SOUTH-EAST MEDITERRANEAN SEA PROJECT (SEMEP)

Teaching/Learning Modules on the Mediterranean region

1. Food

2. Plants/Trees/Woods

3. Biodiversity

AN ITALIAN CONTRIBUTION

Miranda Pilo
Mario De Paz
Giorgio Matricardi
(University Of Genoa)

Experts:
Elena Bianchi
Liceo Scientifico "A. Einstein" – Rimini (Italy)
Brigitte Gavio
Department of Biology, University of Louisiana, USA

Collaborating Teachers:
Marina Menabue, Maria Geronima Bignone, Brunella Rossini
Scuola elementare "Thouar" - Genoa
Graziella Martelletti, Maria Teresa Parodi
Scuola elementare "Gallino" - Genoa

DECEMBER 2001

General introduction.

by **Miranda Pilo**

One of the main objectives of **SEMEP** is to build a culture of peace in the Mediterranean region. The best way to achieve this is to foster mutual knowledge and exchange among the different populations of the region. Since individual culture, history, religion, customs are different, encouraging dialogue, especially among young people, is the best way to develop increasing tolerance and respect for the other.
The quality of life of a population depends to a large extent upon environmental conditions. As the Mediterranean countries have to cope with a number of common problems concerning their common environment, it is only natural that cooperation among them would result in more effective methods and processes in the search for solutions.
Suitable and effective solutions need sound scientific knowledge and awareness. Science-based environmental education is the main way to build sensitivity, criticism, awareness and responsible behaviour towards the environment.
A constructivist approach has been used in preparing these materials. The basic principle of this approach is that "**learning is a construction of the individual and cannot be transmitted**". This method requires deep reflection on teaching practice in order to influence the behaviour of pupils/students and enhance their capability to handle new problems.
The teacher should encourage students to take an active role and have personal involvement in building their knowledge.
The three modules on :

- **Food**
- **Plants/Trees/Woods**
- **Biodiversity**

in Mediterranean region

should be used in a flexible way as they are only examples of work that could be proposed and developed in school. Teachers as well as students may introduce modifications taking into account the local conditions (pupils' interest, facilities, availability of experts,….).

FOOD IN THE MEDITERRANEAN REGION.

Brigitte Gavio, Miranda Pilo, Marina Menabue

Introduction.

Food has always been a means of knowledge and comparison, through which different cultures and population meet and interact.
We can even affirm that FOOD can be a means through which it is possible to transmit principles of peace, co-operation and solidarity among different populations.
As matter of fact, dialogue and peaceful living together arise first of all from mutual knowledge and respect and the awareness that differences should be appreciated, as they can become a common resource.
History could be read through recipes: for example, Greek recipes have been influenced by Turkey and vice-versa, Sicilian (Italy) cooking shows traces of Arab domination, especially in sweets and cakes.
Every region has its cuisine and its tastes, fruit of a millenary culture handed on from mother to daughter. Cooking has been at all times a feminine activity through which women take care of their family and express their feelings of love.
In the present time, globalization tends to cancel the valuable heritage of tastes and knowledge of many regional cuisines; this heritage should be protected and appreciated.
This module is an attempt to educate young people living in the Mediterranean area to become aware of their heritage. Its objective is to provide opportunities, through food, for comparison and exchange among different countries thus helping to develop a culture of solidarity and peace.
It also provides possibilities for science education.
Materials (information, suggested activities) are flexible and could be used by the teacher in an original and personal way to better fit students' needs and interests.

Remarks and suggestions for teachers.

The cultural identity of a country is expressed mainly through its history, traditions, religion, art and cookery. Each country expresses its relationship with its territory using its products in recipes.
Regional recipes are the essence of a territory. Appreciation is not possible without knowledge.
Teachers should stimulate pupils to learn about food. They should favour contacts and exchanges with schools of Mediterranean countries.
Materials include general information about foods, guidelines for a healthy diet, activities consisting in experiments, measurements, collection or treatment of data, observations etc.
Materials should be used in a flexible way; teachers can pose suitable questions and help students in looking for information. Students should be stimulated to become protagonists in transforming information into knowledge, in their own knowledge built by themselves. Only in this way, will learning be meaningful.
Moreover, students should develop their critical faculties in order to become discriminating consumers.

Investigation on Mediterranean food.

Activities (age 8-13 years).
Write a list of foodstuffs (land and water products)
Which of them are specifically Mediterranean?
Which of them are found in the Mediterranean region but are of foreign origin?
(Example: the eggplant is grown in all Mediterranean countries, but it comes from India.)

