Cooperative Series 8

BALANCED DIET

ERNATIONAL COOPERATIVE ALLIANCE

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(Cooperative Series 8)

INTERNATIONAL COOPERATIVE ALLIANCE
REGIONAL OFFICE & EDUCATION CENTRE FOR SOUTH-EAST ASIA
43 FRIENDS' COLONY, NEW DELHI-14. INDIA

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(Cooperative Series 8)

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PART II

Foreword to the First Edition

One of the recommendations of the Seminar which the International Cooperative Alliance had organised, in collaboration with the UNESCO, on the 'Role of Cooperation in the Emancipation of Women' in 1962 in New Delhi, was that the ICA should undertake a survey on the extent of participation by women in Cooperative Movements of South-East Asian countries. On behalf of the ICA, this task was accomplished by a Cooperator from Pakistan. The Survey brought together a large amount of factual information, highlighted the major problem areas and provided a broad framework within which the future work programme of the ICA Regional Office in the field of women and cooperatives could be developed. Ever since the completion of the Survey, the office has given sustained attention to collecting and bringing up-to-date information on the subject and has arranged for its exchange within the Region as also, through the ICA Headquarters in London, with the rest of the world.

One of the most fruitful areas of cooperative activities in which the contribution of women remains vital is that of consumer cooperation. In the context of our intensive work in the field of cooperative education, it has been our feeling that education programmes must be comprehensive in approach and must cover a broad enough area to be of direct interest to members. A too narrow emphasis on cooperative principles, ideology, laws and practices, is likely to create an

interest in members which could only be temporary. Thus, for instance, when educational campaigns are directed towards women, it is absolutely essential that problems of household economy, hygiene and dieting are brought within the scope of educational material. The present document on "Balanced Diet" is our first attempt in the Region to produce suitable literature particularly for women members of consumer cooperative societies.

The booklet was conceived by our Woman Assistant, Mrs Margaret D' Cruz, and was written, at the initiative of the International Cooperative Alliance, by Mrs Bina Poplai of the Lady Irwin College of Home Science, New Delhi. I sincerely hope that this document, which reflects the wider concern of the Cooperative Movement towards a problem so vastly encountered in South-East Asia, will be of use to Cooperative organisations as study material for educational programmes for women.

The views expressed in the booklet are entirely those of Mrs Poplai.

New Delhi,
May 29, 1968.

Dr. S. K. Saxena
ICA Regional Officer for South-East Asia

Foreword to the Second Edition

The first edition of this book was issued in mimeographed form. Encouraged by the popularity of the book among cooperative educators, especially in the consumer sector, the book is now being issued in print.

The book was revised for the purpose by the author, Mrs. Bina Poplai. Expert assistance was rendered by Miss Maria Di Giacomo, Nutritionist, FAO/UN, who was attached till recently to the Directorate of Extension, Ministry of Agriculture, Government of India.

I am very grateful to both Mrs. Poplai and Miss Maria Di Giacomo for their valuable assistance and ready cooperation in this regard.

My thanks are also due to Mrs. Margaret D' Cruz, our Assistant (Education), for the assistance given by her in the preparation of this edition.

New Delhi,
August 31, 1972.

P. E. Weeraman
ICA Regional Director for South-East Asia

Introduction

Food is one of the necessities of life. There have been extremely rapid and striking advances in the field of nutrition in the past century, and the results have indicated that optimum nutrition is essential for a healthy life. The earlier belief that appetite is a good guide in the selection and consumption of food is no longer true in accordance with the present knowledge of nutrition. In the living system, a number of chemical compounds are recognized as essential for optimum growth and development. For maximum benefit, the frequency of consumption is also an important factor.

Primitive man consumed all that was available and edible. The change from man, the hunter, to man, the food-gatherer, brought about many new ideas and concepts concerning food. As civilization progressed; many changes in the diet took place and many of these changes have become firmly established practices that are still in existence among various cultural groups. Man cultivated food on farms, prepared it by different methods, and usually ate well. Even the poorer classes had a simple, but ample supply of food. There was little scientific knowledge of the nutritive value of food, of the usage of storage facilities, or of the preservation of food. Not until the late nineteenth century was it known that foods differed in nutritive value.

With the progress in scientific research and technology, a great deal of useful information has been obtained in the field of foods and nutrition. It has been established that a nutritionally adequate diet is essential for maintaining the body in good health, and for increasing physical efficiency. The importance of making known to all people, especially to housewives, this basic scientifically established fact, along with other findings in the field of nutrition, has been recognized by international bodies like the Food & Agriculture Organization (FAO/UN), the United Nations Children's Fund (UNICEF) the World Health Organization (WHO), and others who are especially interested in improving the diets of the vulnerable groups such as children, expectant women, and nursing mothers.

Data on food surveys and nutritional status has shown that most of the countries in South-East Asia are suffering from under-nutrition. Besides this, protein deficiency, and deficiencies of iron, vitamin A, riboflavin and thiamine are also common in a majority of the population in these countries.

The conduct of nutrition surveys of the particular group of people is an important basis on which work may be undertaken to improve nutritional standards of the people, or of an entire nation. An assessment of nutritional status is imperative in order to determine the existing nutritional deficiencies, the underlying factors involved, and possible means of combating these problems. Work in the field of nutrition has revealed that nutritional deficiencies in the early years of life may be responsible for long and lasting damage to both the physical and mental well-being of the children. These frightening consequences of under-nutrition and malnutrition have been responsible for world-wide recognition of the problem.

The most important cause of malnutrition, hunger, and illness, and of premature death in India is the fact that people do not grow

enough of the right kinds of food. Even when food is available, poverty, lack of education, religious taboos, and a lack of understanding of nutritional needs prevent their wise selection and utilization. This results in an uneven distribution of the available food among the population groups.

In order for people to understand the basic underlying problems, and to become aware of the relationship of good nutrition to healthy living, nutrition education is imperative. Nutrition education has been found to be an effective means of improving the health of a population group.

Food and the Human Body

Scientific investigations have been carried out on food to determine its relationship to, and effects on, the human body. As a result of these investigations the following facts have been established :

(a) Foods can be divided into six major nutrients : Proteins, Carbohydrates, Fats, Minerals, Vitamins and Water.

(b) No one nutrient has the ability, in itself, to maintain the body in good health. For example, though proteins are essential for body building and repair of worn out tissues, a diet consisting of proteins alone cannot compensate for the lack of other essential nutrients.

(c) Foods contain some of each of the nutrients, but in different amounts. As an example, wheat and dal contain proteins, fat, carbohydrates, minerals and vitamins, Dal has a greater amount of protein, and less carbohydrates than wheat. Green leafy vegetables would contain more minerals and vitamins than either dals or wheat.

(d) A variety of foods must be eaten each day in order to meet the body's requirements of the various nutrients.

(e) Some nutrients perform more than one function in the body, whereas others are restricted to one or two functions.

Nutrients that furnish energy ;

Carbohydrates

Fats

Proteins

Nutrients that build and maintain body tissues :

Proteins

Minerals

Water

Nutrients that regulate body functions ;

Water

Minerals

Vitamins

PART I

Chapter I

Food Nutrients

The term nutrients includes proteins, fats, carbohydrates, minerals and vitamins. These nutrients provide energy, structural materials from which different tissues are made, and some nutrients directly or indirectly contribute towards the chemical reactions taking place in the body. The sum total of all these functions is life.

The body has a limited capacity to store nutrients. Thus the consumption of most nutrients is necessary every day and throughout the life cycle. All persons require the same nutrients because of the similarity of the body composition, yet the amounts required are different not only for different age levels, but also for different individuals of the same age groups.

Calories

The energy value of food is expressed in terms of calories. This energy is made available to the body by the oxidation of the ingested food. Oxidation is the process by which certain chemical changes take place in foods when the food comes in contact with air or oxygen. Three nutrients are oxidizable: proteins, fats and

carbohydrates. Proteins and carbohydrates have the same calories per gram. Foods differ in caloric values because of differences in their nutritive content.

All foods are a potential source of energy, and this energy is expressed in terms of the calorie which is a heat unit. By definition, a calorie (as used in nutrition) is the amount of heat required to raise the temperature of 1 kilogram of water to 1 degree Centigrade. The food one eats is burned up by the body, and the energy which the body needs to perform various tasks is expressed in terms of calories or heat units. Some foods give more calories than others. The proportion of calories derived from carbohydrates in the diet is the highest because they form the bulk of the diet.

The caloric requirements of people in different age groups—for normal health—are given in Figure I.

Different foodstuffs have different values in terms of calories. This means that a small quantity of one type of food may give the same number of calories as a larger quantity of another type of food. In other words, equal quantities of different types of foodstuffs yield different amounts of calories. For instance, one gram of fat gives nine calories, whereas one gram of carbohydrates or proteins gives only four calories.

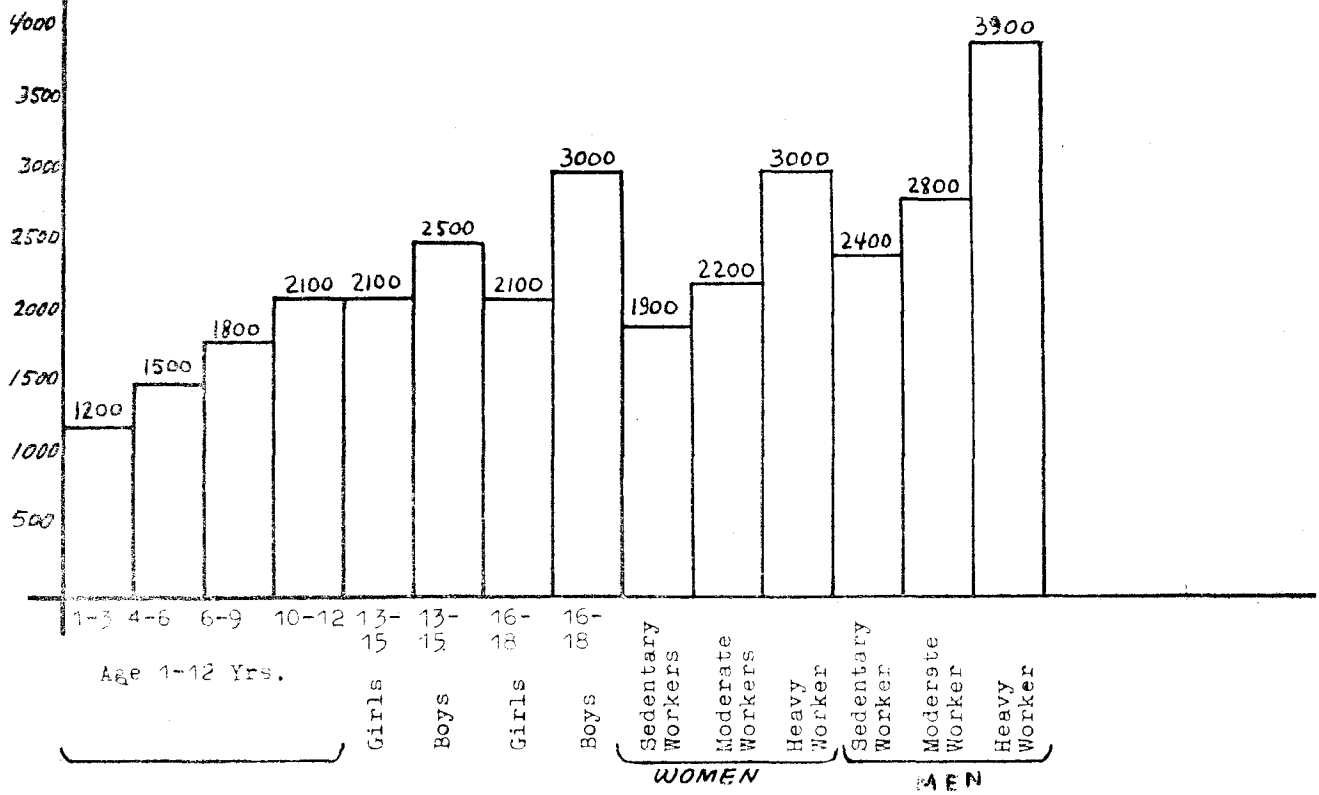
In a balanced diet, carbohydrates provide 50 to 60 per cent of the calories. In lower income groups, when 80 per cent or more of the caloric requirements are met by carbohydrates (being the cheapest available source of energy), the diet becomes inadequate to maintain good health because other nutrients are not provided in the required amounts. To ensure a well balanced diet it is important therefore to select the protein, vitamin and mineral foods first, and then the carbohydrates.

Proteins

One of the most important nutrients in the food are proteins. They are the main constituents of the body cells, and form the major part of the muscles, organs, glands, skin, nails, blood cells and serum. In other words, every living cell and all body fluids, with the exception of urine and bile, contain proteins. Therefore, we need proteins for the building up and constant replacement of the cell proteins

FIGURE 1: CALORIC REQUIREMENTS OF DIFFERENT AGE GROUPS

Recommended by the Nutrition Expert Group, 1968.
(Indian Council of Medical Research.)



throughout lifetime. Foods which are rich in proteins are therefore called body-building foods. In addition, proteins are also essential for the production of certain agents that speed up the chemical reactions taking place in the system, and the digestive enzymes, harmones and blood proteins. They also help in healing wounds. They also maintain the body's resistance to certain diseases.

Types of Proteins

Proteins are complex substances made up of a number of simple substances called amino-acids. Different combinations of these amino-acids give rise to different kinds of proteins.

Proteins provide the essential amino-acids which are required for building and repairing body tissues. Proteins contain an assortment of amino-acids and differ in quality according to specific amino-acids present.

Some 20 amino-acids that are classified as essential or non-essential amino-acids have been identified. Of these, eight essential amino-acids are called the dietary essential amino-acids, and must be consumed preformed. The other equally important amino-acids are synthesized or formed by the body, by the combination of its elements or its simpler compounds, provided the essential amino-acids are present in adequate amounts.

Although proteins are required by all individuals, the need of children are higher per unit of body weight than those of any other age group. The quality of the dietary protien is judged by the different essential amino-acids, and the quantity of each essential amino-acid present in the food. Proteins may be classified into two parts :

(1) Complete proteins: they have all the essential amino-acids present in sufficient quantities for the normal rate of growth and maintenance of the body. The proteins obtained from animal sources, e.g., meat, fish, eggs, milk, cheese, etc., may be called complete proteins.

(2) Partially complete proteins: They have all the essential amino-acids present in them to maintain life, but the amount of some of the essential amino-acids is insufficient to permit growth. They can meet the protein

requirements of the adult, but not of children. The proteins obtained from vegetable sources, e.g., cereals, pulses, and nuts may be called partially complete proteins.

Fortunately, the quantity of essential amino-acids differ in different foods. When one food can improve the quantity of essential amino-acids in another food, it is said to supplement the second food. For example, neither wheat nor dal when eaten separately are satisfactory for protein quality. However, when consumed together, their protein quality is considerably improved.

Assimilation (or digestion) of Proteins

The proteins obtained from food are broken down into simpler substances, called amino-acids, by the process of digestion. These amino-acids are soluble in water and readily get mixed or dissolved in it. In this form the amino-acids are carried in the blood stream. They circulate throughout the body and are re-assembled and used for growth in the young child, and for replacement and repair of tissues in the adult. The amino-acids which are absorbed and are not needed for repair and replacement of tissues are broken down. The end products are excreted by the body.

In general, it has been seen that the proteins derived from vegetable sources are digested to a far lesser degree than the ones derived from animal sources. Cooking, however, improves the digestion of vegetable proteins. Proteins require a longer time for digestion than do carbohydrates, and provide a feeling of satiety.

Protein Requirements

The protein requirements vary according to age, sex and the state of body health. According to Indian standards (and the recommendations of the Nutrition Expert Group of the Indian Council of Medical Research), the proteins required to meet the daily needs, is one gram per kilogram of body weight. However, in growing children the requirement per kilogram of body weight is more, since growth is still taking place. Similarly, the body makes extra demands during pregnancy and lactation. For this reason, we need to know not only the foods that are protein sources, but also what amino-acids they contain. In general, there is a shortage of

protein foods in India and, therefore, the available protein foods should be efficiently used by proper combination and supplementation.

Protein requirements of different people in different age groups are given in Figure 2.

