FOOD GROUPS

MILK AND MILK BASED PRODUCTS

MILK
Is the staple food for the first two years of life.

Chemical composition and nutritional value
The chemical composition is different, depending on the species of animal and human milk is the ideal food chemical composition in the first months of life.

Human milk
Milk secreted during the first 5 days, called colostrum, is a special composition, it then changes to reach the stage of mature milk. Compared to definitively milk, colostrum has more protein, globulins prevail against casein is low in carbohydrates and has almost the same amount of fat. Calcium and phosphorus are in smaller quantities, trace sodium, and zinc is threefold quantity. Vitamins are present in large amounts, vitamin A 5-10 times more abundant, as vitamin B₂ is also increased.

Final milk contains:
• Protein - 1.4%, consisting of casein (0.7%), lactalbumin (0.5%) and lacto-globulin (0.2%) of female breast contains more non-protein nitrogen and amino acids that are directly absorbable and can be used quickly in their protein synthesis;
• Carbohydrates - represented 6.8% of lactose and oligosaccharides, oligosaccharides are the remains of glucose and galactose, sialic acid, fucose, N-acetyl-glucosamine;
• Fat - 3.4% have a high content of unsaturated fatty acids, saturated fatty acids ratio / unsaturated fatty acids = 1 to 3 in cow's milk, high cholesterol levels (30-40 mg% to 10-15 mg % in cow's milk) and its precursors, contribute to the growth and maintenance of nervous system activity;
• Mineral salts quantitatively less than those of cow's milk (0.2 g% to 0.75 g%), but are used almost entirely for infant body, which explains the rarity of rickets in infants fed;
• Vitamins in sufficient quantities for the needs of infants, quantities vary by mother's dietary intake, vitamin D is not enough;
• Enzymes (amylase, catalase, lipase, alkaline phosphatase and acid peroxidase, transaminase) in quantities greater than in cow's milk;
• Immunoglobulins A, G, M, E, lactoferrin, lactoperoxidase.
**Cow's milk**

**The chemical composition of cow's milk**

Protein - the protein of milk (averaging 3.4 g%) the most important is casein (2.9 g%), whey protein (lactalbumin 0.4 g%, .05 g% lactoglobulin, lactotransferina 0.02 g%).

Casein is a phosphoprotein combined with minerals as phosphorus, calcium and magnesium caseinate.

It precipitated at pH 4.6 (isoelectric point) forming large micelles and in the presence of acid forming lactic acid casein (curd) and calcium lactate (solution). This phenomenon occurs during acidification of milk with lactic acid consisting of lactose, the action of lactic acid bacteria. Precipitation can occur under the action of coagulating enzyme (rennet, pepsin). This phenomenon is the basis for preparing cheese.

Whey proteins represent 17% of the total protein of cow's milk, being rich in cysteine. Almost half of these proteins β-lactoglobulin are represented and α-lactoglobulinele represents approximately 20% of total protein. These proteins contain more tryptophan and other essential amino acids. Serumalbumina (3-5% of whey protein) immunological properties similar to human serum proteins.

Milk sugars are neutral, nitrogen and hydrogen. Lactose is the most important, it represents about half of the dry matter, nelipidică milk (4.9 g%). It breaks down into two components monosaccharides (glucose and galactose) under the action of intestinal lactase. Absence of lactase (congenital, due to enteritis or prolonged lack of milk in the diet) produces digestive disorders after ingestion of sweet milk because lactose reaches the large intestine that form where fermentation favors flower development.

Milk lipids are the triglycerides (98% of fat), phospholipids (0.05 to 0.075%), steride (cholesterol and lecithin), averaging 3.6%.

In terms of chemical composition, they contain a high percentage of phospho-lipids, polyunsaturated fatty acids are poor and have large amounts of cholesterol.

Minerals found in milk at a rate of 9 to 9.5%, varies according to season and depending on the species, are represented in the majority of phosphates (Ca, K, Mg), citrate (Na, K, Mg, Ca) chlorides (Na, K, Ca). Iodine is present in a proportion superior to that of other foods.

Milk and cheese are the most important source of calcium, which is found in the following amounts: 125 mg% ml milk 200 mg% in cottage cheese, 500 mg% in cheese, 700 mg% in cheese and cheese; 900 - 1000 mg% in Schweitzer. Calcium is accompanied by her favors absorption factors: phosphorus ratio higher than one from (1.4), the presence of the active form of vitamin D, the presence of lactose and lactic acid, or the presence of citrate.

Cow's milk contains more calcium and phosphorus than human, but the Ca / P is lower. Sodium and potassium concentrations are higher in cow's milk from those in human milk. Magnesium, sodium, potassium gives milk alkalinizing properties.

Most important milk enzymes are lipases, esterases, alkaline phosphatase, lysozyme, amylase, protease, xanthine oxidase, peroxidase, catalase.

Best represented vitamins in milk are B2, B1, A. Milk is a poor and unreliable source of vitamin D, vitamin C in breast milk is approximately 3-4 mg%, so scurvy appears not to breast-fed children.

**MILK BASED PRODUCTS**

**Acid dairy products**
These products are the sour milk, acidophilus milk, yogurt, kefir site, and koumiss. Acidified milk contains all the protein, fat, calcium and vitamins of the original milk. It is a safe way to prepare for countries where hygiene conditions are poor. Lactobacillus acidophilus milk is boiled and increased abundantly, so that there is likely pathogenic flora development. Yoghurt in the U.K. and the U.S. frequently consists of *Lactobacillus bulgaricus, Streptococcus thermophilus*.

Yoghurt is originally from South East Europe and Turkey. Acidified milk kefir is prepared in the Caucasus with lactobacilli and yeast that ferment lactose, it can contain 1% alcohol. Koumiss is a popular Russian drink made from mare's milk, which is rich in lactose. It may contain more than 3% alcohol.

Various bacteria are used for this purpose: Lactobacillus acidophilus found in man, *L. bifidus* found in the gastrointestinal tract of infants and *L. bulgaricus* found in cows. All these bacteria cause a breakdown of lactose with the formation of lactic acid (up to 3%). The natural method for preparation is to boil the milk and somewhat reduce its volume. After cooling, it is inoculated with a small portion of the previous day's milk as a starter. The souring takes about 24 hours. Commercial preparations of the bacterial cultures are also available as starters.

Soured milk (yogurt) contains all the protein, fat, calcium and vitamins of the original milk. There are many traditional forms of sour milk, which are appreciated as national drinks. Yogurt originated in South-east Europe and Turkey. It is considered a long life aliment.

**Curds (junket)**

Curds are the clotted proteins formed when fresh milk is artificially inoculated with rennet (a commercial preparation of rennin prepared either from calves' stomachs or vegetable sources).

**Whey**

Is the fluid that separates from the clot in making cheese. It contains most of the lactose from the original milk and little lactalbumin, but almost no casein or fat.