Pupils could form various groups and each group could carry out an investigation about the origin of a chosen food stuff.
Using a map they could draw the food flow and understand the mutual influence of populations during millennia, through good exchange.

What parameters influence vegetable production?
Why are fertilizers used in agriculture?
Do farmers use chemical fertilizers in your region?
Do you know the difference between natural and chemical fertilizers?
Do you know what is biological cultivation?
Do farmers practice greenhouse cultivation?
Do you know if the vegetables you usually eat are produced using:

- natural fertilizers
- chemical fertilizers
- biological cultivation
- greenhouse cultivation

Pupils could be asked to analyse differences and similarities in a product which is produced in different regions

Pupils might be interested to learn more about mutual influence and an historical perspective could be developed.

Food production depends upon soil and climate features.
Studies about climate and soil can be carried out at higher level of age.

Climate Study (age 12-15 years)

Students can look for (with the help of a university geophysics department) information on:

- insulation (mean data)
- temperature (minimum and maximum/daily/monthly/annual; mean temperature: daily, monthly, seasonal, annual)
- humidity (mean data)
- rainfall (monthly, annual)
- wind regime (dominant, prevailing,…)

……
Students could make some measurements by themselves:

- temperature measurements could be carried out daily in classroom, using a maximum and minimum thermometer
- rain measurements can be done using a pluviometer or designing one using the following materials:
  a) cylindrical glass(or transparent plastic cylinder) having a 6.0 cm internal diameter
  b) funnel having a 18.0 cm diameter of its mouth (it has to be much larger than the glass)

c) adhesive tape
d) graduated ruler
e) indelible felt-tip pen

Join the glass to the funnel using adhesive tape. Water collected through a section of 81π square centimetres flows in a container having a section of 9π square centimetres.
Water flows into the glass (having a smaller section than the funnel).
As the diameter of the cylindrical glass is smaller than that of the mouth of the funnel, the level of the water collected in the glass will be higher than if the glass had the same diameter as the mouth of the funnel.(see Fig. 1).
If:

H = level of water in a cylinder having the funnel section
l = level of water in the cylindrical glass
A = funnel section
s = cylindrical glass

then, keeping in mind the previous considerations, we have:

$$l/H = A/s = 9 \rightarrow l = 9H.$$

1 mm water flowing in a cylinder with the funnel section, corresponds to 9 mm in the cylindrical glass. This method of collection allow an easy reading.
This is an example: a similar relationship should be taken into account in order to set up a reading scale for values to adjust the instrument of different size.
Students might construct pluviometers using funnels having various diameters, but their choice should consider the desired amplification factor. In this way, they could compute rainfall volume using their pluviometer. If various pluviometers are available the class makes the most suitable choice taking into account the meteorological forecasting: drizzle or driving rain require pluviometers of different size.
Students are asked to make their observation, if possible, as soon as it stops raining, to avoid the influence of evaporation.
Students might construct pluviometers using funnels having various diameters, but their choice should take into account the desired amplification factor. In this way, they could compute rainfall volume using their pluviometer.
Teachers could introduce some concepts about measurements and characteristics of devices, like sensitivity and precision of an instrument, measurement errors etc.
Activities should stimulate creativity and imagination, put students in operative and problematic situations and stimulate reasoning and criticism.
Teachers could ask students to give the reason for the choice of the specific sizes of the cylindrical glass and the funnel . Students might *discover* the reason (are measurements more practical? Are calculations more simple?……).
As official data on annual rainfall is available, students can classify the climate of their region.

Unfortunately, owing to the greenhouse effect, the Mediterranean climate is also going to change and many regions might suffer from desertification.
Teachers could make students aware of the fact that water is a valuable resource and should be not wasted. Drinkable water is going to decrease, while people and their needs are dramatically increasing. A responsible consumption of water should be encouraged.

Diet: guide lines.
This part can be addressed to students of any level; activities are addressed especially to elementary and low secondary school.

Ten years after the previous guidelines for a healthy diet, the Italian Institute for Nourishment (IIN) has published in 1998 the new "Guide lines for a healthy Italian nourishment". The purpose is the suggestion of a model of nourishment behaviour to attain a suitable nutrition and health protection, respecting Italian gastronomic traditions.
However, these guidelines, written for Italian people, may be used in an international context.

1) **Watch your weight and get some physical exercise**

In Western developed countries (according to the World Health Organisation, 1999) the percentage of fat young people is increasing. Obesity in young people causes serious illnesses, such as diabetes and cardio-vascular diseases. Young people should watch their weight to attain an harmonious growth and to prevent health problems. People should take care to have a balanced diet and should exercise regularly, especially after a long time spent at school or in the office. Regular exercise prevents the above mentioned diseases and some kinds of tumours, osteoporosis and depression.