Foods as Protein Sources

The composition of the food proteins vary greatly depending upon the different types and amounts of amino-acids they contain. Meat, fish, poultry, eggs, cheese and milk, dals, grams, dried beans, dried peas, ground-nuts and soyabeans are good sources of proteins, whereas cereals are relatively fair sources of proteins.

The living cells have the ability to produce proteins by the combination of their simpler compounds, the amino-acids. Whereas animals directly or indirectly depend on plants for their protein needs, the plants are capable of making their own proteins by combining nitrogen of the soil with water and carbondioxide of the air. A large proportion of this protein is stored in the plant seed, and a lesser amount is found in roots and tubers.

A combination of proteins from both animal and vegetable sources is far more desirable for healthy living than only one source of protein.

FIGURE 2: PROTEIN REQUIREMENTS OF DIFFERENT AGE GROUPS

Recommended by the Nutrition Expert Group, 1968.
(Indian Council of Medical Research.)

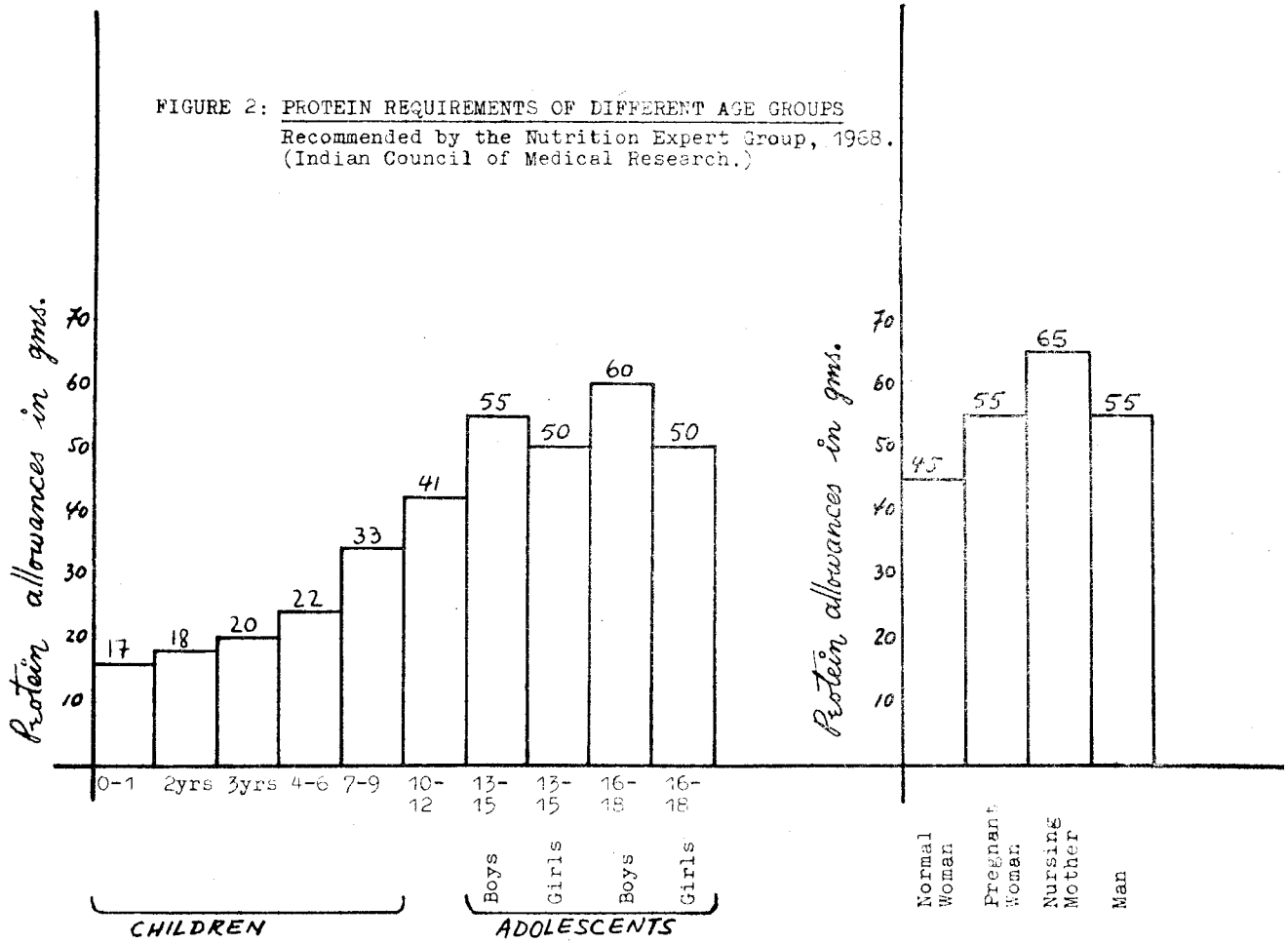


Table I shows the protein (in grams) obtained from 100 grams of the foods listed.

TABLE I

Protein (in grams) Obtained From 100 grams of the Foods Listed

Food (in 100 grams)	Approximate Protein Yield (in gms.)
Milk (from different sources)	3.2—4.3
Milk powder (whole & skimmed)	25—38
Eggs	13.3—13.5
Fish, meat and liver, fowl	18—25.9
Cereals (ragi, barley, bajra, maize, jowar & millet)	7.3—12
Wheat (atta)	12.1
Rice (home pounded/milled)	6.4—7.5
Pulses	17.1—28.2
Soyabeans	43.2
Groundnuts	24.7

Figures taken from *"The Nutritive Value of Indian Foods and Planning of Satisfactory Diets" by* I.C.M.R., 1966.

Deficiency of good quality proteins in the diets of young children over a period of time leads to a serious deficiency disease, Kwashiorkar. This disease is mostly prevalent among children one to four years of age and in population groups where the food is mainly from vegetable origin.

Early in the course of Kwashiorkar, the children have stunted growth ; hyperpigmentation of the skin leading to frequent ulceration ; they are restless,

apathetic, withdrawn, and there is dulling of sensorium and response. Low protein intake also effects the digestive system resulting in poor appetite, continuous diarrhoea and anaemia.

Kwashiorkar is an acute condition of protein deficiency in children which usually starts after weaning, because the diet lacks good quality protein. When children reach this stage of the disease and medical treatment is not available, they usually die. When the child suffers from both, a protein deficiency and caloric shortage, then the condition is known as Marasmus. The symptoms of this disease are an emaciated body, wasted limbs, and wrinkled skin.

Protein deficiency is also prevalent among pregnant women, especially those in the low income groups. Miscarriages, premature and still-births, are common among such women.

Carbohydrates

Carbohydrates are important nutrients in our food. They are divided into two classes : starches and sugars. The cereals and root vegetables such as potatoes, are classified as starches. The sugars include cane sugar, jaggery, and honey. Most of the carbohydrates are easily digestible. There is a certain type known as cellulose, which is not digested by the digestive juices. Cellulose is found in the fibrous part of the plant. The skin of vegetables and fruits, and the outer layer of the cereal grains contain much cellulose. Cellulose has no nutritive value, but is extremely useful as it causes the contraction of the muscular walls of the digestive tract and thus prevents constipation.

All sugars and starches yield 4 calories of energy per gram. Carbohydrates form the bulk of the Indian diet and, therefore, are important sources of energy. Starches from cereals also contain proteins, minerals and vitamins of the B-complex group.

The starch from roots and tubers of plants are often used to replace starch from cereals and grains. In such cases, some source of proteins, like pulses and grams, and fresh fruits and vegetables for minerals and vitamin should be included in the diet.

Table II shows the carbohydrates (in gms) and calories obtained from 100 grams of the foods listed.

TABLE II

Foods (100 grams)	Calories	Yield (in gms)
Sugar, jaggery & honey	350	79.5—95.0
Sago & arrowroot	350	83.1—87.1
Rice (raw, milled & home pounded)	345	75—79
Wheat flour (atta)	340	69.4
Wheat flour (maida)	348	73.9
Pulses and legumes	330	20.9—60.9
Potatoes & sweet potatoes	97	22.6—28.2
Tapioca	157	38.1
Fruits—fresh	50—100	15—25
Fruits—dried (dates, prunes & figs)	315	67—77

Source : *"The Nutritive Value of Indian Foods and the Planning of Satisfactory Diets" by* I.C.M.R., 1966.

Fats

Fat is an important nutrient of the diet. All types of fats, including oils, produce twice as much energy in the body as equal quantities of either carbohydrates or proteins. Fats, therefore, have a higher caloric value. Each gram of fat yields 9 calories. Since fats take a longer time to be assimilated, the energy produced by them is gradual and sustained.

Apart from their caloric value, fats help the fat-soluble vitamins, particularly vitamin A, to be carried in the food. Fats also facilitate the absorption of fat-soluble vitamins A, D, E and K. They provide satiety and prevent the onset of hunger. They contribute palability to the diet. In addition, body fat serves as a padding around the organs holding them in place, and absorb the shocks to which they might otherwise be subjected. They are essential for maintaining body temperature by providing insulation under the skin.

About 95 per cent of the fat in food is digested and absorbed. Fats are slowly digested and remain in the stomach for a longer period of time than do proteins and carbohydrates. Fried foods are more slowly digested. Table III shows the fats and calories (in grams) obtained from 100 grams of the foods listed.

TABLE III
Fats (in gms) and Calories From 100 gms. of the Foods Listed

Food	Total fat (gms)	Calories
Skim milk—1 cup	Trace	90
Whole milk—1 cup	10	165
Half milk & half cream	29	330
Bread—1 slice	1	60
Bread—1 slice with one pat butter	7	110
Mutton chops—lean	6	140
Mutton chops with fat	33	405

Robinson, C., *"Basic Nutrition and Diet Theraphy"*, The MacMillan Co., New York, 1965, p. 45.

Kinds of Fats

Fats are of two kinds : those derived from animal sources are known as fats, and those which come from vegetable sources are called oils. The animal fats, such as butter, are usually solid, and the vegetable fats are usually liquid. The exception to this is vanaspati, which is an oil derived from vegetable source, processed and made into a solid form.

Mineral Salts

A number of mineral elements are present in the human body. Bones and teeth contain large amounts of calcium and phosphorous, and iron is an important constituent of the blood.

Minerals are important nutrients in our food. As much as 4 per cent of the body weight is made up of minerals. The most important of these are calcium and phosphorous, which form three-fourths of the mineral element in the body.

The mineral elements are present in every cell of the body. The body framework has a large proportion of calcium, phosphorous, and magnesium, while the soft tissues mainly contain potassium. Iron is present in the haemoglobin of the blood and gives it its red colour. Iron is also found in every cell of the body.

Minerals perform regulatory functions in the body. Therefore, it is important that the body receives its daily supply from the foods which one eats. The mineral salts required by the body for its normal functioning are ingested through different foods. These minerals are interrelated to each other in such a way that the absence, or lack of one of the elements can affect the proper functioning of the others.

It has been seen that there is a constant loss of minerals through excretion by the kidneys, intestines and skin. In order to make good this loss, the minerals provided in the daily diet should at least be equivalent to this loss.

Research has shown that if calcium, iron iodide are present in our body in sufficient quantities, there are less chances of other mineral salts being deficient. It is, therefore, necessary to deal with these minerals in a little more detail than with the others.

Calcium

Calcium is essential as a building material for bones and teeth. This mineral is also necessary for certain regulatory processes in tissues and blood. The normal functioning of heart muscles and the clotting of blood depends on the presence of calcium. Children need a relatively high calcium intake to meet the needs

of growing bones. For the same reason, the expectant and nursing mothers also need a higher intake of calcium to meet the extra demands the body has during this period. The diet of the pregnant and nursing mother, if deficient in this mineral, will affect both, the mother and the child, adversely.

Milk and milk products are rich, but expensive, and scarce sources of calcium in India. Cereals and leafy vegetables are, therefore, relied upon as the major source for meeting calcium requirements in India. Certain foods, though rich in calcium, are also rich in oxalates, which are salts of oxalic acid. These oxalates combine with calcium and make the calcium unavailable for body use. Therefore, calcium sources should be carefully selected, especially for children.

Our daily requirements of calcium can be obtained from milk and milk products such as curd, cheese, buttermilk and green leafy vegetables, especially amaranth, fenugreek, drumstick leaves, mustard greens, turnip tops and radish tops. The cereal ragi is also a good source of calcium. The recommeded daily allowance of calcium for the adult man, woman, expectant and nursing mothers, and children are given in Table IV.

TABLE IV
Daily Allowance of Calcium

Men/women	400-500 milligrams
Pregnancy	1,000 ,,
Lactation	1,000 ,,
Infants : 0—6 months	500-600 ,,
7—12 months	
Children : 1—2 years	400-500 ,,
Boys/Girls : 13—15 years	600-700 ,,
16—18 years	500-600 ,,

Recommended by the *Nutrition Expert Group*, I.C.M.R. 1968.

Phosphorous

Closely associated with calcium is phosphorous, which forms one-fourth of the total bulk of mineral salts present in the body. Phosphorous is mainly found in the bone structure in combination with calcium. The remainder is present in the soft tissues and body fluids.

Milk, cheese, egg yolks, meat, fish and whole grain are excellent sources of phosphorous.

Iron

Iron is present in small amounts in the body, but has very important functions to perform. Iron is an important constituent of the haemoglobin, which is the oxygen carrying pigment contained in the red blood cells.

Iron absorption takes place in the small intestines and depends on several factors. These factors include the body's need for iron, especially during pregnancy, and for women who constantly lose blood due to menstruation and after childbirth. The presence of vitamin C helps in the proper utilization of iron in the body. Any parisitic infection such as hookworm also affects the iron utilization by the body.

A new-born baby has a store of iron in the body to last for four to six months. Foods containing iron should therefore be introduced into the child's diet as early as six months in order to prevent anaemia. This must be done as milk is a poor source of iron, and should not be relied upon as a complete food for the child after the first few months.

The recommended dietary allowances of iron for different age groups are given in Table V.

TABLE V
Daily Allowances of Iron

Men		20 mg.
Women		30 mg.
Pregnancy		40 mg.
Lactation		30 mg.
Infants :	0—6 months 6—12 months	1.0 mg. of body weight
Children :	1—12 years	15-20 mg.
Adolescents :	13—18 years	25 mg. (for boys) 35 mg. (for girls)

Recommended by the *Nutrition Expert Group,* I.C.M.R., 1968.

If iron secured from the diet is not enough, a condition known as anaemia results. Anaemia means low concentration of haemoglobin in the blood. This can be detected by examination of the blood.

Food sources of iron are : liver, organs, meat, egg yolk, green leafy vegetables, whole grain cereals, dals, grams and jaggery.

Iodine

The amount of iodine in the body amounts to 25 to 50 milligrams and is found in the thyroid gland. The thyroid gland is located in the front portion of the neck. This gland secretes a hormone known as thyroxin which contains iodine. The amount of thyroxin secreted determines the rate at which the body uses the ingested food. If the intake of iodine is inadequate, the thyroid gland enlarges in order to produce the necessary iodine-containing hormone.

The condition of an enlarged thyroid gland known as goitre occurs in areas where the iodine content of the soil is so low that insufficient iodine is obtained in the food. In India there are widespread cases of goitre in the Himalaya regions, due to the lack of iodine in the soil.

Food sources of iodine are fish from the sea and foods grown on soils near the sea. In order to prevent an iodine deficiency, iodized salt should be used. An iodized salt is common table salt with iodine added to it. India has two large plants for iodizing salt.

Vitamins

Vitamins are vitally important organic compounds which are required by the body in small amounts for many biochemical reactions. They are referred to by letters such as A, B, C, D, E and K. Vitamins are divided into groups on the basis of their solubility. The fat-soluble vitamins can be stored by the body. The water-soluble vitamins, however, cannot be stored by the body in appreciable amounts and therefore need to be supplied daily. The individual vitamins have specific functions to perform in the body, but collectively, as a group, their functions can be divided into :

1. The promotion of body growth ;
2. The maintenance of health and vitality through :
   (a) normal functioning of the digestive tract,
   (b) nervous stability,
   (c) resistance to infection.

Most of the vitamins cannot be made by the body and must be obtained from the diet. In order to ensure an adequate intake of vitamins, the diet should contain sufficient quantities of whole milk, whole grain cereals, green leafy vegetables, butter, eggs, fish, poultry, sprouted grams and fruits.

