Training 2000**

<http://www.training2000.it>



**British Hellenic College**

<http://www.bhc.gr>

<http://www.food-med.eu>