2) **How many and which fats**

It is recommended that no more than 30% of the total amount of calories of the daily diet be constituted of fats. This means that a person consuming 2000 calories daily, should consume, at the most, 600 calories of fats. Each gram of fat produces 9 calories (both carbohydrate and proteins produce 4 calories/gram); which means that people should not consume more than 60-70 grams of fats daily. Of course this amount includes both fats added as condiments and fats contained in foods, visible or not.
People should also take into account fat quality: 10-15% of total daily amount of calories should come from mono-unsaturated fats (like olive oil), 7-10% from saturated ones (like foods of animal origin), 7-10% from polyunsaturated fats (like seed oils and fish).

Suggested activity in school:
Compute:
- *how many calories are produced by the different percentages*
- *how many grams correspond to them, taking into account that 100 grams of butter – animal fat – develop about 800 calories, while oil – seed or olive – about 900 calories.*
- *Why does 100 grams of butter produce less calories than the same amount of oil?*

3) **More cereals, legumes, vegetables and fruit.**

They are important foods as they provide us with a good supply of carbohydrates (our best "fuel"), vegetable fibres, vitamins, mineral salts and other micro-nutrients (such as polyphenols) which are antioxidant (i.e. they have a high protecting potential). They must represent the basis of our daily alimentation.

Suggested activity in school:
investigation about individual daily vegetables and fruit consumption.

4) **Sugar and sweets.**

Sugar and sweet food can be consumed as sources of energy up to 10-15% of daily caloric supply. Diabetics (if allowed by physician) may consume some only during the meal, in order to avoid an increase of glycemic peak value.

5) **Salt.**

Experts advise to consume no more than 6 grams of salt per day, including both those present in foods and added ones.
Aromatic herbs added to food make them tasty, effectively limiting the amount of salt assumed daily.
Consumption of food preserved by salting should be limited too.

6) **Alcoholic drinks**.

Healthy people, not in need of losing weight, may consume small quantities of alcohol. However, they should be aware of the risks associated to alcohol consumption(drunkenness, sleepiness, loss of control, etc.).
The acceptable daily threshold value is 0.6 grams of alcohol per kg of body weight. On an average, this means that a man must not exceed 3 glasses of wine a day(2 for a woman, since women have more difficulty than men in metabolising alcohol), of course taken during meals.. If the above mentioned limits are respected, wine, especially red wine, has protective effects on the organism, while if the threshold value is exceeded, alcohol has negative effects.
The value that **must <u>never</u> be exceeded is 1.0 gram of alcohol per kg of body weight per day!**

Suggested activity in school:
calculate how many grams of alcohol are allowed to a man weighing 70 Kg. Transform these grams in a volume (or glass, measuring the volume of glass) of wine, if a wine containing 13% of alcohol (volume) is chosen.

6) **How and why diet should be varied.**

From food we extract basic substances that we are unable to produce: vitamins, essential amino acids, essential fatty acids, trace elements, etc.
No food contains all the needed substances and in the right proportion. Consequently, it is necessary to vary our diet as much as possible to avoid a lack of some nutrients essential to our organism.
Varying food is more satisfying to the taste and it helps to avoid excess of single nutrients or of substances that impede absorption of others.

Additional information and activities.

Often teenagers do not have a suitable diet.
Young people in need of losing weight should consume low fat food as a rule; fats should not be completely cancelled, otherwise serious health problems might arise.
Our organism will work well if our daily diet respects the following proportions:
60% carbohydrates, 20-25% fats, 10-15% proteins.
In the United States, low fat diet seems to have failed; exclusion of fats seems to increase cholesterol and even risk of heart problems, probably because the metabolism is altered.
If someone needs to lose weight, it is better to gradually decrease the amount of daily food to an optimum amount.
Many dieticians suggest that the minimum daily food quantities (that must not be decreased) for an adult organism are:

- 3 servings of vegetables and 2 of fruit
- a quarter of litre (250 ml) of milk or 1 yogurt
- 70-80 grams of bread, pasta or rice
- 150-170 grams of meat, ham, fish or legumes
- 3-4 spoons of oil
- 1.5-2 litres of water.

4 eggs per week are recommended (no danger for increasing cholesterol).

As far as vegetables and fruit servings are concerned, experts give the following equivalents:

- a fruit serving corresponds to a glass of fruit juice, a whole fruit, a quarter of a little bowl of dried fruit or a half bowl of cut fresh fruit
- a vegetable serving corresponds to at least half a small bowl (250 ml or ¼ litre) of raw/cooked vegetables or legumes or to a little bowl of salad.