Vitamins are widely distributed in nature, both in animal and plant life. In order to obtain an adequate supply of these vitamins, a mixed diet from both animal and vegetable sources, is desirable, but carefully planned vegetarian diets can also give a good combination of the required vitamins.

In selecting foods for the vitamins that will be furnished in the diet, it is well to remember the following points :

1. It is important to know how often any given food will be used in the diet.
2. The amount of food which will be used.
3. The effects of preparation and cooking of the foods on vitamin retention.
4. The availability and cost of the foods.

Different vitamins, their sources, and the deficiencies resulting from the lack of these vitamins, along with the recommended daily allowances, is given in Table VI.

Malnutrition and Under-Nutrition

As a result of surveys of food habits amongst the people in different parts of India, it has been observed that the food consumed by a large majority of the people is lacking both, in quality and quantity. This is particularly true of the low-income groups. Therefore, malnutrition and under-nutrition are very common.

The effects of the deficiencies of the various nutrients have already been discussed under their respective headings. Many people in India suffer from deficiencies of proteins, vitamin A, riboflavin, thiamine and niacin.

Protein Malnutrition

The problem of protein malnutrition is especially prevalent among children in the age group 1-5 years. It has been seen that an infant who is breast-fed is healthy (unless there is a maternal disease or defect by birth) upto the age of 4-6 months. Even the under-nourished mothers secrete large quantities of milk and provide the proteins required by the child. Even when nutritional standards are higher, it is not possible to sustain the child only on breast milk after the age of 4-6 months. Supplementary proteins in the form of protein-rich foods such as milk and milk products, eggs, dals, and grams are extremely necessary. Protein deficiency over a period of time results in stunted growth, anaemia, dry and discoloured skin, scanty hair and mental retardation.

TABLE VI

Different Vitamins, Their Sources, and the Deficiencies Resulting from The Lack of These Vitamins

Vitamins	Sources	Deficiency	Recommended Daily Allowances*		
Fat Soluble Vitamin A.	Animal foods are good sources of Vitamin A, e.g., fish liver oils, butter, fortified margarine, milk cheese, eggs. Vegetables such as spinach, turnip & radish tops, carrots, yellow sweet potatoes, pumpkin, corriander and mint leaves and tomatoes contain Carotene, which is converted into Vitamin A by the body. Fruits such as mangoes and papaya are also rich in Carotene.	1. **Eyes** a) Night blindness b) Xeropthalmia—acute case of vitamin A deficiency leads to cornea becoming dry and cloudy and ultimately leads to ulceration. c) Keratomalacia—softening of the cornea resulting in permanent blindness. 2. **Skin** Dryness and roughness of skin occurs in acute deficiency.	**Age Group**	**Carotene** micrograms	**Vitamin A** micrograms
			Adults —	3000	750
			Pregnant women	3000	750
			Lactation	4600	1150
			Infants		
			0-6 mths	0-6 mths	400
			7-12 ,,	1200 7-12 ,,	300
			1-3 yrs.	1000 1-3 yrs.	250
			4-6 ,,	1200 4-6 ,,	300
			7-9 ,,	1600 7-9 ,,	400
			10-12 yrs.	2400 10-12 yrs.	600
			Adolescents		
			13-18 yrs. (Boys & Girls)	3000 13-18 yrs. (Boys & Girls)	750

*Recommended by the *Nutrition Expert Group*, Indian Council of Medical Research, 1968.

TABLE VI (contd.)

Vitamins	Sources	Deficiency	Recommended Daily Allowance
Vitamin D	Fortified milk, fish liver oils and liver are good sources. Natural foods like milk, egg yolks, and fish provide vitamin D in very small amounts. Sunlight is a good source.	1. Rickets in children a. enlargement of knee, ankle and wrist joints. b. softening of bones and bow legs. c. chest, spinal and pelvic bone deformation. 2. Delayed tooth eruption and ill-formed tooth. 3. Osteomalacia--also known as adult rickets, especially among women. a. soft and bent bones, pelvic deformities, b. pain in bones and lower part of back, c. tendency for spontaneous multiple fractures.	Since the exact requirement of Vitamin D is not known, an arbitrary allowance of 200 I.U/day is made. This allowance is in addition to some amount of Vitamin D that might be derived from exposure to sunlight.

TABLE VI (contd.)

Vitamins	Sources	Deficiency	Recommended Daily Allowance
Vitamin E	Vegetable oils like wheat germ oil has highest concentration. Corn oil and cotton seed oil are also good sources. Legumes, green vegetables and nuts are good sources of Vitamin E.	Deficiency symptoms not well established in human beings.	Allowances not established.
Vitamin K	Green leafy vegetables like spinach are excellent sources. Cabbage, cauliflower and pork liver are good sources. Cereals and fruits contain small amounts of Vitamin K.	Tendency to haemorrhage. Prolonged clotting time for blood.	Allowance not established.

TABLE VI (contd.)

Vitamin	Source	Deficiency	Recommended daily Allowance	
Water Soluble Vitamin C or Absorbic Acid	Amla is an excellent source. Drumstick and drumstick leaves are also excellent sources. Fresh fruits, especially citrus fruits, oranges, guava and papaya are good sources. Tomatoes, cabbage, green leafy vegetables are good sources. Sprouting grams and dals increase their Vitamin C content.	1. Painful joints due to Scurvy. Pain, tenderness of muscles. Tender and hemmorhagic gums Improper growth. 2. In adults: swelling, infection and bleeding of gums, tenderness in logs, anaemia, sore and spongy gums, loosening or even loss of teeth, haemorrhage, painful joints, edema, and loss of weight.	**Adults**:	50 mg.
			Pregnancy:	50 mg.
			Lactation	80 mg.
			Infants:	30 mg.
			Children:	30-50 mg.
			Adolescents:	30-50 mg.

TABLE VI (contd.)

Vitamin	Source	Deficiency	Recommended daily allowance
Vitamin B Complex Thiamine or Vitamin B_1	Widely distributed in both plants and animal tissues. In plants, seeds contain highest amount. Dry peas, beans, soya beans and eggs are good sources. Vitamin is concentrated in outer layers of grain kernel. Bran and rice polishing are good sources. Liver, poultry and pork are good sources, & Brewers Yeast is an outstanding source. Many nuts like peanuts, are good sources. Milk is an important dietary source due to the large quantities consumed.	Beriberi : early symptoms are loss of appetite nervious instability, depression, fatigue, constipation, edema cramps in calf, muscles of legs.	**Adults :** Male : 1.2-2 mg. Female : 1.0—1.5 mg. Pregnancy : +0.2 mg.* Lactation : +0.4 mg.* **Children :** 0.6—1 mg. **Adolescents :** 1.1—1.5 mg. (Requirement based on caloric requirement).
Vitamin B_2 Riboflavin	Milk and milk products like skimmed milk, buttermilk, curd, cheese and whey, egg, liver and kidney are good sources. Green leafy vegetables, dried yeast and enriched cereals are also good sources. Cereals are poor sources.	Eyes become sensitive to light. Burning and itching eyes. Blurred vision. Inflamed and purplish colour of the tongue and lips. Cracks at the corners of mouth and on the lips. Mouth becomes very sore. An increased number of capillaries in the corner of the eyes resulting in "blood shot" eyes.	**Adults :** Male : 1.3-2.2 mg. Female : 1.0-1.7 mg. Pregnancy : +0.2 mg* Lactation : +0.4 mg.* **Children :** 0.7—1.2 mg. **Adolescents :** 1.2—1.7 mg. (Requirement based on caloric requirement).

*The allowance of vitamins recommended during pregnancy and lactation is over and above the requirements of normal females.

TABLE VI (contd.)

Vitamin	Source	Deficiency	Recommended daily allowance	
Niacin or Nicotinic Acid	Widely distributed in both plant and animal tissues. Liver, kidney, heart, lean mean and fish are good sources. Brewers' Yeast, peanuts, and peanut butter are among the richest sources. Whole grain cereals are fair sources of Niacin. Potatoes, legumes, and green leafy vegetables are fair sources.	Early signs of deficiency: fatigue, listlessness, headache, backaches, poor health, very sore mouth, tongue bright red in colour. Pellagara-dermatitis accompanied by pigmentation. Diarrhoea and nervous disorders.	**Adults** Male : Female : Pregnancy : Lactation : **Children** : **Adolescents** : (Boys and Girls)	 16-26 mg. 13-20 mg. + 2 mg.* + 5 mg.* 8-14 mg. 14-21 mg.
Folic Acid	Liver, kidney, green leafy vegetables, yeast, and grams are good sources, whole grain cereals are fair sources.	Deficiency leads to anaemia.	**Adults** : Pregnancy Lactation : **Infants** : **Children & Adolescents** : (Boys & Girls)	Micrograms 100.00 150-300 150 25.0 50-100
Vitamin B_{12}	Plants do not contain Vitamin B_{12}. Animal foods like liver, kidneys, milk, eggs, cheese, contain Vitamin B_{12} in moderate quantities.	Pernicious anaemia and degenerative changes in the nervous system.	**Adults** : Pregnancy : Lactation : **Infants** : **Childern & Adolescents** : (Boys & Girls)	Micrograms 1.0 1.5 1.5 0.2 0.5-1.0

*The allowance of vitamins recommended during pregnancy and lactation is over and above the requirement of normal females.

It is, therefore, necessary to provide adequate amounts of milk to children during this period. As an alternative for the short supply of both fresh and dry milk in the country, vegetable protein foods should be made available for different age groups to prevent malnutrition.

A great deal of work has been done to find ways and means of incorporating these deficient nutrients into the food of the common man. In India foods like milk, eggs, meat, fish and cheese are comparatively expensive. Also, a large majority of Indians are vegetarians. To meet the need of making available a comparatively cheap source of nutritive food, formulated multi-purpose flour and Balahar are being developed. The M.P.F.[1] is made up of groundnut flour, Bengal gram flour and skimmed milk powder, and is enriched with vitamins and minerals. The protein content of M.P.F. is approximately 40 to 45 per cent. The acceptability of M.P.F. has been tested on a large scale, and it has been seen that upto 25 per cent of M.P.F. can be used in combination with other cereals to make up for the deficiency of important food constituents, without changing the food habits.

Balahar is a formulated food of high protein content. It is made up of wheat, Bengal gram flour, peanut flour and powdered milk. Its protein content is approximately 25 per cent. It contains spices to improve acceptability. Both Balahar and M.P.F. are not on sale in the open market, but are used by certain voluntary and Government agencies in their school-feeding programmes among selected groups in certain areas.

Vitamin A Deficiency

Malnutrition not only results in high rates of infant mortality, but can also damage some of the important organs of the body, thus crippling children for life.

Vitamin A deficiency in children affects their vision. In the early stages, such deficiency causes the eyes to become dry and slightly discoloured. They lose their shine and lustre. In advanced cases, the cornea of the eye becomes opaque, and later on erodes and gets soft. Finally, complete loss of eyesight takes place. Blindness occurs in both eyes and cannot be cured.

1. M.P.F.-Multi-Purpose Flour.

Vitamin A is widely distributed. In animal foods it is found as Vitamin A, and in plant pigment as carotene, which can be converted into vitamin A during the process of digestion. Carotene, therefore, is known as a provitamin.

To prevent blindness due to Vitamin A deficiency, the use of Vitamin A and carotene-rich foods or provitamin are necessary during pregnancy, to ensure a good store of Vitamin A in the new-born baby. Vitamin A may be incorporated in the child's diet as early as the fourth month. Foods containing vitamin A *must* be added to the diet by the time the child is six months old.

Iron Deficiency

Iron deficiency causes anaemia both in childhood and during pregnancy. This can be cured in the early stages by eating foods rich in iron, but in advanced stages medical treatment is more effective than dietary treatment.

Under-Nutrition

Under-nutrition occurs when the overall food intake is not sufficient. In such cases there is a general deficiency of almost all the important nutrients of food. Under-nutrition and the resultant deficiencies can be observed in varying degrees.

In an adult, under-nutrition will result in continuous loss of body weight and general weakness of the body. In children, during their growing age, constant under-nutrition will result in stunted growth and loss of weight. Prolonged under-nutrition also results in general lack of vitality and mental retardation of children.

The problem of malnutrition, as also that of under-nutrition can only be met through planned efforts. Since this is an enormous problem, it needs the efforts of both, the public as well as the Government. The public needs to be made more conscious, through education, of what they eat, what they should eat, and how to substitute inexpensive but nutritious foods for the expensive ones.

Questions

1. What are some of the factors that determine the protein and energy requirements for individuals ?
2. What are the major food sources of carbohydrates ? What is their importance in the diet ?
3. Explain the role of minerals in the body.
4. While cooking food, why is it necessary to know that certain vitamins are soluble in fat while others are soluble in water ?
5. What nutrients are lacking in the diets of people who suffer from scurvy, beriberi and pellagra ?

Chapter II

Balanced Diet

In the preceding chapter we have briefly discussed the essential nutrients, their sources and the effects on the human body in their absence. All foods and their contribution to nutritional needs can be assigned a definite place in the balanced diet. This concept has been interpreted as the "Basic Five Food Groups" by the Indian Council for Medical Research (ICMR). This interpretation has proved extremely useful in the teaching and the learning of nutrition. It has also helped tremendously in simplifying the difficult task of meal planning which is discussed in Chapter IV. In order to plan a balanced diet, one must choose some foods from each of the five groups every day (*see* Figure 3 on "Food Groups").

A balanced diet is one that provides all the essential nutrients in sufficient amounts, so as to meet all the body's needs. This can be achieved by eating a variety of foodstuffs. The greater the variety of food, the better are the chances of eating an adequately balanced diet. However, it is not sufficient to eat a variety of foodstuffs, unless they contain correct and sufficient amounts of different essential nutrients. A correct combination of different amounts of foods will give the best results for proper growth, repair and maintenance of the body tissues, and proper functioning of the body.

When planning a well-balanced diet, the ratio of the energy contribution from proteins, fats and carbohydrates is usually calculated. These ratios are not well-defined for much depends on the types of foods available, the economic level of the population groups, and the eating habits of communities. After a careful consideration of the conditions currently existing in India, a tentative ratio of the energy contribution from proteins, fats and carbohydrates is proposed. The range is :

Proteins	...	...	10-20 per cent
Fats	...	...	18-40 per cent
Carbohydrates	...	...	48-70 per cent

To ensure a balanced diet it is important, therefore, to include the proteins, vitamins, minerals, and fat requirements first, and then the carbohydrates can be selected in sufficient quantity to make up the caloric needs.

Tables VII gives the food nutrients and their sources.

Table VIII and IX give recommended balanced diets for different age groups, both vegetarian and non-vegetarian. These tables are followed by suggested menus for different age groups, both vegetarian and non-vegetarian.

TABLE VII

Important Food Nutrients and their Sources

Nutrient		Source
Proteins		Eggs, milk, cheese, curds, buttermilk, meat, fish, poultry, wheat, rice, ragi, maize, jowar, bajra, Bengal gram dal, black gram dal, green gram dal, red gram dal, ground nut, soyabeans.
Carbohydrates		Sugar, jaggery, honey, sago, arrowroot, rice, wheat, maize, bajra, barley, pulses, potatoes, tapioca, dates, figs, raisins and some fresh fruits such as bananas.
Fats		Ghee, butter, vegetable oils, groundnuts and nuts.
Vitamins :	A	Whole milk, cheese, eggs, fish, fish oils, liver, butter, pumpkin, carrots, cabbage, green leafy vegetables, mango, papaya, tomato,apricots.
	B	Milk, milk products, cheese, meat, liver, eggs, whole wheat, parboiled rice, ragi, grams, pulses, nuts, soyabeans, peanuts, green leafy vegetables.
	C	Amla, orange, lemon, citrus fruits, sprouted pulses, tomatoes, guava, strawberry, papaya, cabbage, drumsticks, green leafy vegetables.
	D	Milk, fish, fish oils, butter, eggs and liver.
Minerals		
Calcium		Milk, milk products, ragi, Bengal gram dal, black gram dal, red gram dal, green leafy vegetables.
Phosphorous		Milk and milk products, egg, fish, mutton, liver, fowl, bajra, barley, maize, ragi, parboiled rice, whole wheat, pulses, soyabeans and groundnuts.
Iodine		Common salt prepared from sea water, sea fish, vegetables grown on soil near the sea coast.
Iron		Whole wheat, parboiled rice, ragi, jowar, bajra, soyabeans, jaggery, nuts, green leafy vegetables, eggs, liver, meat.

