

**Principles of rational  
nutrition.**

**Preservation of food. Food  
fortification and adulteration  
of foods.**

- Principles of rational nutrition provides an integrated overview of the physiological requirements and functions of protein, energy, vitamins and minerals that are determinants of health and diseases in human populations.
- 1. Caloricity of daily ration must be equal to energy spend of organism. Person of I professional group need 40 kcal/kg of weight; person of II professional group need 43 kcal/kg of weight; person of III professional group need 46 kcal/kg of weight; person of IV professional group need 53 kcal/kg of weight; person of V professional group need 61 kcal/kg of weight.

## ● Regime of nutrition:

If we eat 4 times per day: breakfast must have 25-30 % of daily caloricity, lunch (after dinner eating) or before supper eating must have 10-15 %, dinner must have 40-45 % daily caloricity, supper must have 20 % of daily caloricity. If we eat 3 times per day: breakfast must have 30 % of daily caloricity, dinner must have 45-50 % daily caloricity, and supper must have 20-25 % of daily caloricity. Time between breakfast and dinner must be to 5-6 hours; time between dinner and supper must be 6-7 hours. Optimal duration between eating is 4-5 hours, at night is 8-10 hours.

# Completeness and coordinateness of ration

- Food must have optimal ratio of protein, fats, carbohydrates, vitamins, mineral substances. Optimal norm of protein is 1,5 g/kg of weigh per day. Protein must give 14-15 % of daily caloricity. Optimal norm of fat is 1,5 g/kg of weigh per day. Fat must give 28-30 % of daily caloricity. Average norm of carbohydrates is 400-500 gram per day. They provide 50-60 % of daily caloricity.
- Ratio of protein : fat : carbohydrates is
- 1 : 0,8 : 3 or 1 : 1 : 4 for peoples, which has high mental activity;
- 1 : 1 : 5 for peoples with physical activity.

# Methods of food preservation.

- Preservation of food by heat.

Sterilization

Pasteurization

- Preservation with the help of low temperature.

Cooling (refrigeration)

Freezing

Defrosting

# Methods of food preservation.

- **Preservation with the help of the field of ultra high frequency.**
- **Preservation by drying:**
  - Natural, sunny drying.
  - Unnatural.
  - Vacuum drying.
  - Leiophilization (Sublimation).

# Methods of food preservation.

- **Preservation of food by ionizing radiation.**

  - Radurization.

  - Raddapertization.

  - Radisidation.

- **Preservation by changing of conditions.**

  - 1) Osmotic pressure tension

  - Preservation with the help of salt.

  - Preservation with the help of sugar.

  - 2) Multiplication of hydrogen ion ( $H^+$ ).

  - Marination (pickle).

  - Souring.

# Methods of food preservation.

- Preservation with the help of chemical substances.
  - Preservation by antiseptic.
  - Preservation by antibiotic.
  - Usage of antioxidants.
- Mixed methods of preservation (Smoking).



# Food fortification

- Food fortification is the process whereby nutrients are added to food to maintain or improve the quality of the diet of a group , community or population.

# Food fortification

Fortification must be a part of the regular daily diet by relevant section of the population.

Amount of nutrient added must provide an effective supplement for low consumers of the vehicle

Not harmful to high consumers

Do not cause noticeable change in the taste, smell, appearance or consistency

Cost should be economical

# Food fortification

Fluoridation of drinking water in endemic areas to prevent dental caries

Iodisation of salt to prevent IDD

Vitamin A fortification of ocular diseases

Iron to salt or Flour.

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# Food additives

**Coloring agents:** considered as safe for human consumption

**Flavoring agents:** sweeteners (Saccharin), Preservatives (Sorbic acid, Sodium Benzoate), acidity imparting agents (Citric acid, Acetic acid)

Pose health hazards among consumers - contaminants through packing, processing steps, farming practices (insecticides)

# Food adulteration

- Definition: Mixing, substitution, abstraction, concealing the quality, putting up decomposed food for sale, misbranding or giving false labeling and addition of toxicants to food, which are having adverse effect on the health of the consumer is called as food adulteration.

# Food adulteration

- Milk - Addition of water/removal of fat.  
Skim milk - soluble starch.  
Cream -foreign fats.  
Ghee -Hydrogenated fat/animal fat.  
Vegetable oils -Cheap/non edible oil like linseed, mineral oils.  
Wheat and rice -stones  
Bengal gram dhal -Kesari dhal.  
Chilli powder- Starch colored red by tar dye.  
Black pepper- Dried papaya seeds  
Honey -colored sugar syrup.  
Tea - exhausted tea leaves.



Thank you!