.
The five vegetable servings can be spread out during the day as desired.
The latest research by specialists shows that there is no specific protecting food that has been identified as yet. However, researchers have observed that our immune system is strengthened by consumption of a variety of fruit and vegetables. Therefore it is important to vary our diet with different combinations of food.

In order to overcome the deficit of nutritional elements, such as vitamins, minerals and trace elements, due to an inappropriate diet during some phases of our life (e.g. pregnancy, illness, etc.) or due to an unbalanced diet with a serious deficit of some substances, the use of integrators is suggested. to.
During pregnancy a correct supply of folic acid (B12 group vitamin) is necessary for good fetal growth; during childhood and puberty sometimes a vitamin complex may be used; elderly persons need trace elements, while vegetarians need amino acids and B group vitamins. If people live in smoke or smog polluted environment, they should consume extra quantities of antioxidants like vitamins C or E . It is important to emphasize that nutrients should normally be consumed through food, using integrators only if strictly necessary.
In fact some researches have evidence that nutrients are better absorbed by the organism through food than through integrators. A varied and balanced diet with abundance of fruit and vegetables is the most suitable one for keeping us fit (and healthy).
Vegetables contain the largest amount of precious trace elements, named antioxidants, able to neutralize free radicals, which age the cells. Following a study of the U.S. Department of Agriculture, a parameter evaluating the capability of free radical absorption named Orac has been introduced. This parameter has been used for various kinds of fruit and vegetables. We list some of them, using a decreasing order for their absorbing capacity of free radicals:

Fruits:
prunes (5440 Orac per 100 grams), raisins, blueberries, blackberries, strawberries, raspberries, plums, oranges, black grapes, cherries.-
Vegetables:
Cabbage (1770 Orac, less than a third of that for prunes), spinach, Brussels sprouts, beetroots, eggplants, onions, corn, red peppers.

Some doubts may rise about residual pesticides and fertilizers in vegetables.
In 1997 the Italian Ministry for Agriculture Politics analyzed 11152 samples of vegetables, produced in Italian farms.
These are the results:

- 66.0 % of the samples had no chemical residues
- 30.6% of were under the safety limit
- 3.4% of had been marked as irregular.

A similar study carried out by the Association of Farmers in the same year on the presence of 260 different dangerous chemical substances showed:

- no evidence of 130 substances
- less than 0.1% of allowed daily dose (ADD) for 75 substances
- less than 1% of ADD for 51 chemical substances.

Judging by these results, Italian products may be abundantly consumed.

We still need more information from both producers and authorities about the health risk due to the excessive use of chemical substances. Systematic checks are the most effective means to avoid food adulteration.

Activities: search for information about chemical substances used in agriculture and about food checks, addressing local authorities, media, consumers' associations, consumers' cooperatives and producers . If possible, directly interview farmers and/or producers.

Currently, an 'integrated approach' for agricultural protection is sometimes used, e.g. biological control, to limit the use of chemicals in agriculture.

A further advantage for health and taste due to the use of local products is their freshness, their higher content of perishable vitamins and their better taste.
Varying diet is a basic rule for food science: less risks for nutrients deficit, a better training for the digestive system.
"It is insidious to always consume the same foodstuffs or the same variety of food. The digestive system becomes lazy, loses suppleness and can suffer a crisis if the dietary regimen is not maintained. In fact, the consumption of a food that has long been avoided may prove difficult to digest because our digestive system needs to re-build the enzymes specialized in breaking down some parts of the forgotten food.
The more we have the same diet the more our organism loses its adaptability.
Biodiversity in diet is a pleasure for the taste and a way to improve health and welfare." (Oliviero Osculati, Italian dietician). For this reason it is important to know and appreciate local products and gastronomic specialties that abound in Mediterranean countries. It is necessary to conserve local traditions and prevent a global homogenization in foods and tastes.

In accordance with the seven countries [1] study suggestions for avoiding serious dietary mistakes are listed in the following table:

Table no. 1

To be eaten daily: **bread, pasta, rice, barley, polenta (thick maize porridge - generally served with meat, cheese, etc.), potatoes.** **These foodstuffs supply us with complex carbohydrates (like starch), proteins and fibers.**
The following aliments may be abundantly consumed: **Vegetables: courgettes, carrots, peppers, celery, artichokes.** **Fruits: apples, pears, oranges, cherries, strawberries, peaches, apricots.** **They provide us with a large amount of fibers, vitamins and mineral salts.**
To be frequently eaten: **White meat(recommended for proteins): chicken, turkey, rabbit.** **Fish.** **Legumes(contain starch and fibers): peas, chickpeas, beans, lentils.** **Partially skimmed milk, yogurt and low fat cheese.**
To be eaten less frequently: **beef, mutton, pork, salami, eggs, fatty cheese.** **These contain proteins but also a high quantity of saturated fats (potentially dangerous)**
Be careful with condiments: olive oil is the condiment to be more frequently used. **Olive oil, if consumed as the only fat condiment, decreases the total cholesterol in the body(and keeps arteries healthy)**

The above table is given for adults. Young people may use, in small quantity, foods to be avoided by adult one.
Family and school are expected to control that children have right diet behaviour, in their interest.