FIGURE 3 : FOOD GROUPS

FIGURE 3

FOOD GROUPS

Choose Foods From Every Group Each Day For a Balanced Diet

The Five Food Groups	Food Stuff	Main Nutrient Contribution
1.	**MILK** curds, panir (cheese) skim-milk powder	Protein
	PULSES grams, dals, dried beans & peas	Calcium
	MEAT fish, poultry, eggs, liver	Riboflavin
2.	**FRUIT** orange, tomato, mango, papaya, amla, lemon, lime, guava, grapefruit, etc.	Carotene (Vit. A value) Vitamin C
	GREEN LEAFY VEGETABLES sag or keerai, cabbage, carrot tops, radish tops, turnip tops, beetroot leaves, amaranthus, palak, colocasia leaves	Calcium, Iron } leafy vegetables
3.	**OTHER VEGETABLES** brinjal, gourds, fresh beans, pumpkin, lady-finger, tinda, cauliflower, carrots	Vitamins and Minerals (in small amouts)
4.	**CEREALS** rice, wheat, maize, ragi, bajra, jowar	Carbohydrates B Vitamins
	STARCHY VEGETABLES yams, colocasia, tapioca, potatoes, green banana, etc.	Protein (in cereals)
5.	**FATS AND OILS** vegetable oil, butter, ghee	Fat (energy) Essential Fatty Acids. Vitamin A (in animal fats only)
	SUGAR jaggery, honey	Carbohydrates (in sugar only)

Source : *"Some Common Indian Recipes and their Nutritive Value"*, National Research Laboratories, ICMR, Hyderabad, 1964.

TABLE VIII

Balanced Diets in gms. for Different Age Groups (Non-Vegetarian)

Groups	Cereals	Pulses	Green leafy vegs.	Other vegs.	Roots & Tubers	Fruit	Milk	Fats & oils	Meat & Fish	Egg	Sugar & Jaggery	Groundnuts
Men : Sedentary worker	400	55	100	75	75	30	100	40	30	30	30	—
Moderate worker	475	65	125	75	100	30	100	40	30	30	40	—
Heavy worker	650	65	125	100	100	30	100	50	30	30	55	50
Women : Sedentary worker	300	45	125	75	50	30	100	35	30	30	30	—
Moderate worker	350	55	125	75	75	30	100	40	30	30	30	—
Heavy worker	475	55	125	100	100	30	100	45	30	30	40	40
Pregnancy	+50	—	+25	—	—	—	+125	—	—	—	+10	—
Lactation	+100	+10	+25	—	—	—	+125	+15	—	—	+20	—
Pre-School Children :												
1-3 years	150	40	50	30 or 30		50	200	20	30	or 30	30	—
4-6 years	200	50	75	50 or 50		50	200	25	30	or 30	40	—
School Children :												
7-9 years	250	60	75	50 or 50		50	200	30	30	or 30	50	—
10-12 ,,	320	60	100	75 or 75		50	200	35	30	or 30	50	—
Adolescents :												
Boys : 13-15 years	430	50	100	75	75	30	150	40	30	30	30	—
16-18 ,,	450	50	100	75	100	30	150	50	30	30	40	50
Girls : 13-18 years	350	50	150	75	75	30	150	40	30	30	30	—

(Recommended by the Nutrition Expert Group of the Indian Council of Medical Research, 1968)

TABLE IX

Balanced Diets in gms. for Different Age Groups (Vegetarian)

Groups	Cereals	Pulses	Green leafy vegs.	Other vegs.	Roots & Tubers	Fruit	Milk	Fats & Oils	Sugar & Jaggery	Groundnuts
Men : Sedentary worker	400	70	100	75	75	30	200	35	30	—
Moderate worker	475	80	125	75	100	30	200	40	40	—
Heavy worker	650	80	125	100	100	30	200	50	55	50
Women : Sedentary worker	300	60	125	75	50	30	200	30	30	—
Moderate worker	350	70	125	75	75	30	200	35	30	—
Heavy worker	475	70	125	100	100	30	200	40	40	40
Pregnancy	+50	—	+25	—	—	—	+125	—	+10	—
Lactation	+100	+10	+25	—	—	—	+125	+15	+20	—
Pre-School Children :										
1-3 years	150	50	50	30	or 30	50	300	20	30	—
4-6 years	200	60	75	50	or 50	50	250	25	40	—
School Children :										
7-9 years	250	70	75	50	or 50	50	250	30	50	—
10-12 years	320	70	100	75	or 75	50	250	35	50	—
Adolescents :										
Boys : 13-15 years	430	70	100	75	75	30	250	35	30	—
16-18 years	450	70	100	75	100	30	250	45	40	—
Girls : 13-18 years	350	70	150	75	75	30	250	35	30	—

(Recommended by the Nutrition Expert Group of the Indian Council of Medical Research, 1968)

SUGGESTED MENUS FOR DIFFERENT AGE GROUPS (1 TO 5 YEARS)

	Vegetarian	Non-Vegetarian
Breakfast	1 glass milk (8 ozs) Besan roti with butter 1 raw vegetable like carrot, or a tomato or some fruit.	1 glass milk (8 ozs) 1 egg (boiled or scrambled) 1-2 slices bread with butter and jam 1 raw vegetable like carrot, or a tomato or some fruit
Mid-Morning	If in school (packed box) 1 sandwich with cucumber, or tomato or cheese 1 snack (sweet) like a biscuit or cookie	1 sandwich with cheese, or ham, or even tomato or cucumber 1 snack (sweet) like a biscuit or cookie
Lunch	Rice—1 serving, or 1 chappati or both ½ cup curd 1 vegetable or dal, and some salad	Rice— 1 serving or 1 chappati or both ½ cup curd 1 vegetable or dal, and some salad
Evening	1 glass milk 1 snack, either sweet or savoury 2 biscuits	1 glass milk 1 snack, either sweet or savoury 2 biscuits
Dinner	1 chappati 1 serving dal 1 serving vegetables 1 sweet dish serving made with milk	1 chappati 1 serving meat either with vegetables, or alone 1 sweet dish serving made with milk

SUGGESTED MENUS FOR DIFFERENT AGE GROUP (5 TO 10 YEARS)

	Vegetarian	Non-Vegetarian
Breakfast	1 glass milk (8 ozs) 1 Besan roti or Besan pancake with butter and/or 1 cup whole wheat porridge 1 fruit or raw vegetable 5 almonds	1 glass milk (8 ozs) 1 egg (boiled, fried or made into an omelette) 2 slices bread with butter and/or 1 cup whole wheat porridge
Mid-Morning (School Snack Box)	2 sandwiches or 1 stuffed parantha	2 ham or cheese sandwiches, or 1 stuffed parantha
Lunch	Rice—1 serving or 2-3 chappatis 1 cup curd 1 dal 1 vegetable (cooked) Salad Fruit	Rice—1 serving or 2-3 chappatis 1 cup curd 1 dal 1 vegetable (cooked) Salad Fruit
Evening	1 glass milk (8 ozs) 2 sandwiches or Any other snacks either sweet or savoury, or both	1 glass milk (8 ozs) 2 sandwiches or Any other snacks either sweet or savoury, or both
Dinner	2-3 chappatis 1 dal or cheese dish 1 vegetable cooked dry salad with sprouted grams or mixed vegetables 1 sweet either made with milk or served with cream	2-3 chappatis 1 meat or fish dish salad with sprouted grams, or mixed vegetables 1 sweet either made with milk or served with cream

SUGGESTED MENUS FOR DIFFERENT AGE GROUP (10 TO 15 YEARS)

	Vegetarian	Non-Vegetarian
Breakfast	1 glass milk (8 ozs) with Ovaltine or drinking chocolate 2 stuffed paranthas with some vegetable 1 fruit or raw vegetable and/or 1 cup whole wheat porridge, or oatmeal	1 glass milk (8 ozs) with Ovaltine or drinking chocolate 1—2 eggs (fried, scrambled) 2 slices bread with butter and/or jam, or 2 small paranthas
Lunch	2—4 chappatis 1 cup curd 1 dal 1 vegetable generous helping salad Some fruit or sweet	1 fruit or raw vegetable 2—4 chappatis 1 cup curd 1 dal 1 vegetable generous helping salad some fruit or sweet
Dinner	2—4 chappatis and/or rice 1 helping vegetable curry (with peas and cheese, etc). 1 helping vegetable raw or cooked sweet	2—4 chappatis and/or rice 1 helping of meat or fish curry 1 helping vegetable or salad sweet

Daily Diet for Expectant and Nursing Mothers

Whole Milk	4 cups
Meat, Fish & Poultry	1 liberal serving (4 ozs)
Liver	Desirable at least once a week
Pulses	1 liberal serving of peas, pulses, or curds, or cheese (8 ozs) daily
Eggs	At least 1 daily
Fruit	2 or more servings daily 2 medium oranges, or 8 (ozs.) fruit juice or its equivalent (rich in vitamin C)
Vegetables	2 or more servings of cooked or raw vegetables. These should include dark green leafy vegetables several times during each week, in addition to some amount of cooked potatoes each day.
Bread and Cereals	2—4 chappatis, or 4 slices bread 1 helping rice (depending on the appetite)
Butter or Fat	2 tablespoons daily.

Packed Lunch Menus for Adults

MENU **1**	3 vegetables or mince cutlets 3 sandwiches (with tomato, or cucumber, or mint chutney) A little salad, and 1 fruit like banana, guava or orange.
MENU **2**	4 small Besan rotis A little seasonal vegetable like peas and cauliflower or peas and carrots, etc. A piece of pickle Some fruit.
MENU **3**	2 Potato puffs 2 slices bread with butter Salad or sprouted grams with lemon dressing A piece of cold meat, or 1 full boiled egg Some sweet like a piece of Besan barfi or carrot barfi.
MENU **4**	2 stuffed toasts with either mince and peas or some other vegetables Some salad, or pieces of raw vegetables like radish, carrots and small tomatoes A piece of sweet, or some fruit.
MENU **5**	2 Hot Dogs, or 2 Hamburghers of Vegetable or cheese-burghers Salad Fruit.

Packed Lunches for Children

MENU **1**	2 Sandwiches with either some vegetable or plain butter 1 full-boiled (shelled) egg Pieces of vegetable (radish, carrot, etc.) or salad 1 piece of sweet like peanut brittle.
MENU **2**	2 stuffed paranthas Some fruit.
MENU **3**	One or two Hot Dogs or Hamburghers Salad Fruit.
MENU **4**	2 Ham sandwiches (or any other sandwiches) or 2 bread rolls with meat or vegetable stuffing salad sweet.

Questions

1. In what way would food required for a child of 3-4 years, a boy of 16-17 years, and a man of 40 years of age differ?

2. Why is it important to select foods from each of the basic five food groups ?

3. Plan two menus for your family, one for summer and one for winter months. Give details of the requirements of the family members.

Chapter III

Principles of Food Preparation

Food is eaten according to set food habits. These food habits depend on individual likes and dislikes and on attitudes, beliefs and customs. Besides this, what we eat, and the influence it has on our body, also depends on how we prepare and serve our food. The preparation of wholesome and palatable foods is dependent on factors like the quality of foods purchased, method of preparation, handling and serving, food sanitation and temperature at which food is held. Although some foods, especially fruits and certain vegetables, are better when eaten raw, there are certain other foods like meat and cereals which cannot be consumed unless cooked. Cooking also :

(a) enhances the digestibility of food,

(b) helps improve the appearance and texture of food,

(c) adds variety and makes food more appetizing,

(d) renders food more hygenic by destroying certain harmful organisms and parasites.

Different Methods of Cooking

Foods may be cooked by moist heat, dry heat, or by frying.

1. *Boiling* : is cooking food in water that has reached its boiling point (100° C or 212° F). At this temperature the bubbles break rapidly on the surface of the water and steam is released. Boiling helps to soften foods like vegetables, fruits and cereals. Boiling also hardens the fibres of some foods such as meat and poultry. Therefore, boiling should not be used for such foods.

Foods which can be boiled are: vegetables, cereals, grams and dals.

Foods which should not be boiled are: meat, fish and poultry. These should be stewed, simmered or roasted.

2. *Steaming :* is cooking by exposing foods to hot steam rising from boiling water, with or without pressure by applying steam directly to the food as is done in a steamer or pressure cooker, or to the vessel as in a double boiler. The food should not come in direct contact with the boiling water. Foods which may be steamed are: meat, fish, poultry and vegetables.

3. *Simmering :* is cooking food in a liquid at a temperature below boiling point. The bubbles rise slowly and break just below the surface. About 185° F. Foods which may be simmered are: meat, fish, eggs and some vegetables.

4. *Baking* : is cooking food by exposing it to hot air. Baking can be successfully done in both modern ovens or in the indigenous over called "Tandoor"*.

5. *Frying* : is cooking food in hot fat. This is one of the quickest methods of cooking. Most foods can be fried. Frying is either done in hot fats deep enough to cover the food called "deep fat fry" or cooking in small amounts of fat called "shallow" or "pan fry".

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*An earthenware oven, used in most villages for baking chappaties or bread. It is very inexpensive and costs between Rs. 2 and Rs. 10, depending on the size. 10 to 20 chappaties can be baked at one time.

6. *Poaching :* is cooking in an open pan over water or liquid. The water or liquid should simmer, not boil. Eggs and fish can be poached. Poached food is easily digested, and hence can be used when cooking for children and for invalids.

7. *Grilling or Broiling :* is cooking food by exposing it to direct heat. Gas or electric ovens are fitted with a grill, but in the ordinary stove or sigri, the grill is used over an open fire. Foods that can be grilled are: small pieces of meat, fish, poultry, liver, bacon and sausages. Some vegetables like tomatoes and mushrooms can also be grilled.

8. *Stewing :* is cooking food in a small amount of water at a temperature below the boiling point.

Effects of Cooking on Different Food Nutrients

Proteins : Cooking renders proteins mor digestible but too much heat has a tendency to harden the animal fibres. The nutritive value of some of the vegetable proteins increases with the application of heat. The fibres of animal proteins like meat and poultry harden and shrink with the application of too much heat.

Carbohydrates : A great proportion of our food is made up of starches. Raw starch is not only difficult, but almost impossible to digest. Cooking causes the starch granules to swell and ultimately burst. The resulting gelatinised substance is easily digested.

Fats : There is very little effect of cooking on fat, but prolonged and constant heating produces a pungent compound which is irritating to the intestines (as in the case of fat used over and over again for frying).

Minerals

Calcuim : Heat has very little effect on calcium. Some of the minerals might be lost because of their solubility. If the water in which the food is cooked is discarded, an appreciable amount of calcium is lost.

Iron : Heat affects iron very much the same way as it affects calcium. Cooking in iron pans helps to increase the nutritive value as the food absorbs iron from the cooking pan.

Water-Soluble Vitamins

Vitamin B_1 (Thiamine) : Thiamine is highly soluble in water and is stable when cooked in an acid medium. Some of the vitamins are destroyed in the cooking process, but most of the loss is due to its solubility. In order to retain the nutritive value of the food, a small amount of water should be used and cooking should be done in the shortest possible time. When possible, use the water in which the food is cooked for soups and curries and for kneading dough.

Riboflavin : This vitamin is not very soluble in water, so the cooking procedures do not contribute greatly to its destruction. Riboflavin is very sensitive to light. Since milk is a good source of riboflavin, exposing milk to light for any length of time would cause considerable loss.

Nicotinic Acid or Niacin : Some loss of this vitamin does occur when foods are cooked since nicotinic acid is water-soluble. The same application of principles for the retention of water-soluble vitamins should be used.

Vitamin C : is highly soluble in water and easily destroyed by exposure to air. It is the most easily destroyed of all vitamins. Acid inhibits the destruction of this vitamin. Again, small amounts of water should be used when cooking foods containing vitamin C. Leftover vegetables should be tightly covered to help reduce losses during storage.

The Use of Baking Soda : The practice of adding baking soda to vegetables as they are cooking greatly *reduces* the vitamin content of the vegetables. This can be said for all water-soluble vitamins.