**Cream**

Cream contains all the fat and usually one third to half of the protein and lactose from milk. The standards from cream are varied in different countries and from time to time.

**Evaporated and condensed milk**

Evaporated milk is the liquid product obtained by the partial removal of water from milk or skimmed milk. Condensed milk is the product obtained in the same way, but with the addition of sugar. In some countries, infants fed with these products have become blind, due to the development of keratomalacia.

**Skimmed milk**

This is the milk from which the fat has been removed in the making of butter or cream.

**Casein**

Various preparations of casein are on the market. Casilan, a calcium caseinate, is one which is well known. These preparations have little taste and provide a most convenient and effective mean of enriching diets with proteins in dietetic practice, as in the treatment of burns, prolonged fevers and in convalescence from severe illnesses.

**Cheese**

Cheese is derived from milk products is obtained by working in different ways resulting in clot casein clot. Coagulation of milk casein can be achieved in two ways: by acidification or author clot.
Obtained by acidifying lactic cheeses are normally eaten fresh, and those obtained by the author clot requires a more laborious process.

Maturation is an important step in the process of cheese and involves: proteolysis, deamination, decarboxylation, lipolysis, fatty acid degradation, glycolysis and lactic acid fermentation. Cheeses contain smaller quantities of water soluble vitamins and lactose than milk. Most cheeses contain 25-35% protein of high biological value. Fat content varies from 16-40%. Cheese is rich in calcium, vitamin A, vitamin B₂.

Acidic dairy products contain nutrients in an easily digestible form: the form precipitated casein, lactose and lactic acid as a large amount of vitamin B. cheeses provide a contribution of nitrogenous substances 4 times the milk.

**Recommended intake of milk**
- children 1 - 12 years from 400 to 600 ml
- adolescents from 300 to 500 ml
- adults from 250 to 300 ml
- pregnant women 400 to 600 ml
- people exposed to hazards 500 ml
- elderly 300-500 ml

**Recommended intake of cheese** is between 20 to 60 g

**Nutritional value of dairy products**
Acidic dairy products contain nutrients in an easily digestible form: the form precipitated casein, lactose and lactic acid as a large amount of vitamin B.

Lactic acid formed is essential for pepsin activity in gastric juice. For healthy people is an ideal food, which prolongs life.

These products are recommended for the following categories of persons:
- hypoacidity and anacidity people;
- people who have lactase;
- in liver diseases, cardiovascular, renal,
- in obesity.

**The effects of inadequate consumption**
Inadequate intake of this food group is manifested by increasing incidence of rickets, delayed development stature, weight, reducing resistance to infections and toxins.

Lactate or lacto-meal scheme extended lead to iron deficiency anemia and hypovitaminosis C. Contraindications milk consumption: fermentation enterocolitis, ulcerative colitis.

**MEAT AND MEAT BASED PRODUCTS**

**MEAT**
Man using meat has over 100 species of animals. It is composed of skeletal muscle tissue and is consumed as such or after being converted into preparations.

**Chemical composition and nutritional value**
Protein is the main component of muscle tissue from young animal, representing about 80% of dry residue and 18-22% of its full weight. Sarcolem proteins and interstitial tissue are represented by collagen, elastin and reticulin.
Miofibrilare proteins form insoluble fraction of muscle, which are represented by actin, myosin, tropomyosin, contractin, para myosin, meta-myosin.

Meat protein has a high biological value, but decreased when increasing the proportion of connective tissue.

These proteins have an important role in muscle contractility in life and his behavior at the point of rigidity and meat curing. Myosin is 35% of muscle protein and contains all essential amino acids in a balanced proportion. Actin is 13 to 14% of muscle protein and the normal balance of amino acids. Sarcoplasmatic protein fraction soluble form of muscle protein. They are the myogen, myoglobin, myoalbumin. Granules of sarcoplasmatic proteins are the proteins, globulins, lipoproteins, ribonucleoproteins. Nuclei are nucleoproteins and proteins represent 50% of dry matter.

Muscle fat of cattle, sheep, horses and pigs containing unsaturated fatty acids in a small proportion. Fat meat chicken and turkey contain more polyunsaturated fatty acids, but their levels depend on the proportion of feeding birds.

Carbohydrates are represented, especially glycogen and varies with the species of animal and type of meat. After slaughter glycogen degradation occurs, accumulate lactic acid lowers the pH and form simple sugars.

Water ranges from 75-80%, decreases with age and with the amount of fat.

Minerals are present in amounts ranging from 0.8 to 1.8% and are represented by phosphorus, calcium, iron, fluorine and iodine (abundant in fish flesh).

Vitamins are present to a significant degree, especially from group B.

Pork is rich in thiamine and nicina proportion is higher in meat from different mammals. Soluble vitamins are present in meat fat.

**Mammalian meat** (cattle, sheep, horses, pigs)

Major protein intake is done by horse meat and lamb (21.7% and 20.1%) and lowest in the pork (10.1%).

Mutton and pork fat intake ensures the highest 18% and 13%, only 2.6% horse meat.

Regarding vitamins, thiamine is raised pork quantity (1.0 mg% in the poor). Vitamin B₃ is about 5 mg% in various species of mammal meat.

Of mineral salts, phosphorus is found in appreciable proportions especially veal and rabbit (290 and 220 mg%), the horse has a small amount of phosphorus (44 mg%) but a high amount of sodium (175 mg%).

Maximum intake of potassium is obtained from mutton and pork and an important contribution by iron horse meat (5 mg%) and calf (3.6 mg%). Calcium generally found in smaller quantities.

Meat wild mammals are characterized by a relatively high intake of protein and minimal fat. Phosphorus and iron are found in major quantities. Vitamin intake is generally insignificant. Venison is characterized by a lower digestibility.

Poultry meat most commonly used in food is meat: chicken, duck, goose, turkey, pigeon and guinea fowl. Goose and turkey meat provides a larger amount of protein: 21.6% and 20.1% respectively. Goose and duck meat are characterized by their richness in fat: 31.5 g% and 28.6 g%.

**Viscera**

The liver is rich in protein, carbohydrates, vitamins and iron are absorbed and rich as the pancreas and kidney cells, contains many nucleic acids are contraindicated in gout.

The brain has low protein content, is rich in lipids, especially phospholipids,

phosphorus, potassium, sodium, with a small percentage of vitamins;

The kidney is rich in vitamin A, riboflavin, niacin, and thiamin.
MEAT BASED PRODUCTS

Meats are subjected to various treatments in order to achieve certain organoleptic and nutritional qualities and to ensure good preservation.

Of raw materials used are: meat from one animal species or more, viscera, fat, salt and potassium nitrate in order to get a pink-red color by forming nitrozomyoglobin (myoglobin and nitrite resulting nitrate reducing bacteria under the denitrify action). It adds flavor, spices, and binders.

