CHAPTER : 15
BALANCED DIET AND FOOD GROUPS

The human body constantly requires nutritive elements and these nutritive elements are important for maintaining our health. That is why it is important to take these elements in our daily diet. And this is possible only if we eat a balanced daily diet.

Balanced diet– A diet that contains proper proportions of carbohydrates, fats, proteins, vitamins, minerals, and water, according to a person's age and gender. To maintain good health its essential to eat a balanced diet.

Table 15.1 shows the proper proportions of nutritive elements to be incorporated in a balanced diet (man and woman adult)

Table 15.1

	Adult man (in grams)	**Adult woman (in grams)**
Cereals	400	300
Lentils	70	60
Green leafy vegetables	100	125
Other vegetables	75	75
Root vegetables	75	50
Fruits	30	30
Milk	200	200
Fat	35	30
Sugar or jaggery	30	30

Source: NIN (1985)

The food article given in the above table are in raw state. Nutritive elements are present in different types of food items. No single food item contains all the nutritive elements. Therefore, we should include different types of food items in our diet.

Food groups— on the basis of their nutritive elements food is mainly divided into 11 types. For example: (i) cereals and millets, (ii) pulses, (iii) nuts and oil seeds, (iv) vegetables, (v) fruits, (vi) milk and milk products, (vii) eggs, (viii) meat and fish, (ix) oil and ghee, (x) sugar and carbohydrates, (xi) spices

To obtain a balanced diet, it is very essential to include these 11 groups in our daily diet. Difficulties arise in remembering these 11 groups. These difficulties did not make it possible to add all 11 food groups in the diet. The Indian Council of Medical Research (1989) classified these 11 food groups into 5 groups on the basis of nutritive elements present in them. (Table 15.2)

Table 15.2

11 groups		5 groups	
1	Milk and Milk products	1	Milk and Milk products
2	Meat, Fish, Chicken, etc	2	Protein- providing foods
3	Eggs	3	Cereals
4	Pulses, Beans, Oil seeds	4	Fruits and Vegetables
5	Cereals	5	Fats and Sugars
6	Potato, SweetPpotato, other root vegetables		
7	Sour fruits		
8	Green leafy vegetables, Yellow vegetables and		
9	other Fruits and Vegetables		
10	Oil, Ghee, Butter		
11	Jaggery, Sugar, etc.		

Table : 15.3 (Five basic food groups)

Food group		Food products	main nutrients obtained	Physical functions
1	**Body building foods**			
(a)	milk and Milk products	Milk, curd, buttermilk, cottage cheese, milk powder ice cream, etc.	This food group is a good source of calcium, phosphorous, riboflavin, vitamin D, vitamin A, fat, protein. That is why it is known as complete nutritional food.	Growth and development of body, formation of bones and teeth, regulation of physical activities
(b)	Meat, Fish and Eggs	Mutton chicken, Fish and Eggs	Proteins, iron, fat, fat-soluble vitamins and other micro-nutrients.	Growth and development of body, formation of haemoglobin, providing energy
(c)	Pulses, nuts and oilseeds	Brown chickpeas, green gram, red lentil, split red gram, other beans, nuts like almonds, walnut, cashew nuts, coconut, pistachio, etc. oilseeds such as sesame, groundnuts, soya bean, mustard oil, etc.	Protein, fats, fibers, essential fatty acids, vitamin B group, mineral salts, etc.	Growth and development of body, energy providing, regulation of physical activities