Fat-Soluble Vitamins

Vitamin A & D : are not soluble in water. They are stable to heat during usual cooking methods. They are destroyed by using very high temperatures and cooking for long periods of time.

The Preparation of Vegetables

Since vegetables contribute greatly to the vitamin and mineral content of the diet cooking procedures should include ways of preserving these vitamins and minerals.

Preparing Vegetables for Eating Raw

Many vegetables such as carrots, radishes and turnips when they are crisp and tender are good to eat raw. Because most vegetables are grown in or close to the ground and are contaminated by dust and sprays, they do require special treatment before eating. They should be thoroughly washed, and all spoiled portions removed. It is recommended that root vegetables be scraped or the skins removed to ensure greater safety. Tomatoes may be dipped in boiling water for a few seconds and the skin can be removed easily.

Soaking of vegetebles, particularly when they are cut into small pieces, results in a significant loss of nutrients. As far as possible, wash vegetables before cutting. If no proper storage facilities are available, prepare raw vegetables immediately before eating, to minimise loss of nutrients.

Preparing Vegetables for Cooking

Whenever possible, it is always better to cook vegetables with their skins. Peeling after cooking results in less loss of nutrients. Potatoes may be cooked either with or without their skins. When peeled before cooking a considerable amount of Vitamin C is lost. Beets should always be cooked in their skins. If pared before cooking they lose a tremendous amount of their red colouring matter and this affects their appearance. Carrots, when cooked with their skins on and scraped after cooking, seem to retain their sweetness and their nutrients. If the preparation requires that they be pared before cooking, they should be scraped rather than pared.

Cooking Vegetables

The palatibility and digestibility of most vegetables is improved by cooking. The cooking process softens the fibrous parts of the vegetables and in so doing, makes many of the nutrients available to the body. When cooking vegetables in water, some of the water-soluble vitamins may leak out into the water. There is also the possibility of destruction of some of the vitamins such as Vitamin C. In tomatoes which are acidic, little of vitamin C is destroyed in cooking. In cooking cabbage and spinach, as much as 60 per cent of Vitamin C can be destroyed.

Whenever possible, cook vegetables in as little water as possible for as short a time as possible. Vegetables should not be cut into small pieces. The liquid in which vegetables are cooked should be used in soups, gravies and sambars.

Colour and Flavour

For cooking purposes, vegetables are classified as green, red, yellow and white. Strong and mild are the classification for flavour. It is best to preserve both the colour and the flavour during the cooking process. Table on Page 47 is a guide to be used in cooking vegetables.

Serving Vegetables

Raw vegetables should be served crisp, bright in colour and free from decayed areas. Cooked vegetables should not be mushy, but crisp and crunchy. The original shape of the vegetable should be maintained unless otherwise specified. The natural colour should be preserved as much as possible.

TABLE SHOWING CHARACTERISTICS AND PREPARATIONS OF FRESH VEGETABLES

Vegetable	Colour	Flavour	Description	For Boiling	Time for Cooking (minutes) Boiling Time	Pressure Cooked (Time)
Beans, green	Green	Mild	Whole or 1″ pieces	Uncovered	20-35	1½-3
Beets, young	Red	Mild	Whole	Covered	30-45	5-10
Beets, matured	Red	Mild	Whole	Covered	45-90	10-18
Beets, greens	Green	Mild		Covered	5-15	
Cabbage	White	Strong	Quartered	Uncovered	12-15	
Cabbage	White	Strong	Shredded	Uncovered	5-9	
Cabbage	Green	Strong	Shredded	Uncovered	3-8	
Carrots, young	Yellow	Mild	Whole or halves	Covered	15-25	3-5
Carrots, old	Yellow	Mild	Diced	Covered	15-20	2-3
Cauliflower	White	Strong	Flowerlets	Uncovered	8-15	
Chinese Cabbage	Green	Strong	Sliced	Uncovered	8-10	
Eggplant	—	Mild	Diced	Covered	8-15	
Knol-kohl	White	Strong	Pared or sliced	Uncovered	20-30	
Mustard Greens	Green	Strong	—	Uncovered	15-25	5-8
Ladies-fingers	Green	Strong	Whole	Uncovered	8-20	
Onions	White	Strong	Sliced	Uncovered	15-25	
Peas, green	Green	Mild	Shelled	Uncovered	8-20	
Peppers	Green	Strong	Whole	Uncovered	10-15	
Potato, white	—	Mild	Whole	Covered	25-35	8-10
Pumpkin	Yellow	Mild	Sliced	Covered	20-25	8-10
Palak	Green	Mild	With stems	Covered	3-5	
Gourds	—	Mild		Covered	5-15	
Tomatoes	Yellow/ Red	Mild	Sliced	Covered	5-10	
Turnips	—	Strong	Sliced	Uncovered	10-20	1½-3
Turnips, greens	Green	Strong	—	Uncovered	15-25	

Adapted from Justin, Rust and Vail, *Foods*, Haughton Co., New York, pp. 164-167

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Adapted from Justin, Rust and Vail, *Foods*, Haughton Co., New York, pp. 164-167

Questions

1. Why is it important to cook food by different methods?
2. How does cooking affect the nutritive value of some nutrients?
3. How best can you preserve the colour and flavour of beets, carrots, green peas and white potatoes while cooking?

Chapter IV

Meal Planning

The food habits of a nation, to a large extent, determine the nutritional status and health of its people. The kinds, as well as the amounts of food eaten, is an important factor in determining how well the body is nourished. Limitations in both quality and quantity of foods will obviously result in malnutrition and hunger. Availability of food in itself is no guarantee that people are well-nourished. Eating patterns and food habits are established over a period of time and are dependent on the availability of foods, the economic level, the cultural and family patterns, climatic conditions, and the educational background of the individuals residing in the communities. These eating patterns eventually result in national eating practices. Therefore, it is important to recognise basic eating patterns before undertaking any plans for improvement in the diets of population groups.

All the above influences, directly or indirectly, determine the individual's eating habits, nutritional status, and the ultimate influence on physical and mental well-being. The planning of adequate meals that will meet all the needed nutrients for different age-groups merits careful consideration of some basic factors. Among these factors are : knowledge of the limiting nutrients, both quantitative and

qualitative : awareness of the cultural food patterns and habits : recognition of economic levels and feasibility of putting the proposed plans into practice, and the knowledge of the multiple resources available.

There are four basic goals of meal planning : the *first* and the most important goal is to achieve nutritional adequacy; *second*, matching meals to the food budget; *third*, catering to the likes and dislikes of the groups concerned; and *fourth*, management of time. These four goals of meal planning, along with the recommendations suggested by the Indian Council of Medical Research for improving the diets of people in India should always be taken into consideration when planning meals.

The broad principle that would help in meal planning to provide the well-balanced diet, can be grouped under three headings :

1. Eat a variety of foods every day in sufficient quantities that would meet the caloric needs.
2. Eat enough of good quality protein foods in each meal to help the required growth and maintenance of health.
3. Eat a variety of foods in each meal that would provide the essential minerals and vitamins.

A balanced diet can be planned by using many different food combinations. Selecting one or more servings from each of the Five Food Groups for every meal helps in making this difficult task of meal planning easy.

Meal planning includes menu-making, shopping, preparing and serving foods. With experience it is possible to do all this without apparent plans or shopping lists. But in the beginning, a home maker has to make many rational decisions especially with limited resources of time, money, energy, knowledge and skill.

Importance of Meal Planning

Many home makers feel that planning meals in advance is not only time-consuming, but also a waste of time, as emergencies can arise which require an

alteration of plans. This may be true, but there are 5 definite benefits that are derived from careful planning :

(a) An hour or so spent in planning, that is, composing menus and shopping lists, saves time and effort in shopping, cooking, planning and preparation of each meal.

(b) Precise planning makes it easier to control expenditure on food as :

(i) food choices can be made deliberately to suit the purse;
(ii) choice of more or less expensive foods can be made to arrive at the total expenditure;
(iii) planned menus lead to planned shopping—a practice which minimises waste;
(iv) spending can be regulated. Meals planned while marketing tend to be costly.

(c) Meals planned in advance help to achieve the goal of adequate nutrition. Meals planned on the spur of the moment may or may not provide for adequate nutrition.

(d) Planned meals generally include a wider variety of foods rather than huriedly planned meals.

(e) Meal planning helps to form good habits such as practice in deciding what to serve, how much to spend, and how much time and effort to invest. It also helps to develop good judgement and to minimise impulsive buying.

Problems of Meal Planning

There are some definite factors that guide the meal planning for the family. They are :

a. Food Budget

b. Age, sex and activity of different family members

c. Number of family members

d. Family goals, like education, status and health

e. Likes and dislikes, fads and fallacies of different family members

f. Availability of certain foodstuffs

g. Marketing facilities

h. The time and help the housewife has at her disposal

i. State of health of different family members

j. Nutritional needs

Keeping these factors in mind, the housewife should plan meals for the family.

As far as possible, meals should be planned in advance. This will help in the selection, buying, and preparation of foods. Alternatives or substitutes should be chosen in case certain food items are not available in the market. Selecting foods that are available in the season, and preparing only sufficient quantities, thereby avoiding waste, will help minimise expenditure on food.

Selection of foods to form a balanced diet may be a problem for some housewives. This problem can be simplified, and a reasonably well-balanced diet provided each day, by including at least some foods from the Five Basic Food Groups mentioned earlier.

Another problem which a housewife faces is that of adapting a well-balanced diet to the likes and dislikes of her family members. She can accomplish much by making the food attractive.

Making Food Attractive

1. Selecting food combinations which are colourful. Salads and garnishings improve the total effect of the foods.

2. Serving food in appropriate dishes or containers, e.g., a gravy dish should go in a deep bowl, and a dry vegetable dish in a flat one.

3. Serving small helpings of food at a time.

4. Serving pleasing textures and having a variety of textures within the meal.

Serving Foods with Flavour

1. Have a variety of flavours within the meal.

2. Serve flavours that go well together.

3. As far as possible, serve a particular food item only once in the menu.

4. Serve properly seasoned foods. Avoid the use of too much or too little seasoning.

5. Cook foods until done. Cooking develops flavour. Over-cooked and under-cooked foods lack flavour.

6. Serve hot foods hot, and cold foods cold.

Serving Nutritious Meals

1. Serve at least one generous helping from each of the five food groups daily.

2. Do not throw away water from boiled vegetables and cereals. Use it for soups and gravies.

3. Add raw fruits or vegetables in the form of salad with each meal.

4. Careful handling and storing of foods, both raw and cooked, help preserve the nutritive value of foods.

Useful Shopping Hints

The money we spend on food is the most important part of our total expenditure on housekeeping. It is better that the amount to be spent on food is decided in the beginning, and on no account must this money be sacrificed for entertainment, clothing or other luxuries.

It is advisable to deal with reliable traders, and occasionally to compare the prices and quality of different shopping places. Economy through inferior buying is not rational and should not be practiced. In the long run it is economical to pay a little more for getting quality goods.

Points to be Considered while Buying

1. Plan what you have to buy, and buy only that and no more. Consult Table VII (at the end of Chapter II) for an alternative, if a certain food item is not available, in order to see what else you may buy without upsetting the menu, budget and food value. It is better to complete a shopping blank and tick mark what you have purchased. A sample of a shopping blank is given at the end of this chapter.

2. Plan where you intend to shop. If possible, keep a list of food prices from your previous shopping to compare with current market prices.

3. Make a complete list of the quantities to be purchased. Take into consideration the size of the packets available at your cooperative and other grocery stores.

4. Carefully select the brand of dry and tinned foodstuffs that suit your budget.

5. Buy unperishable foods like cereals, tinned foods, and condiments once a month if possible, but no more than once a week.

6. Be very selective in your purchases of fresh foods like fruit, vegetables, eggs, poultry, meat, bread and butter.

7. Use all fresh foods within 24 hours of purchase, unless you have refrigeration and/or similar storage facilities.

8. Always shop at a place which is scrupulously clean. Food in the shops, especially the unwrapped ones, should not be exposed to dust, flies, and free handling. Unwrapped, loose and cut foods are cheaper, but are unhygenic and may cause illness.

How to Select Different Foods

Vegetables : All vegetables have a natural, bright colour and should be firm in texture and free from blemishes. Green vegetables have crisp leaves which should snap well. Wilted vegetables have lost much of their vitamin content, particularly carotene and vitamin C. Buy vegetables which are in season, as they are cheaper and taste better. Vegetables deteriorate rapidly in nutritional value unless proper storage facilities are provided.

Fruits : Fruits (like vegetables) should, as far as possible, be purchased when in season. Try and select firm, ripe fruit, with natural freshness. This can be judged by the colour, smell and feel. Do not buy over-ripe fruit. If unripe fruits are purchased, they should be allowed to ripen fully at room temperature before they are used.

Meat : The meat of a young animal is light pink in colour, firm to the touch, and has a bright appearance. The meat of an aged animal is dark pink, with a purple tinge, and shows richer fat deposits than the meat of a young animal, and it may be tough and stringy. Meat cuts from the hind end of the animal are more tender than those from the front and/or from muscles that are constantly used. Meat should be washed well before using. It should also be used immediately if refrigeration facilities are not available.

Eggs : Eggs should be brought from a reliable source, or should be tested for freshness. A fresh egg when placed in a bowl of water will lie flat on its side. A stale egg will have a tendency to float. A bad egg will stand erect with its apex touching the bottom of the bowl. When opened a fresh egg has a thick white, round and firm yolk.

Fish : Fish, when fresh, has bright, clear and unsunken eyes, firm flesh, a shining skin and red gills. The odour is one of freshness. As far as possible, buy fish from a reliable shop. Sea fish contains important mineral salts. River fish when eaten during the rainy season requires thorough cooking.

Tinned Foods : The life of tinned foods depends not only on the contents, but also on the type of liquid (if any) used in preserving, and the temperature at

which the tin is stored. The modern, scientific way of canning and preserving food is reliable. Good firms are careful in using good quality tins and suitable liquids. Therefore, choose from good brands. Store tinned foods in a cool, dry place, and do not store for an indefinite period of time.

Perishable Foods and How to Store Them

Besides meat, fish and eggs, there are certain foods which need special attention :

1. *Milk :* If obtained in bottles from a city milk supply centre, the milk should be left in the bottles and kept in a cool place until boiled. Avoid bright sunlight as vitamin B_2 (Riboflavin) can be lost due to exposure to light.

2. *Cream :* Cream does not remain good for more than 24 hours in cool weather, and 12 hours in hot weather. Store in a cool place or under refrigeration.

3. *Curd :* Should not be kept for more than 24-48 hours. Store in a cool place.

4. *Cheese :* Cheese for table use should be kept wrapped in aluminium foil to prevent drying and mould growth. Plastic bags also make good containers. Cooking cheese should be allowed to remain exposed to air (but not exposed to dust and flies), covered with a clean muslin, in order to make it hard and easy to grate. Keep all cheese in a cool place, in a refrigerator, if possible.

5. *Fruits & Vegetables :* are rich in vitamin C, which is greatly affected by storage. It is advisable to use them within 24 hours. Wash and clean fruits or vegetables and store them in a meatsafe or under refrigeration, wrapped up in individual paper or plastic bags.

6. *Eggs :* should be kept in a cool place. If kept in the refrigerator, allow them to come to room temperature before use. This is especially necessary when using eggs for cakes and puddings. Do not keep eggs for more than 3-4 days.

7. *Bread :* should be kept in a plastic bread box. Complete exclusion of air results in mould growth. Plastic bags are also good as they prevent the bread from drying.

8. *Butter :* Should be kept in a cool place. When it becomes rancid (smell/taste) it should be converted into fat (ghee) for cooking.

If possible, perishable foods should be refrigerated. A Janta refrigerator can easily be purchased or made by a potter. This may be made by placing one clay pot inside another. The space between the pots is fillled with water. Food is placed in the inner pot and covered. Green leafy vegetables stay crisp for approximately four days in this cooler.

SHOPPING BLANK

Place of Shopping_____

DAILY, WEEKLY OR MONTHLY SHOPPING LIST

Date_____

Groceries		Vegetables		Fruit		Meat or Fish or Poultry		Dairy Products		What to substitute if I cannot get what I want at the market.	
Item	Size or weight	Item	Weight	Item	Weight	Item	Weight	Item	Weight	Item	Size/Weight

Questions

1. What are the advantages of planning meals carefully?
2. What are some of the ways by which meals can be improved through the use of a variety of textures and flavours?
3. What standards would you use in the selection of fresh vegetables?
4. What are the advantages of preparing a shopping list?
5. What are some of the factors that you would consider while buying: fruits, meat and eggs ?