Suggested activities:

At school, investigation on students' knowledge, diet habits, mental conceptions and stereotypes concerning food.
The teacher may stimulate discussion, encourage interviews of experts, suggest research to guide young people to a right diet, very important for a growing organism. Diet habits are developed from earliest youth and family influence is crucial; for instance, if the father doesn't eat fruits, very often the child will not eat fruit.

[1] Seven countries of the Mediterranean basin have been chosen for an international research on diet. They are: Greece, Italy, Spain, Malta, Tunisie, Turkey, Lebanon

- **Do you know the meaning of "wholemeal bread, pasta, cookies?"**
- **Do you eat any wholemeal food?**
- **In your opinion, which cheese, among those you know, is "fatty"?**

For this purpose students may compare some kinds of cheese and find out the percentage of fat content. (Information can often be obtained directly from the packing labels).
The aim of such an activity is to increase awareness and stimulate discussion on some stereotypes (for example, some cheeses, like mozzarella are considered lean though they are fatty).

- *Describe your usual menu*
- *Analyse it taking into account the above mentioned parameters for a balanced diet and discuss it with your mates.*
- *Collect proverbs/sayings about food.*

Keeping in mind the latest scientific facts, verify if the following sayings are true:
An apple a day keeps the doctor away
Good wine makes people good-humoured
Fish contains phosphorus useful for brains.
……

- *Groups of students may be asked to make up a dossier about food, nutrition and health*
- *properties (students may choose a foodstuff to be investigated).*

Collected data should be classified and evaluated and information should be disseminated to the whole class. Sources of information should be specified: magazine, newspaper, scientific review, research report etc.

Criteria for evaluating reliability of information should be discussed; information should be critically analysed, with the help of an expert if needed.
Pupils should develop critical reasoning, especially about health.
Little children may be requested to draw vegetables and fruit, combining them according to rainbow colours.
Ask to list seasonal vegetables/fruit and vegetables/fruit out of season.
Investigate typical local products at risk of disappearance: for instance, in the Italian region Liguria, we are losing some varieties of potatoes, wine and cheese.
The investigation might stimulate pupils and teachers to get to know the territory and its products better and to understand the causes of a possible deterioration. Moreover protection of local products is very important for biodiversity.

Supporting information.

The seven sisters.
1.400 variety of apples are classified, but just a few are cultivated and their number is decreasing, leading to the extinction of the non cultivated varieties. The apple biodiversity is damaged.
In Italy the "wonderful seven"(each with specific features) dominate the market:

1. Red Delicious: Deep red colour, heavy peel, sweet, cream coloured pulp, suitable to be eaten fresh. On an average, 56% of Italians purchase this variety.
2. Stark: Striped red colour like the Delicious, rather smaller. Suitable to be eaten fresh. It ranks second in the Italian purchasing list (39%).
3. Golden: Bright yellow, slightly punctuated thin peel, firm, sweet pulp. Suitable both to be eaten fresh and to be cooked (e.g. apple pie and strudel) because it holds its shape.
4. Royal Gala: Bright, variegated with red-orange and, yellow, juicy, slightly acidulous pulp. In Italy it is the first variety of apple appearing on the market (end of August).

5. Granny Smith: The classic green apple with greenish-white, acidulous, crisp pulp. Suitable for salads and sherbets.
6. Annurca: Small, slightly flattened, in Italy it is mainly cultivated in Campania (Southern Italy): white, fragrant and crisp pulp. Suitable to be eaten fresh.
7. Renetta: Dark yellow-green colour, rough and slightly rusty peel. Because of its quite acidulous pulp, it is mainly used for pies and apple sauce.

Apples provide us with energy through simple sugar, fill our stomachs with fibre and contribute to our energy balance with 45 calories per 100 grams of pulp. They help to reduce cholesterol, especially the unhealthy LDL (low density fat),expel uric acid and decrease blood pressure. In fact, their high content of potassium counteracts the action of sodium (with too much sodium in the diet, blood pressure tends to increase, causing serious health problems).