2	**Protection-providing food group- fruits and vegetables**			
(a)	yellow fruits and vegetables, green leafy vegetables	Yellow fruits and vegetables, green leafy vegetables	Δ carotene, various mineral salts, water and fibers	Regulation of physical activities, protection against diseases like night blindness, anemia, etc.
(b)	Group of sour fruits	All sour fruits- gooseberry, Amla, oranges, lemon, guava, tomato, etc.	Mainly vitamin C and other mineral salts	For good health of gums, teeth and bones, regulation of physical activities
3	**Other vegetables, fruits and root vegetables**	Potato, beetroot, eggplant, onion, sweet potato, fruits like banana, grapes, apples, water melon, etc	Main source of mineral salts, water and fiber	Energy giving foods
4	**Cereals and millets**	Wheat, maize, millets, barley, rice, oat, etc	Carbohydrates, protein, vitamin B group, calcium, phosphorous, and iron	Energy giving food, regulation of physical activities, etc
5	**Fats and Sugars**	Ghee, oil, butter, sugar, jaggery, honey, toffee, syrup, etc	Fats, essential fatty acids, carbohydrate	Mainly energy giving

Different food groups, their nutritive elements, sources and functions are briefly given in table 15.3. But it should be kept in mind that each food item provides only some nutritive element Therefore, all the food groups should be included in our daily diet.

The main nutritive elements provided by these food groups are as following—

1. Body-building food groups (pulses, milk, meat, and fish)

Food items belonging to this group are mainly rich in protein. Protein repairs the damages in the body. This food group also provides vitamin B such as thiamine, riboflavin and niacin. Eggs, milk and liver are good sources of calcium and iron. One serving of this food group provides 5-6 grams of protein.

Following points should be kept in mind while choosing food from this food group–

(i) All the lentils, beans are included in the pulses group. For example, Brown chickpeas, green gram, red lentil, split red gram, peas, other whole pulses. Incomplete proteins are obtained from these sources which become complete when taken in combination with wheat and milk products. Eating rice and pulses together, kedgeree or khichdi is good source of protein. Soya bean has maximum 42% protein.

(ii) Proteins and fats are obtained from oil seeds which are sources of fatty acids and energy.

(iii) Milk and milk products– this food group is mainly present in milk and its products. Like–

buttermilk, curd, cottage cheese, dry milk etc. all the food items of this food group are sources of calcium, phosphorous,, vitamin B (riboflavin), and protein. The protein obtained from milk is of complete type and it is the best quality protein because it contains all essential amino acids in sufficient quantity. This is the reason why milk is considered complete food for children. Curd prepared using useful bacteria is also a good source of protein and is easly digestible than milk. Cottage cheese is also prepared from milk and is a source of protein and fat. A normal person should consume 500 ml milk everyday or milk products of the same quantity.

(iv) Eggs, meat, fish, chicken, liver are animal-based food items. Protein obtained from them is complete protein and it is the best quality protein. These are main sources of vitamin B12 which is not found in plant-based food items.

2. **Immunity-providing food group (fruits and vegetables) —** this food group is divided into 4 parts–

(i) Green leafy vegetables (spinach, mustard, fenugreek), yellow fruits (papaya, mango) and yellow vegetables (pumpkin, carrot). β carotene is predominantly found in these food items which get converted into vitamin A in our body. These vegetables are good sources of calcium, iron, riboflavin, folic acids, and fibers.

(ii) Sour fruits– (gooseberry, lemon, orange, guava), drumstick, tomato, cabbage are included in this category. Sour fruits are main sources of vitamin C.

(iii) Bulbous and roots– in this group potato, sweet potato, taro root are included. This group is a good source of carbohydrate and energy.

(iv) Other fruits and vegetables– all the fruits and vegetables which are not included in the other 3 groups are included in this group. For example, eggplant, ladyfinger, bottle gourd, banana, apple, pear, etc. vitamin B group, mineral salts and water are obtained from this group.

All the aforementioned fruits and vegetables are good sources of vitamin, mineral salts and water and perform the function of regulation and control of physical activities and provide protection against diseases. Seasonal fruits and vegetables should be included in our daily diet. At least 300-400 grams of fruits and vegetables should be consumed daily.