Chapter V

Feeding the Family

It is generally agreed that health influences performances throughout life, especially if health is defined as a state of complete physical, mental aud social well-being.

Surveys have shown that food and nutrition play an important role in the growth and development of children. By growth we mean the physical increase in height and weight. Development is an overall measure of the body's weight, height, mental development, and muscle coordination. The development is a continuous process from conception to maturity. It has been seen that there are two stages of rapid growth and development during the life span : (i) from conception to early childhood, and (ii) during adolescence. The nutritional needs vary to a very large extent during these different stages.

Infant Feedings

Experience, as well as scientific observations, have proved beyond doubt that breast milk is the best food for infants.

There are certain advantages of breast milk over artificial milk :

(i) breast milk has less chances of contamination, and less dangers of infection;

(ii) the proteins and fats in mother's milk are for more easily assimilated by infants than the proteins and fats from milk obtained from other sources such as ; cows, buffaloes or goats.

If the infant has to depend on breast milk—a good and abundant supply should be ensured. An average Indian mother is capable of producing 16-24 ozs. of milk during the first year of lactation. Special care of the mother's diet will be an added advantage in ensuring enough milk for the child.

Breast milk should be supplemented with other foods. This may be started at four months, but must be done by the time the baby is six months' old. Fish or cod-liver oil in one form or another is essential, and can be introduced from the third month. Cod-liver oil is rich in vitamin A and vitamin D which are necessary for the proper growth of the bones and for the prevention of rickets.

The first foods to be added to the child's diet are in liquid form. In the beginning one breast feeding may be substituted by an eight ounce serving of animal milk. Because of the different proportions of nutrients in animal milk, and for easy digestion, the animal milk can be diluted e.g., 2 parts of milk to one part of cooled, boiled water. Groundnut milk, soyabean milk or ragi malt may be substituted for the animal milk if families are not financially able to purchase animal milk, or in case of some ailment like stomach disorders or milk allergies.

Vitamin C, the protective vitamin which builds resistance to infection, is found in fruit juices, which should be introduced into the diet from the fourth month. If fruits juices are not available, the liquid portion of a soup made with green leafy vegetables may be substituted.

Vegetable purees* and cooked strained cereals should be slowly introduced. A well ripe banana, mashed and strained, may be given raw. Other fruits must be cooked and strained. The yolk of a soft cooked egg should be introduced into the

* Puree : Soup of vegetable, etc., boiled to a pulp and passed through a sieve.

child's diet at six months. Dal and cereal combinations which have been cooked and strained can be added at nine months.

The quantities of all these foods should be gradually increased until the child is one year old. On no account should these foods replace milk completely. Milk should form a considerable portion of the daily diet. When milk is not available, the child should remain on breast milk until one year old.

Feeding the Pre-School Child

After the first year, the child should be introduced to more solids. Good eating habits should be encouraged, and the feeding hours of children should be that of peace and harmony. The digestion improves if the child accepts food happily. New foods should be introduced one at a time and in small quantities.

Eating lots of fruits and green leafy vegetables, both raw and cooked, should be encouraged in the daily menu. As far as possible, the child should be encouraged to eat the foods which are prepared for the family.

The child's appetite is always changing, and the mother should never feel concerned about the child not eating well at one meal, provided the child makes up for it in the second or third meal. However, if the appetite is constantly decreasing and the child is losing weight, and is not bright and cheerful, then it is a matter for concern and must be brought to the attention of a doctor.

Elementary School-Age Feeding

This is a very critical age for children as far as eating is concerned. The children are exposed to new experiences which affect the digestion to a very great extent. During this period the child is being disciplined and is exposed to new individuals, teaching methods and materials. These experiences sometimes affect the child's appetite adversely. Hence, regular feeding sometimes becomes difficult, and the child needs special attention during feeding time.

The caloric requirements for boys and girls up to the age of 12 years is more or less the same, and starts increasing more rapidly for boys than for girls, after this age. The balanced diet is listed on pages 32 and 33 of Chapter II (Tables

VIII and IX) show the amounts of each individual food needed to meet the daily recommended allowances of nutrients for this age group.

The increase in protein intake is proportional to the child's body weight (development and growth). A good quality protein and different varieties of protein-rich foods should be encouraged at this age.

Calcium and iron are very important at this stage for strengthening bones and teeth which are in the formative stage. If there is a wider variety of foods selected from the basic food groups, the vitamin requirements of the body are adequately met, and very seldom need to be compensated by artificial means. Citrus fruits, green vegetables, especially raw vegetables, and sprouted grams, should be encouraged.

Feeding Adults

Food requirements during these years play a very important role, because it is during this period that the results of good nutrition during early years are very obvious and the effects of nutritional deficiencies are very striking.

Surveys have shown that a large number of adults do not attain the maximum size of growth, nor are they able to maintain maximum strength and vitality. Although heredity plays an important role in the total growth and development, good food and nutrition play an equally important role, especially when sound foundations are laid during childhood.

The diet of a young adult, man or woman, depends upon factors such as body weight, type of activity, climatic conditions and the state of health. The caloric and protein requirements are given in Figure 1 and 2 in Chapter I respectively. If proper care is taken to include a generous helping of at least some foods from the five basic food groups at each meal, the diet will be sufficient to meet the needs of the body during this age.

Feeding the Aged

The older members of the family are often the neglected ones on the family menu. Activity decreases with the advance of age, and the nutritional needs also

change. The planning of good food for older people is not an easy task because most of their eating habits are so rigidly set that it becomes difficult to change or modify them. The circumstances under which they live, either alone or with the family of young children and adults, will also make a difference in the feeding problems of the aged. But whoever plans for this group should keep in mind the sentiments that go with age such as special likes and dislikes of old people, at the same time not forgetting their nutritional needs.

Factors which should be kept in mind when planning meals for old people are :

1. The caloric needs of older people are less than those of young adults because of lesser activity.

2. The appetites of some older people increase beyond their actual needs. They eat more than can be assimilated, resulting in excessive body weight. In others, the appetite may be so small that there is danger of mal-nutrition.

3. Protein needs do not lesson with old age, yet older people have a tendency to eat less of protein, which may lead to a protein deficiency over a period of time.

4. The calcium needs of older people are the same as that required for young adults. This need is usually neglected, resulting in fragile bones and frequent fractures. Thus, the diets for older people should provide for plenty of calcium-rich foods like milk and milk products distributed evenly throughout the day.

5. The vitamin requirements do not change with age, and as a safeguard against any deficiency, the vitamin intake should continue as in younger days.

Feeding During Pregnancy and Lactation

Though pregnancy is considered to be a normal process, it makes many demands upon the mother's system. During the period of pregnancy, the foetus is

growing rapidly. In order to meet the demands of the growing foetus, the diet of the prospective mother may need very special attention. This fact is often neglected. Studies in this connection have shown a very distinct and significant relationship beween the diet of a pregnant woman and the condition of her baby at birth, and the first fifteen days of life. Physically healthy children are born to better-fed mothers. Inadequate diet during pregnancy may lead to not only physically but sometimes mentally defective infants. Premature and still-births are also common amongst this group of pregnant women.

Since metabolism, or the body's needs for food, increases during pregnancy, especially during the second and third trimesters, it is desirable to increase the intake of all nutrients. Increased intake of milk will help meet the caloric needs, and provide the added proteins, calcium and vitamins, which are valuable contributions to the mother's diet.

The recommended nutritional requirements for a normal woman, and pregnant and lactating women, are given in Table X below.

TABLE X

Recommended Daily Allowances of Nutrients and Balanced Diets*

Nutritional Essentials	Normal Woman (weight 45 kg) Sedentary Worker	Pregnancy	Lactation
Calories	1900	2200	2600
Proteins in gms.	45	55	65
Calcium in gms.	0.4-0.5	1.0	1.0
Iron in mg.	30	40	30
Vitamin A micrograms (mg)	750	750	1150
Thiamine (Vit. B_1) mg.	1.0	1.2	1.4
Riboflavin mg.	1.0	1.2	1.4
Ascorbic Acid (Vit. C) mg.	50	50	80
Vitamin D, I.U.	200	200	200
Nicotinic Acid	13	15	18

*Nutrition Expert Group, Indian Council of Medical Research, June 1968.

The amounts of different foods which would meet these requirements are listed in Tables VIII and IX in Chapter II.

The protein requirements of a pregnant woman increase to provide for the growth and development of the foetus. The best way to meet this increased need is to raise the intake of protein-rich foods such as milk and milk products, as well as the intake of meat, fish and eggs. Since these are expensive foods, and it may not always be possible to consume them in required amounts, the inexpensive protein foods such as grams, soya beans, dals, dried beans and peanuts, should be taken in generous quantities.

Calcium and phosphorous are especially needed in generous quantities for the growth of the bony framework of the foetus. Extra milk and cheese or curds in the diet will meet the required need.

An adequate supply of iron is as important as any other nutrient. The pre-natal storage in the newborn lasts for approximately 5-6 months. Foods rich in iron, i.e., liver, kidney, egg, meet, green leafy vegetables, peas, beans and dried fruit should be incorporated in the daily diet of the pregnant woman.

There is an increased need for almost all vitamins during this period. This need may be met by incorporating foods rich in vitamin into the diet, such as : green and yellow vegetables, milk, liver, eggs, whole grain cereals, grams and dals.

Nursing makes even greater demands upon the mother's system than the pregnancy. The increased demand of calories may be met by consuming large quantities of foods during lactation.

Questions:

1. Why are the nutritional requirements different for infants and for pre-school children ?
2. List some of the foods that could be incorporated in the child's diet after the first 4 months of life.
3. What special nutritional needs should be met in feeding the aged ?
4. What are some special nutritional demands during pregnancy and lactation ?

PART II

(I) GENERAL INFORMATION

Any one interested in serving nutritions, wholesome, and attractive food to those who are in their care must understand that preparation of good palatable food is dependent on many factors. First, the selection of good quality food that the family can afford to pay for, to some extent determines the success of the prepared meal.

Secondly, the proper utilization of foods either by themselves or in combination with each other is important. Thirdly, in order for the food to be well-accepted it is important that they be served at the right temperature e.g., the hot foods should be served very hot and the cold foods served well-chilled. The main problem of having all the food items ready for a meal at one time is faced by many housewives. Fourthly, in order to preserve the quality and appearance of the cooked food, it is also important that they should not be kept too long after cooking.

While planning meals for the day, the primary consideration should be for the nutritive value. The easiest way to ensure that all necessary nutrients are included in the meal is to keep the basic five food groups in mind. These basic food groups have been dealt with in Part I of this book.

The distribution of foods from each of the basic food groups into the main three or four meals, as the food pattern may be, is another problem encountered by some housewives. In order to simplify this difficulty the following points are suggested :

1. The nutritional needs of the family members should be considered.

2. The likes and dislikes of the family members should be taken into consideration.

3. The combination of certain food items in order to make a well-acceptable meal should not be neglected.

4. The availability of certain food items which are included in the meal should be carefully considered on the basis of season, nearness to market etc.

5. The selection of food items on the basis of food, money and nutritive value is necessary.

Once the planning of meal is done, it is important to prepare the food in the best way for maximum acceptability and the preservation of nutritive value. Hence the cooking and storage instructions presented in this part of the book should be carefully followed.

After the selection of the recipe for a particular meal, read it carefully. Collect all ingredients and equipment and proceed step by step according to the instructions. This systematic procedure will help ensure good and satisfactory product and successful meal.

1. How to Use Recipes While Cooking ?

(i) While selecting the recipe, see if :

(a) It is suitable and fits your need according to the planning for a meal.

(b) The ingredients used in the recipe are available at a cost within your budget.

(c) The prepared food item is suitable for the family taste.

(d) It does not require either too much time or effort or any special equipment which is not available.

(ii) Read the recipe carefully once or twice in order to understand it step by step.

(iii) Collect all necessary ingredients and equipment before actually starting to cook.

(iv) Weigh or measure all the ingredients according to the requirements of the recipe. On no account should these be altered or varied. For substitutions carefully select alternatives and the proportions.

2. MEASUREMENTS

It is important that all ingredients used in a recipe be weighed or measured accurately in order to assure the success of the finished product. A set of standard measuring cups and spoons is a must for every kitchen. A measuring cup has been standardized to hold 250 millilitres. Dry materials such as flour (Atta) and white sugar are measured lightly, levelling the top with a flat knife. Brown sugar (Shaker) on the other hand is firmly packed into the cup before levelling it. When the measurings are small, the spoon measures are used. Ingredients like salt and pepper or baking soda etc., are measured by filling the measuring spoon to overflow and then levelling it off with the edge of a straight knife. Solid fat like butter or ghee are measured by packing lightly into measuring cup or a spoon, so that no air space is left and then levelling it with the back (or straight side) of a knife.

3. TABLE OF ABBREVIATIONS

(All measurements are level)

Cup	= C.	Ounce	= oz.
Pint	= pt.	Pound	= lb.
Quart	= qt.	Gram	= g.
Gallon	= gal.	Kilogram	= Kg.
Teaspoon	= t.	Minutes	= min.
Tablespoon	= T.	Hour	= hr.
		Package	= Pkg.

4. Table of Equivalent

1 lb. = 16 oz.
1 oz. = 28.35 g.
1 Kg.= 2.2 lb.
1 Tbsp.= 3 tsp.
pinch= less than $\frac{1}{8}$t.

5. Table of Approximate Weight Equivalents of some Common Food

(Equivalents of 1 Cup)

1 Cup Sugar	= 200 gms	1 Cup Rice	= 185 gms
1 Cup Atta	= 135 gms	1 Cup Dal	= 160 gms
1 Cup Maida	= 130 gms	1 Cup Soybeans	= 145 gms
1 Cup Besan	= 128 gms	1 Cup Bajra	= 165 gms
1 Cup Suji	= 130 gms	1 Cup Peanuts	= 122 gms
1 Cup Brown Sugar	= 138 gms		

List of Common Indian Seasonings with their English names

English Name		*Indian Name*
Turmeric	...	Haldi
Cloves	...	Laung
Cinnamon	...	Dalchini
Bayleaf or Cassia leaves	...	Tejpatta
Coriander Seeds	...	Dhania
Coriander leaves	...	Hara Dhania
Green Cardamom Black Cardamom	...	Elaichi
Cummin Seed	...	Zeera
Aniseed	...	Saunf

Fenugreek	...	Methi
Sesame Seeds	...	Til
Ginger	...	Adrak
Poppy Seeds	...	Khus Khus
Saffron	...	Kesar
Red Pepper (Chillies)	...	Mirch
A mixture of powdered cloves cinnamon, cumin, cardamoms and coriander seeds used for seasoning.	}	Garam Masala
Asafoetida	...	Hing
Mint	...	Podina
Silver Paper	...	Vark
Raisins	...	Kishmish
Pistachios	...	Pishta
Almonds	...	Badaam
Cashew Nuts	...	Kaju
Dry Ginger	...	Sonth
Tamarind	...	Imli
Mango Powder	...	Amchur
Black Pepper	...	Kali Mirch
Coconut	...	Nariyal
Garlic	...	Lahsan
Green Chillies	...	Hari Mirch
Maize or Corn	...	Makki
Millet	...	Bajra
Mint Leaves	...	Pudina
Mustard	...	Rai
Onions	...	Pyaz
Mixed Spices	...	Garam Masala
Vinegar	...	Sirka

7. SEASONING OF FOOD

Seasoning is one of the very important aspects of cooking, because the success in cooking lies to a great extent in the proper seasoning of food. Yet no hard and fast rule can be laid down for the use of different condiments, spices and herbs, because taste varies so greatly and only experienced and a sensitive palate can teach this important part of cookery.

Just as an appropriate use of seasoning can bring out the best in foods, their inappropriate and excessive use may spoil the best of foods. It must be understood that seasoning can be added to the cooked food, but it cannot be taken out from the cooked food once it is added and many cooks spoil food by over seasoning. There are three fundamental rules that should however be kept in mind for good results :

(i) Avoid seasoning the foods very highly, because the natural flavour of the foods will be completely lost, selective seasoning sometimes help the natural flavours to stand out better.