Suggested activities for different age levels.

Teachers and pupils could look for information concerning other kinds of fruits or vegetables.

Pupils could be requested to:

- list all the fruits they know
- say if they regularly consume fruits and/or vegetables and, if so, of which kind
- describe fruits or vegetables -smell, taste, shape, colour - they usually eat

Students may be requested to calculate the amount of calories in an apple.

Teachers may plan a visit to the market and:

- *encourage pupils to look at - and take pictures of - the most common varieties of apples, pears, oranges, etc.*
- *invite pupils to observe and taste different species of the same fruits and ask them to describe similarities and differences*
- *interview dealers, sellers and experts about less known varieties asking if there is risk of extinction.*

Remember that knowledge is the first step to conserve biodiversity and typical local products.

Teachers should create stimulating scenarios for favouring exchange of communication and information among classrooms of Mediterranean countries.

At low levels of age, pupils might exchange pictures and drawings concerning some kinds of vegetables, their production area, markets etc.

Comparison of pictures may favour a preliminary introduction to biodiversity.

Further questions could be posed to pupils like:

- Where does your family buy fruits (or other vegetables)? (local market, supermarket, retail shop, producers,….)
- Do you know if the fruits you consume are produced using chemical fertilizers?
- How many species (list them and give a short description in addition to a picture) of apples are found in a Mediterranean country (specify the country)?
- If some fruits or some species of the same kind of fruits are not found in a country, teachers could encourage pupils to look for information: does it depend on soil quality, micro-climate, trade or other problems?

Ten golden rules.

The World Cancer Research Fund and the American Institute for Cancer have written the following ten rules for preventing cancer.
These rules should be followed since early years.

1. Large consumption of vegetables, fruits, integral cereals
2. Maintain a slender figure. Estrogens[2] dangerous for mammary glands are synthetized in fat tissue
3. Consume daily at least 600-800 grams of fruit and vegetables
4. Consume cereals and legumes regularly. Decrease consumption of foods produced with refined flour and sugar
5. Drink daily no more than two glasses of wine
6. Eat beef in great moderation. Prefer fish and white meat.
7. Limit animal fats, prefer extra-virgin olive oil
8. Avoid food preserved by salting
9. Do not keep perishable food for a long time outside the refrigerator, especially food like cream and mayonnaise
10. Avoid eating fish and meat often grilled or smoked or cooked at high temperature.

Our friends on the table:

Protective substances	Anticancer properties	To be found in:
Vitamin A (carotenoids)	Cell antioxidant	Citrus fruit, potato, spinach, cabbage, turnip, parsley
Vitamin C (ascorbic acid)	Inhibits the formation of nitrosamines in stomach (cancer first stage)	Citrus fruit, potato, tomato, green leaves vegetables
Vitamin D (calciferol)	Controls epithelial cells, among the first to be attacked by tumour	Tomato, cauliflower, pumpkin, soybean
Vitamin E (tocoferol)	Antioxidant	Wheat germ, oat flour, walnut, unrefined rice
Allyl sulphides	Stimulate enzyme production, having anticancer function	Onion, garlic
Tannins, catechins and phenolic acids	Antioxidants, they inhibit nitrosamines	Green tea, berries, carrots, parsley, citrus fruit, tomatoes, cabbage, aubergines
Flavonoids Phenols	They combat potentially cancerogenous hormones	Soybean, cauliflower, cabbage, fruit and vegetables, green tea
Genistines COX-2 inhibitors	In vitro, they stop formation of new blood vessels, essential for new tumour growth	Soy beans, rosemary, carrots, raisin
Fibres	They decrease contact of some cancerogenous substances with intestine	Vegetables, cereals, fruit, bread, pasta
Tiocyanoid limonoid	They stimulate formation of protecting enzymes	Beetroot, chicory, citrus fruit

[2] Estrogens are sex hormones. Hormones are substances secreted by the organism. They are essential in many vital functions, like growing, nutritive processes, etc. Example: insuline, secreted by pancreas, is basic for the metabolism of sugar. An organism showing a insuline disorder can be affecten by diabetes.

Hydrocarbon lycopene	Antioxidants	Tomatoes, grapefruit
Unsaturated hydrocarbon terpene	Antioxidants, they stimulate activity of protecting enzymes	Broccoli, cauliflower, carrots, tomatoes, aubergines

Table by dr. Roberto Margaria, nutritionist in Milan
Tab. n. 2

Activities:
Compare guide lines, table n. 1, ten golden rules and table n. 2.
Show the similarities and differences.
Analyse your daily diet and deduce if it is right or not.
If it is not right, what do you think you should do?