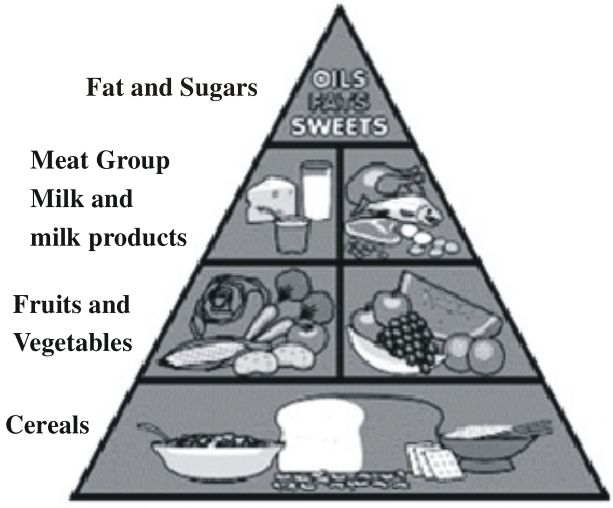

Figure : 15.1 Basic five food group

Cereals— this food group provides carbohydrates, protein and energy. Cereals like wheat, rice, maize, sorghum, millet, etc are included in this food group. In addition to carbohydrates, this group is also a good source of vitamin B group, some mineral salts like calcium, phosphorous, iron and fibers. 6-12% protein is present in cereals. A normal person should consume 300-400 grams cereals daily. Amino acids are lacking in this group and so the protein obtained is an incomplete protein. This is the reason why cereals should be taken in combination with pulses and milk. Cereals contain less amount of fat but that much fat is also important for body. The fat in cereals

contains fatty acids which are required by the body. Cereals provide energy to the body regulates and controls physical activities and are important for physical growth and development.

Fat and sugars— this group mainly provides energy. That is why it is known as 'fuel group'. Sugar and jaggery give instant energy whereas oil and fat are in saturated state and remain stored in our body. Sugar and jaggery provide sweetness to the food and about 25% of these should be used daily.

Fats and carbohydrates obtained from oil, ghee and butter provide energy to our body. An adult should take 20 grams fat everyday'. Excess of fat gets deposited in our body which leads to obesity and other diseases.

IMPORTANT POINTS

1. Food substances are divided into 5 types on the basis of nutritive elements present in them.
2. Milk and milk products performs the function of formation of bones and teeth and physical growth and development.
3. Protein mainly helps in physical growth and development and repairs damages to the body.
4. The main function of fruits and vegetables is regulation and control of physical activities and protection against diseases.
5. Wheat, rice, maize, barley, millets provide energy to the body.
6. Oil, ghee, butter, jaggery, sugar, honey are included in fat and sugar group and they provide only energy to the body.
7. A normal person needs 300-400 grams of cereals and 300-400 grams fruits and vegetables every day.
8. Sour fruits and vegetables contain vitamin C predominantly.
9. Protein found in milk is complete and of the best quality.
10. Proposed dietary intake are denoted quantities of nutritive elements obtained from food that fulfils the nutrition requirements of people belonging to a particular community.

EXERCISE:

1. Choose the correct option:

(i) Fats and sugar mainly provide
(a) Protein (b) Energy
(c) Vitamin (d) Mineral salts

(ii) Protective foods are
(a) Fruits and vegetables (b) Cereals
(c) Pulses (d) all of these

(iii) Milk and milk products mainly contain
(a) Vitamin C (b) Thiamine
(c) Calcium (d) Iron

(iv) How much pulses (in grams) should an adult man and woman take daily?
(a) 50-60 (b) 60-70
(c) 70-80 (d) 40-50

2. Fill in the blanks:

(i) β carotene converts into ------ in the human body.

(ii) A normal person should take ------- of cereals every day.

(iii) ---------- is mainly found in sour fruits and vegetables.

(iv) Animal based foods are rich sources of -----

(v) ------- of fats and ----- of sugar should be consumed daily.

3. What is a balanced diet? Write the classification of food on the basis of nutritive elements.
4. Make a table and classify five basic food groups.
5. Explain body-building foods.
6. Explain classification of protective foods.

ANSWERS:

1. (i) b (ii) a (iii) c (iv) b
2. (i) vitamin A, (ii) 300-400 grams, (iii) vitamin C (iv) Protein, (v) 25 gram, 30 grams