(ii) Avoid the combination of too many flavours in one dish because then none of them will do justice to the food.

(iii) As far as possible, use natural seasoning and avoid artificial or synthetic ones.

8. Spices and Their Uses

Spices	*Uses*
Aniseed (Saunf) : The fruit of a plant which is grown in many parts of Europe and Asia.	Used for flavouring many confectionery desserts.
Chillies : The pods of tropical plant of which there are several varieties	Unripe green pods are used for flavouring and garnishing gravies, soups, chutnies and can be pickled. The red ones are hot in flavour. Used for rich gravies and pickles.
Cinnamon : The inner bark of small tree grown in Ceylon. In the market it is available in sticks, a couple of inches in length or sold in powder form.	Used for flavouring, cakes, biscuits, puddings, stews, sauces and gravies and savoury rice.
Cloves : The dried unopen flower buds of the clove tree which grows in hot moist climate. Resembles small nail heads. Cloves contain an oil which has a very strong flavour and pungent taste. Sold whole, ground or in oil form.	Used both in savoury as well as sweet dishes, especially for stewed apples and pears, fruit pies, sauces, stews and puddings and in gravey and rice.
Coriander : The dried fruit of a plant that grows in Asia, America	One of the ingredients in curry powder Also an important in-

and S. Europe. The seeds have a pleasant smell and a pungent flavour.	gredient for all types of Indian curries.
Curry Powder : A mixture of various spices like chillies, coriander, ginger powder.	Extremely hot, should be used only for rich dishes like curries and in small amounts can be used for soups and sauces.
Ginger : The root of an East Indian plant, which is scalded and dried. In the market it is sold as a root, ground, crystallized or preserved.	Ground ginger is used in chutnies, cakes, biscuits and puddings etc. Root ginger is used in pickling and in gravies. Crystallized ginger is used in cakes and puddings.
Nutmeg : The kernel of the stone of the pear-shaped fruit of the nutmeg tree. It is sold whole— and since it is expensive a little to be grated as and when needed.	Used in both sweet and savoury dishes or grated over milk puddings, custards and junkets.
Mace : Mace is the dried outer layer of nutmeg. It is available in chips blades or ground.	Used both in sweet and savoury dishes and in sauces and pickles.
Turmeric : A yellow powder made from the tubers of an East Indian Plant.	Used in curry powder and for all Indian curries for giving colour & flavour. Also for rice & for roast meats, poultry, game etc.

As far as possible use natural seasonings and avoid artificial or synthetic ones.

9. Condiments and Their Uses

The common condiments and their uses are given below :

Name	*How to Use*
Salt : is sold in the market as either cooking or table salt.	Usually added to all savoury dishes unless restricted on medical grounds. Use cooking salt for cooking and not the table salt. Avoid excessive use of it as it kills the natural flavours. A pinch of salt added to sweets like cakes and puddings bring out other flavours better.
Pepper : made from dried berries of the pepper plant. When fresh, the berries are green, then they change colour to red and finally to yellow when dried they become black. By grinding these dried black berries we get our black pepper. In the market it is sold as whole pepper corns or as ground powder.	For flavour freshly home ground pepper is best. Like salt, pepper can be added to all savoury dishes, but avoid its use in infant cooking.
Red Chillies : A bright red powder made from dried red chillies. In market it is sold in two forms, one which is exceedingly hot, in	It is exceedingly hot and should be sparingly used in gravies. Try to avoid these in infant and invalid cooking. Makes the food more

which the skin and seeds are ground together and the other which is not so very hot but gives red colour to gravies etc. In this only the skin of the red chillies is ground.	appetizing and attractive.
Mustard : This is made from the seeds of red, brown and black mustards ground together. Mustard seeds are also sold whole.	Ground mustard can be added to most of the savoury dishes and in the sandwich paste and also can serve as a mustard sauce. Whole mustard seeds are used for some gravies and in some preserves.
Vinegar : generally made from malt or acetic acid, and sometimes from wine or grape juice. It can be flavoured with different flavourings depending on the purpose for which it is used.	Vinegar is used for pickling in salad dressings and for marinating fish (to kill the strong smell of certain types of river fish). It is also added to meat gravies to make the meat tender. A little vinegar in stews and sauces improves the flavour.

II. BEVERAGES

Beverages are important both for their flavour and stimulating qualities as well as some beverages are nutritious, and many of the beverages have both these qualities combined. Beverages can be served hot or cold. The preparation of beverages may involve simple combination of the ingredients or it may require special process. In order for the beverages to be effective and enhance the meal, it is important that the beverages should be carefully selected, properly prepared, and effectively served.

Water is a natural beverage. It is consumed in fairly large amounts either by itself or in combination with other foods. Although water is never dealt with as a separate nutrient like fats, carbohydrates or proteins, yet it is one of the nutrients required by the body and has many functions to perform.

1. Tea

Tea has been used in the oriental countries ever since 350 A.D. It is brewed from tea leaves which are grown in tropical climate. The leaves are grown on 3 to 4 feet evergreen shrubs and take about 3 to 4 years of hard labour before the plant is ready for picking. The leaves are then rolled and fermentated, before they are dried by special methods.

Tea leaves are obtained in different qualities and price ranges. India and Ceylon are famous for their black tea. Tea can be classified as black or green. Tea can be prepared in earthenware, china, enamel, stainless-steel or white metal pots. For a good cup of tea, it is important to use soft water, good quality tea leaves and

pot prerinsed with boiling water. Good tea is made by steeping the tea leaves in boiling water and not boiling the water with the leaves.

It is hard to recommend the proportion of tea leaves to water used, because it varies with individual taste. However, $\frac{1}{2}$ to 1 teaspoon of tea leaves for 1 measuring cup of water give satisfactory results. Two measuring cups of water yield 3 tea-cups of tea.

Tea is served with milk and sugar, or with lemon. Some people prefer the spiced tea instead of the ordinary tea. For this add $\frac{1}{8}$ to $\frac{1}{4}$ teaspoon of whole all spices (cinnamon, cloves, black pepper and cardamoms). A spring of mint can be used to garnish the spiced tea or the tea served with lemon.

2. Coffee

Coffee is a universal beverage and is prepared and served in many different ways. Coffee available in the market is a blend of many different varieties of coffee. Most of the coffee in Indian markets is from South India.

At home coffee can be prepared by three different ways, the dripolator, (the South Indian style) the percolator, (in a special pot) and by the method of steeping (or the boiling method). The method of preparation can be selected according to the type of coffee making pot or the type of coffee powder available.

Coffee can be purchased either as beans (roasted or unroasted) or as coffee ground. Finely ground coffee makes a stronger and richer brew than does the medium or medium fine ground. Coffee is prepared in glass, aluminium or in stainless steel pots. Besides this there are automatic coffee makers in the market. For best results, use accurate measurements of coffee powder and water, and do not allow the coffee to boil too long. Long boiling, makes coffee flat and spoils its flavour. Fresh coffee, soft water, and clean pots aid in making a good cup of coffee.

Some suggestions for the preparation of coffee using 1 measuring cup of water are given below and should be selected according to individual requirements.

1 Tbs. coffee powder	...	weak coffee
1-1½ Tbs. coffee powder	...	medium coffee
1½-2 Tbs. coffee powder	...	strong coffee
2-3 Tbs. coffee powder	...	very strong coffee

Coffee is served black, with milk and sugar or with cream and sugar. Two measuring cups will give three cups of coffee.

Instant Coffee is available in the market. Although it is more expensive per pound as compared with ordinary coffee, it has an advantage that there is absolutely no waste and the coffee can be mixed according to individual requirements. To prepare instant coffee, place the required amount in a cup. Pour boiling water and serve black, with milk and sugar or with cream and sugar.

3. Milk Beverages

Chocolate Milk

¾ cup milk
¼ cup water
1 Tbs chocolate powder
2-3 tsp. sugar

Place milk, water and sugar in a saucepan. Bring to boil.

Add chocolate powder and stir till dissolves. Serve immediately. Yields one serving.

Cocoa Milk

1 tsp. cocoa powder
¾ cup milk
¼ cup water
2-3 tsp. sugar

Mix Cocoa, sugar and water. Cook on slow fire until smooth. Add milk and stir constantly. Bring to boil. Serve immediately.

Yields one serving.

Coconut Milk : 1 Fresh coconut
4 cups water
4 Tbs sugar.

Grate coconut fine. Place in a bowl. Pour boiling water and allow to stand in warm place for 1-2 hours. Squeeze out the milk by pressing it through a coarse cloth. Add sugar and bring it to boil. Serve hot.

Yields 4 servings (of one cup).

Note : Coconut milk is used in certain areas where natural milk is either not available or is too expensive. This milk is used for feeding the young children.

Peanut Milk : 2 cups peanut seeds.
4 cups water
2 Tbs sugar

Roast peanuts until the skin loosens. Rub lightly between hands to separate the skin from the seeds. Pound coarsely the cleaned seeds. Place in a bowl. Pour boiling water, cover and allow it to stand over-night. Pass through coarse cloth and squeeze out the milk. Add sugar and bring to boil before serving.

Yields 4 servings (of one cup).

Soybean Milk : 1 cup soybeans
4 cups of water

Soak soybeans in water overnight. Next morning remove beans from water and grind into a smooth paste on a grinding stone.

Add 4 cups of water to the soybean paste and boil it for 2-3 minutes on slow fire. Pass it through coarse cloth to remove any solid segments. Add sugar to the strained milk and use it either for feeding the children, for making curd or for use in a sweet dish like khir etc.

Note : Soybean milk is especially recommended for infants and children who suffer from milk allergy or in places where natural milk is not available.

III. CEREALS

Cereals used for breakfast, or for other meals are either whole, flaked or granular. They can be cooked either by a quick or by a long cooking method. The quick cooking cereals are becoming more popular because although little more expensive they are less time consuming and are available in a variety of forms. Wheat, Barley and Rice can be used whole, while cornmeal, cream of wheat (suji) and granular whole wheat (Dalia or wheat porridge) are usually obtained granular. Some cereals available in the market are processed like oats and vermicelli (sevian). Besides this, some cereals are also used as finally ground flour. A number of cereals in this form are commonly used for making the unleavened bread (Indian Chapati, roti or puri etc.) Cereals are usually cooked by boiling or steaming in a sauce pan directly over fire or in a pressure cooker. Long boiling method is recommended for granular cereals especially when retention of shape of the cereals grains is not important. Cereals which are coarsely ground or are used whole, need long and slow cooking to improve the flavour and texture of the finished product. Long cooking does not effect the nutritive value or the ability of digestion of cereal grains.

Cereals when cooked absorb water or liquid and swell up to a limit. Therefore the amount used for cooking to some extent determine the volume obtained (or desired) of the finished product.

1. Breakfast Cereals

Whole Wheat Porridge 1 cup whole wheat Porridge (Dalia)

$1\frac{1}{2}$ cups water

1½ cups milk
A pinch of salt
2 tsp. fat
6 Tbs. sugar

Melt fat in a pan. Add porridge and fry to a golden colour. Add water and a pinch of salt. Cook on slow fire in a covered pan (or pressure cook for 5-6 minutes). When the water is absorbed and the grain is soft, add milk and again cook on slow fire without covering the pan. Stir occasionally. When the mixture thickens add sugar and cook another 2 minutes. Remove from fire and serve.

Yields 4-6 servings for adults
and 6-8 servings for children.

Bajra Porridge

1 cup Bajra
2 cups water
2 cups milk
4-6 Tbs sugar
A pinch of salt.

Place Bajra, water and a pinch of salt in a pan and cook on slow fire until the grain is tender. Add milk and sugar and further cook on slow fire till the required consistency is obtained.

Yields 4 servings for adults
6 servings for children.

Note : If Bajra is soaked in twice its volume of water overnight, the cooking time can be cut short.

Suji Porridge

1 cup Suji (cream of wheat)
1½ cups of sugar
1 cup water
2 cups milk
2 Tbs. fat.

Dissolve sugar in water and keep aside. Heat fat and fry suji to a golden brown colour. Add sugar syrup and stir. Add milk and cook on slow fire stirring constantly. Cook until it has a thick porridge consistency.

Yields 4 servings for adults
and 6 servings for children.

Sevian Porridge
(Vermicelli)

1 cup sevian
(broken and loosely packed)
1 tsp fat
3 cups milk
3 Tbs sugar.

Heat fat and fry sevian lightly. Add milk and sugar. Cook on slow fire till it thickens to soft porridge consistency. Serve hot or cold.

Yields 2 servings for adults
and 3 servings for children.

2. Rice and Rice Preparations

Plain Boiled Rice : Method—I

Pick and wash 1 cup of polished or unpolished rice. Boil 4 cups of water in a pan with $\frac{1}{2}$ teaspoon salt. When water begins to boil add rice and cook on slow fire for 10-15 minutes till the rice grain is tender (when pressed between the thumb and the finger the grain is soft and presses easily).

Drain the water completely and serve the rice with curd or gravy. (Save the water strained from cooked rice and use it for cooking dal, in gravy or in soups. Else the water can be used for kneading the dough for chapatis or other forms of bread).

Yields 2 adults servings
3 children servings.

Method—II

Pick, wash and soak rice for about ½ hour. Drain the rice and place in a a saucepan with 2 cups of fresh water and 1 teaspoon salt. Bring to boil rapidly. Then reduce the heat and cook on slow fire in a covered pan, till all the water has been absorbed and the rice grains are tender.

Yields 2 adults servings and
3 children servings.

Variations of Boiled Rice

Savoury—Yellow Rice

1 cup boiled rice
½ tsp. turmeric powder
½ tsp. mustard seeds
1 Tbs. butter or ghee
Juice of 1 lemon
Salt to taste.

Heat ghee in a pan, add mustard seeds, turmeric powder and salt. Add the boiled rice and stir well with a flat spoon, till the turmeric gives an even yellow colour to the rice. Remove from fire and add the lemon juice—stir well and serve.

Yields 1 serving.

Coconut Rice

1 cup boiled rice
1 Tbs. butter or ghee
½ tsp. zeera seeds
2 Tbs. freshly grated coconut
2 Tbs. finely chopped onions
1 green pepper finely chopped
A few coriander leaves for garnishing
Salt to taste

Heat butter or ghee in a pan, add the chopped onions and fry till light brown in colour. Add zeera seeds. Add the boiled rice. salt, chopped green pepper and the grated coconut. Mix well. Serve garnished with coriander.

Yields 1 serving

Mixed Vegetable Rice

1 cup boiled rice
½ cup finely diced or prepared vegetables (carrots, beans, peas, potatoes, cauliflower, select vegetables according to individual taste either alone or in combination).
1 Tbs. butter or ghee
½ tsp. zeera seeds,
Salt and Pepper to taste
Green chillies and coriander for garnishing.

Steam the finely diced vegetables. Heat butter or ghee in a pan. Add zeera seeds and the steamed vegetables. Fry for 2-3 minutes. Add boiled rice and salt & pepper. Mix well with a flat spoon. Serve garnished with chopped green pepper and coriander.

Yields 1 serving.

Rice with Sprouted Grams

1 cup boiled rice
½ cup sprouted grams*
1 Tbs. freshly grated coconut or coarsely ground roasted peanuts

***How to Sprout Grams** : Pick and wash ½ cup of green grams (Moong whole). Seak them in 1 cup of water overnight. Next morning tie the green grams in a thick piece of wet cloth and leave it in damp cool place. Moisten the cloth every 2-3 hours without opening it. After 12-18 hours the grams will start sprouting when all the seeds are sprouted, remove from cloth and use. (can be in a cool place for 48-56 hours).

Yields 1 cup sprouted grams.

1 Tbs. butter or ghee
Juice of ½ lemon.
Salt and pepper to taste.
1 Tbs. chopped green pepper and coriander for garnishing.

Heat butter or ghee in a pan. Add sprouted grams, fry for 2-3 minutes. Add boiled rice, salt and pepper and the grated coconut or peanuts, and the lemon juice. Mix well with a flat spoon. Serve garnished with chopped green pepper and the coriander.

Yields 1 serving.