Classification
- minced meat products: bacon, gypsy skirt, bacon, pastrami;
- products made from minced meat:
  - with reduced storage period (4 days): baloney, frankfurters, liverwurst, sausages, ham;
  - with medium storage term (3 months) depending on temperature and storage conditions: italina sausage, russian salami, cracauer;
  - with long shelf life: winter salami, Sibiu salami, dried beef sausage.
- products derived from meat: meat paste (minced meat mixed with fat and spices), meat juices, meat extracts.

Recommended intake of meat
- children 1-3 years 60 g, 80 g 4-6 years, 7-12 years 130 g;
- teens 225 g, 220 g teens
- adults between 20-25 years average effort 225 g, 250 g great effort, great effort 270 g
- adults between 25-65 years effort than 200 g, 225 g average effort, great effort 250 g

The effects of inadequate consumption
A diet deficient in meats creates the risk of iron deficiency anemia, especially in children and women during maternity. Excessive consumption of meat exposes the consequences of insufficient intake of milk and cheese and other food groups.

EGGS

The most commonly consumed in our country hen eggs, but can be used eggs and other species of birds (ducks, geese, turkeys, guinea fowl, pigeon and quail).

Structure
If we make a section through an egg stand following components:
- cuticle composed of mucoid substances dry skin covering the outside;
- bark white to brown, matte, representing approximately 10.9% of egg weight, is crossed by numerous pores, calcium carbonate (94%), magnesium carbonate (1.3%), phosphates and other organic substances (3%);
- shell membranes (one mural that surrounds the skin and other visceral covering the whites) to delimit the round egg air chamber that increases in volume as the egg gets old;
- whites forms a viscous transparent, gelatinous representing 57% of egg weight and containing water (85.8%), protein (12.7%), fat (0.3%), carbohydrates (0.33 to 0, 55%), minerals and vitamins in small amounts;
- vitelline membrane covering the egg yolk;
The egg (which is maintained by two cords called chalazas that cling membranes at both ends of the egg) contains 50.8% water, 16.8% protein, 31.7% fat, 8-15% minerals (phosphorus, calcium, iron, sulfur, trace elements); germinal disc is located on the yolk surface (embryo).

The chemical composition of the egg
Proteins are present in both the egg white and yolk.
Proteins in egg white are ovalbumin, phosphoprotein, ovotransferina with antimicrobial activity, ovomucoid other proteins represented by lysozyme, globulin (enzymatic activity and anti-bacterial), ovoinhibitor (with inhibitory activity on trypsin, chimiotrypsin) and avidin, which binds biotin in the tryptophan.
Yolk proteins are, in particular, the lipoprotein complex. Components of yolk lipoproteins were separated into two fractions: a low density fraction rich in lipids represented by lipovitelin, a fraction of high density, low in fat represented phosphovitelin, livetin.
Carbohydrates are found in highest proportion in whites.
Lipids are concentrated mainly egg yolk, representing 70% of its dry weight. They consist of glycerides, phospholipids (lecithin, cephalins), sterols. The proportion of egg lipids is found, the content in unsaturated fatty acids and saturated diet depends birds.
Minerals are especially yolk is represented sulfur, phosphorus, iron, calcium. The egg white is best represented sulfur. Egg trace elements are iodine, copper, manganese.
Vitamins are well represented in the egg.
Soluble vitamins are found in both whites (especially riboflavin) and yolk. The eggs are large amounts of vitamin B1, B2, B12. Fat-soluble vitamins are found in the yolk (vitamin A, D and E).

Disadvantages of excessive consumption of eggs
- Eggs are rich in cholesterol data yolk and low carbohydrate content.
- Very small quantities of calcium are offset by the Ca / P, which is an acceptable (phosphorus is bound in the form of phosphates).
- lack of vitamin C, vitamin B3 deficiency and colecistokinetic action.

Recommended intake of eggs
Yolk is recommended diversification infant feeding, starting with the fourth, mixed with the vegetable purée. Preschool children can eat a half egg / day and schoolchildren and adolescents one egg / day.
A pregnant woman should bring in food to 4-5 eggs per week and during lactation, one egg per day.
Active adult system may contain 6-7 eggs / week, and the elderly 2-4 eggs / week.
Due to excito-secretory reduced slightly digested and absorbed, it is recommended in diets for mercy: hyperacid gastritis, preulcer state, gastric ulcer, post hepatitis states, after trauma.
Digestibility egg is easy, it requires a reduced gastric secretion and stomach leaves in a shorter time than meat.
Because wealth in lecithin, vitamins of group B and protein quality egg is recommended neurasthenia, fatigue, slow growth in children. White part has no fat, so it is recommended diets.
Eggs not used in cirrhosis and those allergic to eggs.
FISH AND SEAFOOD

Fish contain water in a variable percentage (68-85%) was lower for fatty fish (below 50%). The proportion varies between 15-22% proteins, lipids vary greatly with species of fish (0.3 to 31%) with a high content of unsaturated fatty acids. Is an important source of animal protein.

Weak fish (white meat, easy to digest) contains less than 1% fat and 10% protein energy has a value between 50-80 kcal/100 g white meat fish are cod, turbot, ling, sole, bream.

Fish containing fat between 1.7 to 8.5% have a higher energy value, 70-120 kcal/100 g are merlucius, hippoglossus, mackerel, gray mullet, trout.

Fatty fish contain 8.5 to 15% fat and therefore have a higher energy value, 80-200 kcal/100 g and are represented by: herring, sardines, salmon, eel, sardines and mackerel.

Fish proteins have a high biological value but only a diet of fish tends to be monotonous.

Fatty fish are good sources of fat-soluble vitamins (A and D).
Large fish are rich in iodine and is a good source of fluoride.
Small fish can be a source of calcium when ingested as a whole.
Fish meat is low in thiamine because tiaminazei that degrades vitamin.
Fish is an important source of iodine and fluoride (as tea leaves).
Fish contains an important ratio for phosphorus, potassium and low sodium amount.
Fish spoilage occurs faster than other meats because of the following reasons:
- rotting bacteria multiply at temperatures of 15-22°C,
- penetration of bacteria in fish flesh is lighter than the meat of other animals;
- reaction of fish meat is closer to neutrality, which favors bacterial growth.

Epidemiological studies conducted have shown a reduced incidence of cardiovascular pathology in populations consuming overseas. It was determined that this action is due to polyunsaturated fatty acids. Fish oil administration in patients with hyper-triglycerides reduces cholesterol, triglycerides and VLDL.

Fats from fish are characterized by richness of unsaturated fatty acids.

Fish fats exert protective effects against various promoters body carcinogens (reduce the number and size of mammary tumors) in cardiovascular and autoimmune diseases.