We have seen in the previous recommendations that olive oil is the best fat for our alimentation. In order to better appreciate it, it is useful to get more information on it.

Olive and the Mediterranean.

The olive is one of the oldest cultivated trees in the Mediterranean and it is also the symbol of the Mediterranean culture. It was so highly appreciated that it was considered by ancient Greeks to be a gift of the gods. In many cultures the olive is a symbol of peace and hope. It is also a strong religious symbol: in Catholicism during Palm Sunday, olive and palm branches are blessed, like oil during the night before Easter. Blessed oil is used in Confirmation and for the Extreme Unction (when a Christian is dying).
In the Old Testament, Noah perceived the end of the Deluge when he saw a bird carrying an olive branch.
The olive tree sets apart Mediterranean countries from others, especially the Northern ones.
Its products (fruit, oil) characterize the Mediterranean diet.
Until recent years, for lunch peasants customarily had bread, olives and a piece of cheese, while in cooking olive oil was the only fat used (and, in some cases, known).
Many investigations have shown the valuable properties of olive oil: like anti-oxidants, precious for preventing cell aging, mono- and poly-unsaturated fats important for preventing cardio-vascular diseases.
Uncooked, olive oil makes food more tasty and appetizing.
Olive oil is the best fat for cooking: in fact, at high temperature, like peanut oil, it does not degrade while other kinds of fats (seed, palm and coconut oil, butter, margarine…) may produce toxic substances.
The most precious (and unfortunately, costly) olive oil is the *extra-virgin oil*, obtained from the first pressing. Unfiltered, it is more tasty but should be consumed within three months; filtered, it is less tasty but can be consumed for a year. A characteristic is the acidity value: the maximum allowed by current laws for extra-virgin oil, is 1.0 % .
A very good extra-virgin oil generally has the following characteristics:
Acidity: 0.25 (%)
Saturated fatty acids: 15.6%
Mono-unsaturated fatty acids: 76.1% (of which 74.6% is oleic acid)
Poly-unsaturated fatty acids: 8.3%.
Lowest acidity indicates that the olives were of good quality, ripe and pressed immediately after they were plucked from the trees.
In addition, olive wood is also valuable and is used in high quality furniture and artistic work.
In the light of the these properties, we can justly conclude that “the olive is a gift of the gods!”.

The olive tree needs a temperate climate and though it suffers from drought scant rainfall is enough for its needs.
The most dreadful parasite is the olive fly that ruins the harvest; some species of olive are more resistant because their growth cycle does not correspond to the fly cycle (olives present a surface too tough for the insect sting). One of these species is cultivated near the Garda lake (in Northern Italy).
Modern mills are able to produce oil from olives in less than three hours.

Activities.

Activities addressed to improve students' knowledge and awareness about the olive can be carried out at different levels of age.
Students should be asked to observe carefully, to pose questions, to reflect and to "discover" the value of products of their territory. Regional food summarises the taste and the culture of a territory.

Age 8-12 years.
1) Teachers may organise "outdoor" activities, like a visit to a farm and/or to an oil mill.
Observation and description of olive tree features : trunk, leaves and fruits (shape, colour), …
Drawings can complete verbal description.
Ask pupils if they know what treatment freshly plucked olives need before being eaten.
Ask if somebody does such treatments him/herself at home .
A questionnaire may be prepared by pupils in order to obtain information on:

- quality of oil: on what parameters does it depend?
- damages from climate, insects (olive fly) and/or parasites: what type of prevention?
- quantity: upon what parameters does it depend?
- how are quality and quantity correlated?
- what is the difference (if any) between olives to be eaten and olives for oil production?
- how much oil is obtained using 1 Kg (10 Kg or 100 Kg….) of olives?
- how much does a tree yield (young tree, old tree)?
- how are olives collected (plucked directly from the trees, using nets or picked from the ground)?
- ……

2) Teachers may organise a visit to a market.
Pupils can observe different kinds of olives: black, green.,…; pickled or baked or spiced.
Pupils may ask the dealer information about quality and cost.
At school, various investigations could be solicited.
An important one concerns food conservation.
Teachers might ask:

- why are salt and spices used?
- do you think that salt and/or spices are used to make olives (or other food) tasty or are there other reasons?
- …….

3) Teachers may ask:

- Do you know myths or tales concerning the olive tree?
- Do you know paints concerning the olive?
-

Poems could be proposed or pupils may imagine and write some tales.

A visit to a museum may be organised:

- in a museum devoted to folk wisdom and rural culture, old tools can be seen and, maybe among them, those used for olive cultivation and oil production (oil mills,…), old weights and liquid measures…..
- olive in the arts (paints,….)

