

Topic: **FOOD, NUTRITION AND HEALTH**

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BASIC FOOD SCIENCE AND COOKERY.

Food is a mixture of many different chemical components. The study of food science involves an understanding of the changes that occur on these components during food preparation. Study of food science also includes understanding the nutritive value of different foods and methods of preserving them during cooking.

1. Cereals

The principle cereal crops are rice, wheat, maize, jowar, ragi and bajra.

Composition and nutritive value.

Cereals are the main source of energy. Rice provides 345 calories and 6.8 grams of protein per 100 grams and wheat provides 341 calories and 12.1 grams of protein per 100 gms. Ragi is a rich source of calcium and iron. Wheat and ragi are rich in fibre. Whole grain cereals are an important source of B vitamins in our diet.

Principles of cooking

Gelatinisation

When starch granules are mixed with water and cooked the grains absorb water and swell. This process is known as gelatinisation.

Dextrinization

If starch is subjected to dry heat, it is converted to dextrin, giving a brown colour.

This is called dextrinization.

Gluten formation

Glutenin or glutelin and gliadin are proteins present in wheat. During the mixing of a dough the long strands of **glutenin evidently becomes aligned in the direction of mixing** and forms a film that envelopes the starch granules in the dough. In the presence of water and with mechanical agitation, the protein **fraction forms a tough elastic complex called gluten**, which is capable of retaining gases and by doing so, a leavened product is obtained. Due to its elastic property, the dough can be rolled to prepare chapatis or puris.

2. Pulses

Pulses are edible fruits or seeds of pod bearing plants. The major pulses which are used are red gram dhal, Bengal gram dhal, black gram dhal and green gram dhal.

Composition and nutritive value

Pulses contain 55 to 60% starch. Every 100 grams of pulses provide about 350 calories and 22 grams of protein. Pulses are excellent source of B complex vitamins particularly thiamine, folic acid and pantothenic acid. Soyabean

provides 43 grams of protein per 100 grams. Whole grams are good sources of protein, B-vitamins and fibre.

Principles of cooking

Many pulses particularly whole grams, which have hard outer covering need soaking prior to cooking. Addition of sodium bicarbonate hastens the cooking process, but is not advisable because it destroys the B vitamins.

3. Vegetables

The term vegetable is used to refer to those plants or parts of plants that are served raw or cooked as a part of the main course of a meal.

Composition and nutritive value

Nutritionally they are classified into 3 groups,

- (i) Green Leafy Vegetables:** They are good sources of β - carotene, calcium, riboflavin, folic acid, ascorbic acid, iron and vitamin K.
- (ii) Roots and Tubers:** They are good sources of calories and fairly good sources of Vitamin C. eg. Potato, Carrots etc.
- (iii) Other Vegetables:** They contribute to the fibre content of the diet. Ladies finger and cluster beans are a good source of folic acid. (eg.) Brinjal, Ladies finger, etc.

Role of vegetables in cookery

- ✓ They are used in curries, salads, and in sambar.

- ✓ They are used as garnishing agents.
- ✓ They are used as stuffing in samosas and parathas.
- ✓ They are used as thickening agents in gravies and soups.
- ✓ They are used in chutneys and pickles.

4. Fruits

Fruits are the ripened ovary or ovaries of a plant together with adjacent tissues.

Fruits are fleshy or pulpy in character, often juicy and usually sweet with fragrant, aromatic flavours.

Composition and nutritive value

Fruits are very poor source of protein and fat. They are good source of fibre, β -carotenes and vitamin C.

Serving of fruits

Raw, whole or cut fruits are frequently served as an appetiser, or as a salad or for dessert. Some fruits are served in the form of juices or milk shakes. Sometimes apples are served as stewed apples.

5. Milk and milk products

Milk is one food for which there seems to be no adequate substitute. The milk products include curd, butter, skimmed milk, condensed milk, khoa, paneer and cheese.