Shellfish

Lobsters, crayfish, crabs and other shellfish contain little fat and energy value of 50 kcal/100 g. Some people are sensitive to shellfish proteins and develop severe allergic reactions.

Mollusks

Oysters and other shellfish contain more protein than most fish (15%). They also contain about 5% relatively little glycogen and lipids.

Oysters are rich in zinc, which is accumulated with related metals (100 mg/100 g).

Shellfish can become contaminated easily with bacteria in the genus Salmonella.

Roe

Roe chemical composition as follows:
- protein: 23-37% (especially nucleoproteins);
- 2.5 to 4% fat (especially lecithins) / 15 to 17.5% (in the starlet caviar, stor);
- carbohydrates: 1%;
- vitamins and minerals;
- water: 49-66%;
Caloric value of roes varies from 90 to 255 kcal/100 g product.

VEGETABLES

Chemical composition and nutritional value

Proteins are present in large amounts in dried legumes (beans, peas, soybeans). In young plants are then replaced prevails albumin-globulin (as a mature plant). Pulses proteins to customize with a low content of methionine, while lysine content is close to that of meat. Leafy vegetables (lettuce, spinach) and potatoes contain small amounts of protein with average biological value.

Carbohydrates. Low molecular weight carbohydrates are poorly represented in vegetables, except carrots and beets do that are rich in sucrose. Polysaccharides starch and cellulose are represented by:
- reserve starch is the main substance of vegetables increased starch content appears in potatoes, carrots and dried legumes;
- cellulose is the most important vegetable organic substance through her role as supportive formation of the cell wall skeleton, usually associated with hemicelluloses;
- cellulose can be soft (the pumpkin) or hard (in legumes) contain pectin which welded carrot cell membranes from being used in the treatment of diarrhea.

Lipids are poorly represented in vegetables. Organic acids found in vegetables as salts and derivatives thereof and affecting the taste and conservabilitatea products.

Minerals. Calcium is found in significant quantities in vegetables (cabbage, cauliflower, parsley, peas, green beans), but absorption of this mineral element is prevented from forming insoluble calcium oxalate salts. Phosphorus is present in large quantities in the form of phytic acid but less usable. Ratio Ca / P is not optimal absorption of both minerals. Potassium is found in higher amounts than sodium, iron is found mostly in leafy vegetables and other minerals present in vegetables are the magnesium, sulfur, chlorine, copper, iodine.

Vitamins are found in significant amounts in vegetables. Vitamin C is well represented in the external parts of the plant and the leaf gradually increases reaching its maximum amount at maturity. The vegetables are high in vitamin B1, B2, B3, B6, B9.

Group of fat-soluble vitamins is the large amounts of pro: pro vegetables to give attractive color, phytosterols (provitamins D2) are found in cabbage, spinach, the leaves of vegetables. Vitamin E is found mainly in seeds, vegetable oil and spinach, lettuce or dried pulses. Vitamin K is found in the form phylloquinone leafy greens (spinach, lettuce, cabbage, cauliflower) where it is synthesized.

Anti-nutritive substances
- antivitamin - ascorbicoxidase (destroys vitamin C);
- antimineral - phytic acid and oxalic acid (binds calcium, iron, magnesium);
- antiproteinogenetics - trypsin-inhibitors;
- antithyroid – tianogenic glycosides (prevents iodine in the thyroid)
Caloric value is very low, ranging between 10 and 50 g kcal/100

Recommended intake of vegetables
- children 1-6 years 285 to 340 g;
- children 7-12 years from 410 to 500 g;
- adolescents boys from 550 to 570 g, girls 430 g;
- males 500-700 g, females 450 g;
- elderly 250 g

FRUITS

No other class of foods has such a variety of pleasant and attractive flavors. By delicacy of coloring, fruits attract the eye as well as the palate. For thousands of years vintners have been preserving the best and most delicate flavors in wines and liqueurs.

The nutritive value of fruits is much less important. The only essential nutrient in which fruits are rich is ascorbic acid. Almost all fruits contain physiologically significant amount of this vitamin and some are very rich. As fruits are often, eaten raw, large intakes of the vitamin may be provided. Fruits like vegetables contain dietary fiber and add bulk to the stools; they are thus mild natural laxatives.

Prunes contain derivatives of hydroxyphenyllisatin, which stimulates the smooth muscle of the colon. Pectin present in fruit assists in the formation of jellies and is of great value to jam – makers.

Most fruits contain small quantities of carotene and the B-group of vitamins.

Ripe fruits contain no starch. Fructose and glucose are the chief sugars found.

How important fruit is in national diet depends on one’s opinion as to men’s requirements of ascorbic acid.

Fruits contain a great variety of organic acids. They are responsible for the sourness of unripe fruit. During ripening the concentration of these acids falls and that of the sugars rises. As already described, the body readily disposes of these acids; most are easily oxidized, some excreted in the urine and a few are not absorbed from the gut. They do not give rise to acidosis.

Bananas are fruits which require special mention. They contain much larger amounts of carbohydrate than most fruits and so can act as a useful source of energy. There are about 50 varieties of bananas. They vary widely in composition, but may contain carbohydrate 20 g, protein 1 g, fat 0.2 g with an energy value of about 335 kJ (80 kcal)/100 g. In some parts of the tropics they may be the staple food of children and are often eaten together with large quantities of cassava. As a consequence the consumption of carbohydrate is high, while that of protein is low and kwashiorkor may occur.

Fruit morphology
- Epicarp or outer layer consists of layers of flat cells that contain coloring and flavoring;
- Mezocarp or pulp is composed of polyhedral cells filled with juice, among which are empty spaces with gas mixture of variable composition;
- Endocarp and fleshy part that surrounds the seeds of apples, pears or hard shell forming the core of cherries, plums.
Chemical composition and nutritional value
Proteins are poorly represented (average content is 0.88%). Carbohydrates are present in amounts ranging from 5 to 20%.
Fructose and glucose play an important role in their cooking for fructose and glucose.
The starch content is increased from cruel and decreases as fruit maturation. Cellulose is found in combination with hemicelluloses, gums and pectic substances.
Pectic substances involved in welding cell membranes between them, the action of pectin-esters forming macromolecules which causes three-dimensional networks with calcium ions and other divalent ions, which will form gel networks pecto-calcium, an important role in maintaining fruit texture, but also compromise production of fruit (their gelling).
Lipids are concentrated in the seeds and fruit seeds.
Minerals are represented mainly potassium, calcium, magnesium, phosphorus, iron. Sodium is found in small quantities so that fruit can be used in salt restriction regimes.
Vitamins are represented especially vitamin C, which is found in large amounts in citrus fruits, strawberries, strawberry, gooseberry. The outer parts of fruits are rich in vitamin C, compared to the interior.
Riboflavin is found in large quantities in green fruit stage.
Thiamine is found in bananas, grapes, oranges and apples.
Soluble vitamins are present in small quantities, in particular oleaginous fruits (walnuts, almonds) are large amounts of vitamin E and vitamin A (mainly in the form of provitamin) is found in lemons, oranges, apricots, tangerines, bananas, nuts.
The effects of inadequate consumption
- Fruits have a diuretic action by increased water content and potassium.
- Tannin-rich fruits (blueberries, quince) exercise constipating action.
- Feces contribute to fruit (apple pectin).
- Fruits rich in ballast substances have a laxative effect;
- Oleaginous fruits are not recommended diets.