4) The teacher may organise a tasting session.
Various oil samples (without label in order to avoid any influence on evaluation) are tasted: some oil drops are put on a bit of bread; pupils are requested to try slowly each sample; after each tasting, students should eat a bit of bread (otherwise the taste can be altered).
Smell and colour are additive elements for evaluating oil quality.
Students can make classifications by collecting information on samples and taking into account various parameters like acidity, pressing (first or other), DPO (Denomination of Protected Origin).
Are the classifications identical?
5) The teacher may organize an exchange among peers of Mediterranean countries on recipes whose main ingredients are olives and/or oils.

Activities for 15-18 year olds could be addressed in science-technical higher secondary school to carry out chemical and spectro-photometric analyses of different types of oil.
A tasting session could be organised in order to investigate organoleptic properties and to assess quality.

Examples of Mediterranean recipes (from Southern Italy)

Savory Apulian Bread (*Focaccia pugliese*)

Ingredients:
400 g of all-purpose flour
20 g of beer yeast
Extra-virgin olive oil
Ripe tomatoes, preferably small and round, peeled
Black olives (may be pitted if preferred)
Dried oregano
Salt
Garlic (optional)

Preheat the oven to 180°. Dissolve the beer yeast in a small amount of warm water. Add to the flour with a pinch of salt. Work the dough until smooth and elastic. Shape into a ball and wrap in a towel. Let the dough rest for approximately 2 hours.

Knead the dough briefly then press it into a well-greased metal baking pan using your hands. Using your fingers, make numerous indentations in the surface of the dough. Place the peeled tomatoes in some of the indentations, pressing them lightly into place. Fill other indentations with the olives.

Sprinkle the surface with salt and olive oil and oregano. If desired, add garlic. Set the oven to 180° and bake until browned.

Can be served warm or cold.

Serves 6 to 8.

2).

Artichoke and olive tart (*Crostata di carciofi e olive*)

Ingredients**:**
400 g of all-purpose flour
20 g of beer yeast
Extra-virgin olive oil
200 g. canned Italian tomatoes, chopped
3 small artichokes
100 g. of black olives, pitted
150 g. of Emmental cheese, cut into cubes
5 eggs
2 dl of milk
ground nutmeg
salt and pepper
a few basil leaves

Remarks: artichokes should be small and tender and the leaves should have thorns.
Otherwise, substitute artichokes with courgettes (zucchini) or scallions.

Preparation:
Preheat oven to 160°.

Dissolve the beer yeast in a small amount of warm water. Add to the flour with a pinch of salt. Work the dough until smooth and elastic. Shape into a ball and wrap in a towel. Let the dough rest for approximately 2 hours.

While the dough is resting, clean the artichokes, cutting them into wedges and placing them in a bowl of water and lemon juice as you go along to keep them from discoloring. When all the artichokes have been prepared, drain the water, dry the artichokes and sauté them in the olive oil over medium heat.

Drain the liquid from the tomatoes. Beat together the milk and eggs adding salt, pepper and nutmeg to taste.

Roll the dough out onto a floured surface to form a circle. Oil a tart plate and line it with the dough. Fill the tart with the artichokes. Distribute the tomatoes, olives, Emmenthal and basil evenly over the surface. Pour the egg and milk preparation over the entire surface. Place the tart in the preheated oven and bake for 50 minutes. Serve immediately.

Serves 6-8 people.

3) **Orecchiette pasta with Broccoli Rabe (*Orecchiette ai broccoletti*)**

400 g of orecchiette pasta (specialty of the Puglia region; may be substituted with pasta shells)
150 g salt-cured anchovies, washed and with any bones carefully removed
800 g of broccoli rabe
extra-virgin olive oil
all-purpose flour

salt and pepper

Preparation:
Clean and wash the broccoli rabe keeping the tender points and young leaves, discard the tough, older leaves and woody stems. Bring a large pot of salted water to boil, then add first the broccoli quickly followed by the orecchiette.

While the pasta is cooking, pour some olive oil in a small frying pan. When the oil is just beginning to boil, add the anchovies and stir constantly until the anchovies begin to dissolve.

When the pasta is cooked, drain it and the broccoli rabe and divide between plates. Mix with a little olive oil and fresh-ground pepper, spoon the heated anchovy and olive oil over the pasta and toss gently. Serve immediately.

Serves 4.

Suggestions.
Pupils could prepare a booklet with their own family recipes. In the classroom a critical analysis may be carried out to see if the recipes fit requisites of a healthy nutrition (are they too rich in fat? Do they lack some essential substance? etc.,). Pupils might be asked to alter parts