Recommended intake of fruits
- Children 1-6 years 180-240 g 270-330 g children 7-12 years;
- Teens 370-380 g; girls 330 g;
- Men women 260-330 g 270-280 g;
- Elderly 220 g

Cereals
Structure and composition of wheat grain
Grain structure
- Outside the pericarp and test grain, high fiber structures harsh (12% by weight of grain);
- Test in pericarp and aleuronic layer is a coating rich in protein;
- Inside endosperm is composed of two parts (internal and external) (85% by weight of grain);
the bottom of the grain of wheat germ or embryo is placed (attached by a special structure called scutelum) (3% by weight of grain);

**Composition of wheat grain**
- seed is relatively rich in protein, fats and vitamins, almost half of thiamine is found in scutelum;
- outer layers of the endosperm and aleuronic layer has high levels of protein, vitamins (especially niacin) and phytic acid, and the inside to customize the abundance of starch.

**Chemical composition of cereal grains**
Cereal proteins are: albumin (the embryo), globulins, prolamins (gliadin contained in the gluten), glutenin.
Carbohydrates are well represented in cereal grains. The low molecular weight are especially germ, endosperm starch is well represented.
Flour with a low degree of extraction (white flour) is richer in starch than one that has a high degree of extraction. Dextrin is in small amounts in flour. Cellulose and hemicellulose are concentrated in the outer layers.
Lipids are present in amounts of 1-2% in flour and bran, in the form of phospholipid and glycolipid (the endosperm) of corn germ oil is rich in tocopherols.
Minerals (phosphorus, potassium, calcium, magnesium) are well represented in portions of shell and embryo, phosphorus is present as phytic acid and phytates to be hydrolyzed by phytase, releasing phytic acid, which will form insoluble salts with some elements minerals (calcium, magnesium).
Vitamins are present in large amounts in cereals in the embryo and shell layers, endosperm is much poorer
Wheat grain is free of vitamins A, B6, D and distribution of vitamin C. Because white flour content is significantly lower in vitamins than whole wheat.

**Nutritional value of flour**
Extraction rate is the proportion of grains of wheat that is used for making flour.
Flour extraction rate of 85% contains 85% by weight of wheat grain, the rest being removed as bran. Wheat flour with an extraction coefficient of 100% dietary fiber found in amounts 3 times higher compared to white flour, the protein decreases by 16-18% and 35% lipids. Minerals are found in varying amounts in black flour, but their absorption is reduced by their binding phytates. In white flour quantity of nutrients is low, but what remains is better absorbed the loss phytate by grinding. By crushing losses occurring soluble vitamins, which require flour fortification with thiamin, niacin and riboflavin sometimes. Vitamin E is removed completely by grinding grain.

**Nutritional value of bread and cereal derivatives**
These products provide a third of the calories needed an adult, a loaf of bread 100 g providing 255 kcal. Calories are offered mostly starch which forms 50% by weight and more intermediate bread for white bread. Cereal products contain large amounts of vegetable protein, leading to a protein content of 8 to 11 g per 100 g product. These products provide 40-45% of protein for 24 hours. Unfortunately this is an average biological value protein, low in lysine and valine.
Bread and cereal derivatives are rich in thiamine, riboflavin, pyridoxine, niacin, tocopherols. In these products lack vitamin C and vitamin A is in insufficient quantities. Part
of mineral elements combines to form phytate phytic acid (calcium) that are insoluble and excreted with the feces.

**Recommended intake of bread and cereal derived**

- children 1-3 years ration of bread 80 g / day
- children 4-6 years ration of bread 140 g / day
- children 7-12 years ration of bread 225-250 g / day
- male teens ration of bread 300 g / day
- female teens ration of bread 250 g / day
- men ration of bread 320-500 g / day
- elderly ration of bread 250-300 g / day
- ration of cereals 30 g / day;
- ration of cereals 40 g / day;
- ration of cereals 50 g / day;
- ration of cereals 40 g / day;
- ration of cereals 50 g / day;
- ration of cereals 40 g / day;
- ration of grain 35-55 g / day;
- ration of grain 30-40 g / day;
- ration of grain 20-30 g / day.

**Bread**

Manufacturing process involves the four steps:

- Reception of raw materials;
- Storing them in optimal conditions;
- Their training;
- Dough from the four raw materials base represented flour, water, yeast and salt, knead dough and leave to leaven 2 to 3 hours at a temperature of 27-32 °C during leavening occurs alcoholic fermentation of hydrate resulting fermentable carbon and ethyl alcohol and carbon dioxide, fermentation starts with glucose and fructose decomposition in flour existing or occurring as a result of hydrolysis of disaccharides and small parts of starch fermentation enzyme complex is produced by yeast cells, forming gas depends on the quality starch granules can be attacked more easily than the β-amylase, resulting fermentation is more intensive and more gas, initially formed carbon dioxide dissolves in water, and remain as small gas vacuoles around cells yeast from vacuoles expansion and merging them mellow and becomes spongy dough, forming vacuoles depends on the amount and quality of gluten that form of gliadin and glutenin when kneading dough.

**POTATOES**

Potatoes contain 75-80% water and provide 80 kcal/100 g of which most comes from starch. Is about 2 g/100 g protein and biological value of egg-like. Potatoes contain small amounts of minerals and B vitamins are a good source of potassium. There are rich in ascorbic acid, used but in large quantities provides an appreciable amount of this vitamin (4-50 mg/100 g).

Potatoes are easily digested and well absorbed.

Potatoes contain solanine (an alkaloid substance) that is potentially toxic to humans (normal concentration in potatoes is 7 mg/100 g in potatoes sprouting concentration increases). Potatoes with increased solanine may cause symptoms such as headache, vomiting, diarrhea, fever, circulatory collapse, neurological disorders, hallucinations.

**Recommended intake of potatoes**

- children 1-6 years 130-200 g / day
- children 7-12 years 270 g / day
- teenagers and 330-370 g / day, respectively teens 300 g / day
- men between 20-40 years 400-470 g / day, between 41-65 years 270-460 g / day
women between 20-40 years 270-330 g / day, between 41-65 years 200-270 g / day.
elderly 270 g / day.

DIETARY FAT

Food fats include vegetable and animal fats.
Fats include vegetable seed oils (sunflower, soybean, peanut, corn) in vegetables oil (olive) and cereal seeds.
Animal fats are the cream, butter, tallow, lard, poultry fat and fish oil.
There are valuable foods as they provide a concentrated source of energy and they are also essential for the art of good cooking in all civilized societies.
Most plants bearing oil seeds are tropical.
Fats include lard (pig fat), suet (perirenal fat from cattle and sheep) and beef dripping. They were not only used as foods but also as fuel for heating and lighting (now almost entirely replaced by mineral oils) and also for soap-making, which still continues.
Margarine was invented in 1869 by the French chemist Mege-Mourie and its production was stimulated by the shortage of butter during the Franco-Prussian war. At first animal fats were the main raw material; in 1930's whale oil was much used, but today these have been largely replaced by vegetable oils. Soya bean oil from USA crops is now the main raw material, but the industry is adaptable and price and availability determine which oils are used.

Table II
The principal oils and fats

<table>
<thead>
<tr>
<th>Vegetable oils</th>
<th>Marine oils</th>
<th>Animal fats</th>
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<tbody>
<tr>
<td>soya bean oil</td>
<td>whale oil</td>
<td>butter</td>
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<tr>
<td>sunflower seed oil</td>
<td>fish oils</td>
<td>lard (from pigs)</td>
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<tr>
<td>groundnut oil</td>
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<td>suet (from ruminants)</td>
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<td>cottonseed oil</td>
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<td>rape seed oil</td>
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<td>palm oil</td>
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<td>olive oil</td>
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<td>sesame oil</td>
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<tr>
<td>maize oil</td>
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</table>

Nutritional value
Oils and fats consist predominantly of triglycerides and contain little water. Vegetable oils and animal fats have an energy value of about 3700 kJ (900 kcal)/100 g. Butter and margarine's have a little lower value, about 3000 kJ (730 kcal)/100 g, because they contain some water.
Diets containing little or no oils and fats or foods into which they have been incorporated are of low nutritional density and hence so bulky as to be unsuitable for active men and women needing more than 12.6 MJ (3,000 kcal) daily. They provide not only energy but essential fatty acids in varying amounts.
The most important fatty acids are:
Saturated acids
- Butyric acid C4:0
- Caproic acid C6:0 short chain
- Caprylic acid C8:0
- Capric acid  C10:0
- Lauric acid  C12:0  medium chain
- Myristic acid C14:0
- Palmitic acid C16:0
- Stearic acid  C16:0
- Arachidic acid C20:0  long chain
- Behenic acid  C22:0

Monounsaturated acids
- Palmitoleic acid C16:1
- Oleic acid  C18:1
- Erucic acid  C22:1

Polyunsaturated acids
- Linolenic acid C18:2
- Linolenic acid C18:3
- Arachidonic acid C20:4

However, they are not essential articles of diet, since natural unprocessed foods provide adequate amounts of these acids. Those vegetable oils with a high content of polyunsaturated fatty acids, particularly corn oil and sunflower seeds oil, are useful in diets for the treatment of patients with familial hypercholesterolemia. One vegetable oil, rape seed oil, contains erucic acid in amounts which may be toxic and regulations in EEC countries limit the level of erucic acid in edible oils and fats to 5%.

Oils and fats may be a source or a potential source of fat-soluble vitamins. Most vegetable oils contain significant amounts of vitamin E; none contain vitamin D and most are devoid of vitamin A activity. Red pal oil is a rich source of β-carotene. Corn oil contains small amounts of carotene. Animal fats contain small but nutritionally significant amounts of vitamin D and retinol. Butter, however, is a good source of retinol and has some vitamin D, the amounts depend on the quality of the cow's diet. The enrichments of margarine's with retinol and vitamin D was a major advance in public health; by law margarine’s must contain 700 μg of retinol and 8 μg of vitamin D for 100 g.

Vegetable fats
Oil extracted from the seeds and germs of cereals after removal of impurities, peels, cores grind seeds, fry and hot process. Remaining oil cakes and meals extracted with organic solvents at low temperatures. Crude from the press and the mixed extraction refined because, besides triglycerides, crude oil contains other substances that make the product undesirable sensory properties. Finally refined oils containing more than 95% triglycerides.

Hydrogenated fats are oils (vegetable or animal) by saturating with hydrogen solidified double links in unsaturated fatty acids. Hydrogenation increases the melting point double links and shelf-life.

Margarine is a butter fat that mimics the sensory properties. Is prepared from sunflower oil or soybean oils by partial hydrogenation of refined until they have similar melting butter.

In the presence of emulsifier (lecithin, mono-and diglycerides) oils are mixed with water or pasteurized milk with added lactic microflora acidification, which give the flavor of butter. In the aqueous phase is added salt, sugar, butter synthetic fragrances. Finally done coloring with carotenoids, vitamin A is incorporated (up to 5000 IU per 100 g) and vitamin D (up to 500 IU per 100 g).
**Animal fats**
Cream obtained by skimming (degreasing) contains almost all fat (99.9%) only 34-50% of all proteins and lactose in whole milk. After processing is recommended to contain 24% fat.
Butter is prepared from pasteurized cream and fermented by mixing in metal containers with intermittent or continuous flow systems. Fat micelles merge into larger granules and separates from whey.
Butter has a fat content of between 65-85% and concentrates all soluble vitamins of milk.
Animal fats are obtained by splitting fatty tissue (fat, lard, tallow) and by heating them to thin lipid. Melted fat separation can be done by decantation, centrifugation coupled with pressing. After cooling, the fats are mechanical mixer to obtain homogeneous appearance.

**SWEETS**
Sugar confectionery (sweets), due to the large amount of carbohydrates is an important energy source. Some products contain fruit sugar (jams, marmalades) and are a source of vitamins and minerals, or added milk, eggs, butter, giving them a complex composition and high nutritional value.

**Nutritional value**
Confectionery is an important source of energy: 300 - 400 kcal/100 g and 500-600 g for the kcal/100 containing lipids.
Confectionery easily absorbed as the sugar is dissolved rapidly assimilable components (glucose, fructose), so it is recommended to people performing high energy consumption.

**Consequences of inappropriate use**
Confectionery exert a laxative plus enterokinetic and irritant effect of fruit fibrous material included in various dishes. If ingested at the end of a meal, the stomach evacuation time extended.
The theobromine content in cocoa sweets, stimulates the nervous system and by tannins and oxalic acid includes reducing absorption of calcium and iron.
An increased consumption of sugary foods can cause an imbalance glucido-thiamine because carbohydrates increase the body's needs for thiamine. Consecutive accumulate lactic acid and pyruvic tissues, which can cause neurotic disorders, anorexia, constipation, tachycardia, dyspnea, hypotension. Excessive consumption of sweets increases the frequency and severity of caries process.

**Recommended intake of sugar and sugary foods**
Sugar and sugar products should represent up to 8% of children and pregnant women ratio to 10% for other consumers.
BEVERAGES

SOFT DRINKS

This includes mineral water, carbonated water, fruit and vegetable juices, syrups and stimulant drinks (tea, coffee, cocoa).

Chemical composition and nutritive value

Soft drinks have low nutritional value due to high water content (80-90%), natural fruit juices and vegetables. Their main role is to rebalance the body fluid.

The carbohydrates they contain (small molecule carbohydrates from fruit or sugar used for sweetening) they provide a supply of energy to the body.

Fruit juices are a good source of vitamins (C, P, provitamin A, B complex) and minerals in particular from cations (potassium, calcium, iron) and trace elements (they have almost the same content as whole fruit). Fruit and vegetable juices stimulate diuresis with potassium wealth and low content of sodium and chlorine.

Organic acids (malic, citric, tartaric) are present in small quantities, they will be metabolized in the body and converted into alkali carbonates.

Proteins and lipids are found in very small quantities.

Tea is rich in caffeine, tannin and aromatic oils. Stands and the presence of large amounts of fluoride.

Coffee contains large amounts of caffeine that has stimulant properties easily in moderate amounts. Too much causes anxiety, cardiac arrhythmia, insomnia, gastrointestinal discomfort.

Cocoa has a stimulant effect similar to that exercised coffee (by theobromine). It has a high content of oxalic acid, so that attention is required in case of oxalate stones.

Natural waters

The most important quality of natural water is that it should be free from pathogenic organisms.

Mineral waters

Mineral waters contain small quantities of sodium chloride, sodium carbonate and bicarbonate, also salts of calcium and magnesium and sometimes iron and hydrogen sulfide. They are usually mildly alkaline. The total mineral content is seldom as high as 8 g/l and is often much less. Many of these waters are naturally aerated with carbon dioxide.

Soda water in its traditional siphon is simply water from any wholesome source, with carbon dioxide forced into it under pressure. It has no medicinal properties.

Fruit juices

Fruit juices are obtained from fruit by mechanical processes. After removal of a portion of the water they are sold as concentrated juice. Fruit juice contains almost the same nutrients as whole fruit but has lost most of the pectin.

The most important nutrient is vitamin C. This varies greatly depending on the fruit from which the juice was prepared. Citrus fruit juices may be expected to contain between 30 and 50 mg/100 ml and pineapple and tomato juices about half as much. Apple juices are also useful for patients on low sodium diets or receiving diuretic drugs for any reason, as the content of potassium is high and sodium low; K/Na ratio is at least 20:1.
**Stimulant drinks**

These beverages contain small amounts of three drugs: caffeine, theobromine and theophylline. These are methyl derivatives of xanthine.

Caffeine is the most active; it is a stimulant of the nervous system and often prevents fatigue; many people find that caffeine appears to facilitate mental work. An excessive intake of caffeine can cause sleeplessness and so may aggravate emotional instability and mental illness. In some persons caffeine appears to sensitize the heart and increase the incidence of ventricular premature beats but this alone is not a reason to forbid its use.

Tea and coffee both contain tannin, which is a weak protein precipitant and astringent and do not impair digestion when taken in moderate amounts and not excessively strong, whether by healthy people or patients. Caffeine is a weak diuretic.

**Tea**

The tea can be recommended as an attractive drink to all, except a few unfortunates in whom tea appears to cause indigestion probably owing to the tannin content. Caffeine content varies from 50 to 80 mg for a cup - 150 ml - of infusion. Its pharmaceutical dose is 60 to 300 mg, so that many cups have to be drunk before this maximum is exceeded. Tea contains flavones which after infusion polymerize to form tannins with an astringent flavor. This process is inhibited by acids as when lemon juice is added and the polymers are absorbed by milk proteins.

**Coffee**

Analyses of a cup of coffee showed that the amount of caffeine is between 58 to 168 mg. Coffee rapidly loses some of its flavor after gridding.

Coffee is a popular drink and in moderate amounts a mild cerebral stimulant and diuretic, but coffee is not inert. Too much can produce anxiety symptoms, cardiac arrhythmias, gastrointestinal discomfort or insomnia. Some people are more sensitive to the pharmacological actions of coffee or are allergic to it.

There is much evidence that caffeine is one of the safest of the drugs and reports that it increased the risk of developing coronary heart disease and cancer of the pancreas are not confirmed. Toasted coffee beans and instant coffee powder contain 10 to 40 mg nicotinic acid/100 g.

**Cocoa**

The chief xanthine derivative in cocoa is theobromine but it also contains some caffeine and tannin.

**STRONG DRINKS**

Alcohol is a drug that depresses the higher nerve centers. Ethanol is water-and lipid-soluble, it rapidly diffuse across cell membranes, it is rapidly absorbed and distributed in body fluids.

Alcohol metabolism is via alcohol dehydrogenase enzyme system-aldehyd-dehydrogenize or by microsomal system.

- Path-aldehyd-dehydrogenase, alcohol dehydrogenase enzyme system, the first step is the oxidation of ethanol metabolism to acetaldehyde by the action of alcohol dehydrogenase, the enzyme whose cofactor is NAD, NADH resulting from oxidation and ATP production macroergic links, in the second stage converts acetaldehyde adehid-dehydrogenase acetylicoenzyme A that can be used as an energy source in the citric acid cycle or synthesis.

- Second ethanol oxidation system is system that is induced in liver microsomal through repeated ingestion of ethanol. The system is dependent on NADPH and microsomal cytochrome P$_{450}$ and catalyzes the direct use of molecular oxygen without the formation of
ATP. In this context, the energy released can be used and is scattered in the form of heat. Aldehid-dihydrogenase acetalddehyde is removed as it is formed, the enzyme can be inhibited by certain drugs (Antabuz-Disulfiram) which cause some unpleasant symptoms (nausea, dizziness, headache) to alcohol.

Methanol is more dangerous than ethanol because of oxidation of formaldehyde formed to attack the retina. Ethanol and methanol are oxidized by the same enzyme and are competing for it so as methanol intoxication can be used for slowing down ethanol oxidation.

**Types of drinks**

Alcoholic beverages are obtained by alcoholic fermentation of sugars from plant materials (fruits, cereals, potatoes) with yeast. Their alcohol concentration is above 2%.

In terms of how to obtain them are classified into two groups: natural and industrial. The non-distilled beverages include natural and industrial are obtained by distillation, thus containing high concentrations of alcohol.

Natural non-distilled beverages: the most important are beer and wine.

**Beer, ale and stout**

The best brews are made from malted barley. The barley grains are moistened and allowed to sprout for a few days in a warm atmosphere. This activates the enzyme diastase which begins to split the starch in the grains. At the proper moment, the activity of the enzyme is stopped by heating (malting) the sprouting grains. The temperature at which the malting is carried out determines the final appearance of the brew. The dried malt is ground and then mixed with water to produce the "mash". The quality of the water is very important. The fluid from the mash is called "wort". The wort is hailed with the result that a further enzymatic action is stopped and intruding microorganisms are killed. Generally hops are added during the boiling to impart the destructive bitter flavor to the brew.

The wort, once cooled, is piped off into oats where it is inoculated with a pure culture of yeast.

In the making of British-type ales selected strains of *Saccharomyces cerevisiae* and a temperature of 15-20°C are used. Various clearing agents are usually added, such as gelatin, isinglass or tannin.

Most beers, ale and stout contain from 3 to 7 g ethanol/100 ml. Their energy value is usually between 125 and 250 kJ (30 - 60 kcal)/100 ml. They contain no protein, fat or useful amounts of calcium. The only vitamins present in beer are small amounts of nicotinic acid and riboflavin.

Beer - the best is prepared from barley malt. Barley beans are soaked and sprouted a few days in a warm atmosphere. Diastase activated starting to break starch grains. At the right time stops enzyme activity by heating the beans germinated in the oven. The temperature at which transformation occurs in malt determines the final appearance of the infusion. Dried malt is mixed with water and wine, boil. Thus enzyme action is stopped and existing microorganisms are killed. During the boil hops are added to give a flavor infusion.

Must is placed in barrels and inoculated with a strain of *Saccharomyces cerevisiae* at a temperature of 15-20°C. In ordinary beer using a strain of *Saccharomyces carlsbergensis*.

Subsequently, filter and add wine fining agents (gelatin, hops, additives).

The energy is 125-250 kJ (30-60 kcal) / 100 ml - similar to milk.

Vitamins contained: small amounts of nicotinic acid and riboflavin.

In many parts of the world is prepared from fermented grain like corn, rice, millet.

Beer contains 3-7 g ethanol%, some varieties may contain more. Each assortment contains a well-defined concentration of alcohol: alcohol ale weak 6.5% special 12% ale, beer Porter 20%.
Wine - is alcoholic beverage resulting from the fermentation of grape must. Grapes are the only fruit that does not add additional sugars present in fruits like wild yeast fermentation to carry appropriate.

Wort is obtained from the material - grapes - and is the main factor in determining the quality of the wine. Grain crushing grapes membrane damage and release the juice. Must occur dissemination of phenolic compounds, aromatic substances, nitrogen, microflora of the grains, with a number of oxidoreductase. In redox processes must occur: group oxidizes compounds flavonoids, gallic acid, chlorogenic and fluoroglucina, ascorbic acid, tartaric acid and amino acids. Form acetic acids, citric, fumaric, maleic, amino acids and organic acids become amino-alcohols.

By pressing, the wort is enriched with tannic substances, nitrogen, coloring and after a few hours in the air, gets brown-brown color by forming ortochinones of catechins.

The chemical composition of the wort is: carbohydrates (glucose, fructose, sucrose, dextran), pectic substances, vegetable gums, mucilaginoase substances, acids (malic, tartaric, citric), nitrogenous substances (0.2 - 1.4 g%), phenolic compounds, odorous substances. Must contain biocatalysts, vitamins (A, B, H, PP, C, folic acid and choline) enzymes.

The chemical composition of wine include some compounds derived from naturally occurring grape (tartaric, malic, citric, minerals), others are formed during fermentation (alcohol, lactic acid, succinic acid), others by reactions (esters). After water, alcohols are the proportion (8-14 vol%). Besides ethanol, other alcohols are present in small amounts or traces: methanol, propanol, butanol, butanediol, sorbitol. Present aldehydes are acetaldehyde, formaldehyde, propanaldehyde, butanaldehyde and pentanaldehyde.

Some acid from grapes, others are formed during fermentation (acetic acid, glycemic, glyoxal) or during the subsequent evolution of wine (volatile acids).

Acetals resulting from the reaction of aldehydes with alcohols. Organic esters from alcohols combining organic acids from the activity of yeasts, bacteria estrogen and chemical esterification. Minerals are especially ionized form.

**Special wines and wine-based products**
- Sparkling wines (champagne) are obtained from wine through a second fermentation in hermetically sealed vessels in which CO2 is likely endogenous.
- Wine flavored wine known as appetizers, are obtained from wine or grape sugar, wine or food alcohol, herbal flavoring.
- Wine tastes bitter wormwood and wormwood smell.
- Vermouth is obtained from wine with added alcohol, sugar, infusion of herbs.
- Bitters are obtained from wine with added sugar, alcohol, natural plant essences and fruit and caramel food coloring (Amaranth).

Brandy, brandy called, is an old distilled wine with an alcoholic strength from 38 to 50 vol%. Aging is done in oak barrels for 40 years, when the products are enriched with soluble tannins and other polyphenols, coloring matter, lignin, hemicelluloses, pectin, furfural, traces of protein, amino acids and minerals.

**Distilled alcoholic fruit and wine**
This group is formed of alcoholic beverages natural spirits obtained by fermentation and distillation of marc and fruit juices, products containing sugar (by-products of the wine).

Alcoholic fruit and wine distillates are classified into:
- natural fruit brandies and other parts of plants (brandy, šlibovīta, apricot, cherry, cherries, peaches, apples, pears brandy);
- natural spirits obtained from wine by-products (marc brandy, wine, yeast and yeast foam).
FOOD ADDITIVES

It's about the substances used in the preparation of food in order to improve their quality or to allow the application of advanced processing technologies.

Classification additives

By their nature food additives can be natural or synthetic. Once determined why use food additives are: dyes, preservatives, antioxidants, acidifiers, gelling agents, stabilizers, emulsifiers, anti-foaming agents, raising agents, anti-caking, flavoring, sweeteners, enzymes, humectants, support substances.

Effects of the use of food additives on health

Current statistics identify the use of food additives as the third cause of death after drug use and traffic accidents. Food additives are in use must be tested and toxicological analysis. They will then be monitored and reviewed in accordance with changing conditions of use and new scientific data.

Motivation to use additive should not be linked to economic benefits but:

- obtaining quality products;
- producing the necessary ingredients for people with health problems;
- increase food quality and stability;
- facilitate the production, processing, storing food.

Acceptable amount per person is the amount of additive reported per kilogram of body weight can be consumed daily without risk to health.

Harmful food additives with proven effects are just a few examples of food additives which have proven harmful effects:

- Aspartame - disrupts homeostasis of the internal environment, is associated with brain tumors, mental retardation, chronic fatigue syndrome;
- Monosodium Glutamate (taken from Chinese cuisine) - behavior disorders, abdominal pain, diarrhea, irritable bowel syndrome;
- Saccharin - is associated with the onset of gastric cancer;
- Sulphites (used in winemaking to preserve fruit) - can be associated with the onset of severe allergic reactions.

REFERENCES