Plain Fried Rice

1 cup rice
1 medium onion
1" stick cinnamon
2 cloves
2 pepper corns
½ tsp. zeera
1 Tbs. ghee or fat or shortening
salt to taste.
2 cups water (double the amount of rice).

Pick, wash and soak rice for ½ hour. Slice onions. Heat ghee in a pan and fry sliced onions until well browned. Add cinnamon, cloves, pepper corns and zeera and fry another minute or two. Add rice and fry for 2 more minutes. Add water and salt. Cook on slow fire in a covered pan till all the water is absorbed and the rice grains are tender. (In case cooking is done in pressure cooker use equal volume of water and rice).

Yields—2 servings.

Vegetable Fried Rice

1 cup rice
1/4 cup shelled peas
1/4 cup diced carrots
1/4 cup spring onions finely chopped
1/4 cup freshly prepared cottage cheese.
1 cup finely shreded cabbage
1 medium onion
1" cinnamon stick
2-4 pepper corns
2-4 cloves
Salt to taste
3 Tbs. ghee or shortening
½ tsp. zeera powder.
2 drops of edible yellow colour.

Wash, soak and boil rice in twice its volume of water. Steam carrots and peas separately. Crumble the cottage cheese and add 2 drops of yellow colour and mix well to evenly colour the cottage cheese. Heat I tablespoon fat in a pan add the steamed vegetables and salt and fry for 3-5 minutes. Remove from pan and keep aside. Heat another tablespoon of fat and add chopped spring onions and shreded cabbage and salt, and fry for 2-3 minutes. Remove from pan and keep aside. In the same pan heat 1 tablespoon fat, add onions finely sliced, cinnamon, cloves pepper corns and salt. Fry till onions are golden in colour. Add the boiled rice and fry for 2-3 minutes. Remove from pan. Mix all the three lots of fried rice and vegetables and the cottage cheese together.

Meat Rice

Mutton Biryani

1 cup fried rice
1 cup boneless mutton cut in small cubes.
½ cup curd
2 tsp. curry powder

2 medium size onions
2 Tbs. fat
10 Almonds or Peanuts
Salt to taste.

Cook fried rice and keep aside. Beat curd, add curry powder, salt and mix well. Add mutton pieces to curd mixture and leave to soak for 1 hour. Slice the onions finely and fry in fat till golden brown. Remove and keep aside. In the same fat add mutton alongwith curd and fry till all the water evaporates and meat turns a reddish brown. Add 2 cups of water and cook for 15-20 minutes in a pressure cooker. (If pressure cooker is not available add 3 cups of water instead of 2 cups and cook for ½ hour on slow fire). When mutton pieces are tender finish cooking to dry all extra water in an open pan. Add fried onions, and almonds or peanuts and cook till it is absolutely dry. Add fried rice and mix well. Cook another 2-5 minutes on very slow fire to dry the moisture that may be still there.

Yields—1 serving.

Soybean Rice

1 cup rice
1 cup soybeans
½ tsp. zeera seeds
1 tsp. Fat
1 medium onion (thinly sliced)
1″ cinnamon stick
2-4 cloves
2-4 pepper corns
3 cups water
Salt to taste

Soak soybeans in 2 cups of water overnight. Pressure cook soybeans in 2 cups of water, keep aside. Pick, wash and soak rice for ½ hour. Heat fat in a pan and add the sliced onions. Fry till golden brown in colour. Add zeera, cinnamon, cloves and pepper corns. Fry for 2 minutes. Add soybeans and rice and fry for

2-3 minutes. Add 3 cups of water and salt to taste. Cook on slow fire in a covered pan till all the water is absorbed, and the grains are tender.

Yields—2 servings.

3. Indian Breads

Indian breads are usually unleavened and are very unique in their method of preparation. The most popular ones and commonly used are chapati, parautha and Puri. Chapati is usually made from wholemeal flour and cooked on a hot tawa (griddle). Parautha is also made from the same dough and after rolling out like a chapati, it is rolled and re-rolled a number of times and then shallow fried on a tawa. A puri on the other hand is either made from wholemeal or white flour (maida) or by mixing the two together. Puri is slightly smaller than chapati or parautha and cooked by deep fat frying. A large number of variations can be made using the basic recipe by incorporating certain other food ingredients which not only introduce variety but also make them more nutritious.

Wheat flour (wholemeal) commonly known as atta is the staple food for majority of Indians, except for the people living in the coastal areas (where rice is more popular). It can be used in a variety of ways, although the basic dough is more or less the same and the preparation of chapati, roti, parautha or a puri is basically similar.

Chapati

1 cup Atta (whole wheat flour)
A pinch of salt.
Add cold water to make a smooth dough.

Sieve atta and salt. Working in the water and kneeding the mixture well with the hand make a smooth dough. Cover with a wet cloth and leave it aside for atleast ½ hour. Kneed the dough well. Make small balls (the size of a big walnut). Roll out into thin rounds. Heat a tawa (griddle). When it is really hot, place the rolled chapati on it. When the top surface shows slight signs of bubbles, turn the chapati over. Cook the other side for 5 or 10 seconds. Turn and puff up the chapati by pressing with a clean duster. Serve it smeared with butter or fat.

Yields—4 chapati—1 serving

Variations

Besan Roti

½ cup atta (whole wheat flour)
½ cup besan (Bengal gram flour)
½ tsp salt
1/4 tsp. red chillies
1 Tbs. finely chopped onions.
Few springs of coriander leaves.

Mix all ingredients. Make dough exactly as for chapaties. Roll out and cook like chapaties.

Yields—4 Rotis—1 serving.

Potato Besan Roti

Take equal quantities of boiled mashed potatoes, Bengal gram flour and whole wheat flour and the above mentioned seasoning. Cook exactly as for Besan Roti.

(½ cup each of mashed potatoes, Bengal gram flour and whole wheat flour will yield—6 Rotis—1½ servings or 1 adult and 1 child serving).

Roti with Greens
(Methi or Palak)

1 cup atta (whole wheat flour)
1 cup finely chopped greens
1 green chilli
1 Tbs chopped onion.
1/4 tsp. red chillies.
1/2 tsp salt.

Mix all ingredients. Make dough as for chapaties. Roll out and cook as above.

Yields—4 Rotis—1 serving.

Roti with Soybeans

½ cup soybeans (cooked and coarsely pounded)
1 cup whole wheat flour (atta)
½ tsp. salt
½ tsp. red chillies
1 Tbs. chopped onions
A few springs of coriander for seasoning

Soak soybeans overnight. Boil in pressure cooker with twice its volume of water. Coarsely pound soybeans on a grinding stone. Mix all the ingredients with atta. Make a smooth dough and prepare like Rotis.

Yields—4 Rotis—1 serving.

Roti with Soybeans flour

½ cup whole wheat flour
½ cup soybean flour

Use seasoning and prepare as for Roti.

Yields—4 Rotis—1 serving.

Sweet Bajra Roti

1 cup bajra flour
1/4 cup jaggery (brown sugar)
1 Tbs. fat or butter
1 Tbs. grated coconut (optional)
½ tsp. saunf (aniseed)
1/4 cup curd.

Mix Bajra flour, jaggery, fat, coconut and sounf and make a stiff dough using the curds. (Add extra water if required). Allow the dough to stand for ½ hour before using. Knead well before making into Roti.

Yields 2-3 Rotis—One serving.

Sweet Roti with Bananas

1 cup whole wheat flour
½ cup of coarsely ground roasted peanuts.

1/4 cup jaggery or brown sugar or plain white sugar.
2 mashed bananas
½ tsp. saunf (aniseed)
1/4 cup milk
2 Tbs. fat or butter.

Dissolve brown sugar or jaggery in milk. Mix together whole wheat flour, mashed bananas, roasted peanuts, and saunf. Add milk in which jaggery is dissolved and knead into a stiff dough. In case more liquid is required, add some warm water. Leave the dough for ½ hour. Make into 4 Rotis and smear with butter or fat. These rotis keep for 3-4 days in a covered box.

Yields—4 Rotis—1 serving.

Parautha

1 cup whole wheat flour
A pinch of salt.
2 Tbs. fat or butter.

For the preparation of the dough, use the same directions as described under chapati.

For the parautha—Divide the dough into 3 equal parts and shape each into rounds. Smear melted fat or butter on the upper surface and fold it over once to make into a semi-circle. Smear fat on this half and refold once again (to look like a cone). Roll out again to the thickness required in a cone-shape. Cook on hot tawa applying little fat on either side of the parautha every time it is turned. Cook to a crisp golden colour on both sides. Serve immediately.

Yields—3 parauthas—1 serving.

Stuffed Parautha

Parautha Stuffed with Potatoes

For dough—same as that for the plain parautha.

For Stuffing

1 cup boiled washed potatoes
½ tsp. salt
½ tsp. red chilli powder
½ tsp. amchoor or anardana
1 green pepper finely chopped
Few springs of coriander leaves
2-3 Tbs. fat or butter

Mix all the ingredients for stuffing and knead them together and keep aside. Take the dough prepared from 1 cup of flour and divide into 8 small balls. Roll out 2 equal size circles. Smear with melted fat. Take 1/4 of the stuffing and evenly spread over the rolled out chapati. Cover with the other rolled out chapati and seal the edges by pressing with the finger tips. Roll out lightly and fry on a hot tawa until browned and crisp.

Yields—4 stuffed parauthas.
3 parauthas are equivalent to 1 serving.

Variations of Stuffing

i. 1 cup grated raddish with seasoning.
ii. 1 cup grated carrots with seasoning,
iii. 1 cup cooked soybeans with seasoning.
iv. 1 cup finely chopped cauliflower with seasoning.
v. 1 cup of left over of any cooked dry vegetables,
or
1 cup of left over mince meat

Puri

½ cup whole wheat flour (atta)
½ cup white flour (maida)
½ tsp. salt
½ tsp. fat or shortening
Cold water to make stiff dough.
Fat for deep frying

Mix all the dry ingredients. Mix in the ½ tsp. of shortening and then with water make a stiff dough. Keep aside for ½ hour. Knead again with greased hands until the dough is very smooth. Divide into 12 rounds. Make into small circles rolling on a greased board. Heat enough fat in a pan. When fat is hot and smoking, fry these small rolled out rounds turning once or twice only till golden in colour and nicely puffed up.

Yields—12 puris—2 servings of 6 puris each.

IV. CURRIES

Curries are well known as a major item in the Indian meal. The basic ingredients used in the making of any curry are the same. Variations in the selection and combination of some other ingredients can give rise to a large variety of curries.

The basic ingredients for any curry require some fat, thickening ingredients and some seasoning. The fat usually used is ghee or cooking oil. Onions and tomatoes help to thicken the gravy and hence are the basic thickening ingredients. Spices are to add to the flavour of the curries. The success of a good curry lies in the proper selection of spices and herbs and the right type of seasoning.

Curries have a definite function to perform in the body. Besides contributing the important nutrients, they help in the secretion of certain digestive juices which help in the digestion of food.

Vegetable Curry
(Peas and Potatoes)

½ cup of shelled peas
2-3 medium size potatoes (approximately)
2 cups after cut into small pieces,
1 big onion
1" piece ginger
2 garlic pods (optional)
1 medium tomato (chopped finely)

1 Tbs. fat or ghee or cooking oil
2 Tbs. curd (optional)
½ tsp. each zeera seeds, dhania powder, haldi, red chillies
Salt to taste
2-3 cups water
Coriander leaves for garnishing

Cut potatoes into small pieces. Chop onions, garlic and ginger very fine or else grind them into a paste on a grinding stone. Heat ghee or oil in a pan (degchi). Add chopped or paste of onions, ginger and garlic and fry on slow fire till golden brown in colour. Add zeera, dhania, haldi and red chillies and fry another minute or two. Add curd and chopped tomatoes. Cook on slow fire till the tomatoes are a pulp, and the fat separates from the masala. Add the shelled peas and diced potatoes, fry 2-3 minutes. Add 2-3 cups of water. Cover the pan (or degchi) and cook on slow fire for 20-30 minutes or till the vegetables are tender and the gravy thickens. Serve garnished with chopped coriander leaves.

Yields—2 Servings.

Variations of Curries

1. Pea and Paneer Curry

Use equal amounts of peas and freshly prepared cottage cheese (Paneer) in the recipe for vegetable curry. Follow the same method of preparation.
½ of peas and
½ of Paneer in the above recipe.

Yields—2 Servings.

2. Meat & Potato Curry

250 gms. of boneless meat cut in small pieces and 2 medium sized potatoes for the above recipe.

Yields—3 Servings.

3. Soybean and Potato Curry

½ cup soybeans soaked overnight in one cup water and 2 medium potatoes for the above receipt.

Yields—2 Servings.

4. Black-eyed Beans (Rongi)

½ cup Rongi soaked overnight in one cup of water and 2 medium potatoes for the above recipe.

Yields—2 Servings.

5. Kofta Curry Green Banana (Kela) Kofta

6 Green Bananas (Kela)
1 tsp. salt
1 tsp. finely chopped ginger
1 Tbs. finely chopped onions
1 Tsp. finely chopped garlic
2 Black cardamoms
½ tsp. garam masala
2 finely cut green chillies
1 Tbs. finely chopped coriander leaves
2 Tbs. besan
Fat for frying

Boil bananas in their skin for ½ hour or till they are soft. Remove the skin and mash the bananas. Add all the ingredients except the fat. Make into rounds (the size of a walnut). Fry the Koftas in deep fat to a rich golden colour (makes 24 Koftas).

Prepare gravy using the following ingredients and follow the general method of preparing the gravy :

2 Tbs. ghee
2 Tbs. finely chopped onions

1 Tbs. chopped ginger
1 Tbs. chopped parsley
½ chopped tomatoes
1 teaspoon each
zeera, dhania, garam masala and haldi
2 Tbs. chopped coriander leaves
1 Tbs. chopped green chillies
Salt to taste

Yields—6 servings.

Gourd Kofta Curry (Ghia)

In the above recipe substitute 1 Kg. green gourd instead of 6 raw bananas. Grate the raw gourd and steam. Squeeze out any extra water before mixing with other ingredients to form into Koftas.

Soybean Kofta Curry

1 cup soybeans soaked overnight in 2 cups of water. Boil in 2 cups of water in a pressure cooker for 1 hour. Coarsely pound the boiled soybeans. Mix with 1 cup boiled and mashed potatoes before mixing with other ingredients (same as given for banana kofta). Make into 16 balls and fry to a golden brown colour. Cook these in prepared curry.

North Indian Karhi

1/4th cup besan (Bengal Gram flour)
1 cup curds
1 tsp salt
½ tsp red chilly powder
½ tsp turmaric powder
1 tsp coriander powder
½ tsp garam masala
½ tsp fenugreek seeds.

Beat the curds thoroughly and add 2 cups of water. Add besan to curds and well mix with the help of the beater. Add salt, red chilly powder, turmaric powder, coriander, garam masala and mix well. Put 1 table-spoon of ghee in a deep Degchi and when hot add fenugreek seeds. Fry to deep reddish brown colour. Add the above prepared liquid and keep on stirring continuously to avoid the burnt texture of the Karhi. Once it starts boiling, cook on slow fire till a thick pouring consistancy is obtained. Small Pakoras* can be added to Karhi at this stage. Take off the fire and garnish with coriander leaves. Serve hot.

Dry Curries

Vegetable Curry

250 gms beans
250 gms potatoes
250 gms tomatoes
1 big onion
½ teaspoon each zeera, dhania, turmeric (haldi powder,) and red chillies powder
1½ Tsp ghee—salt to taste.

Cut beans and potatoes in small pieces. Slice onion and tomatoes separately. Heat ghee in a pan, add the sliced onions, and fry till light golden in colour, add zeera, dhania, turmeric (haldi) powder and red chillies. Add sliced tomatoes to the prepared vegetables and salt. Add half a cup of water and cover with a lid. Simmer on slow fire till vegetables are tender and all the water is absorbed. Fry with a flat spoon for a minute or two to evaporate all the water. Serve with chapaties.

Note : Using the above method and substituting any seasonal vegetables you can prepare a large variety of dry vegetable curries e.g., Cauliflower and peas, cauliflower and potatoes, peas and potatoes, carrots and peas, carrots and potatoes, cabbage and peas, and any other combination of your own choice.

Yields—4 servings.

*For Pakoras *see* page 114 and make plain pakoras without using any vegetables.

Dry Meat Curry
(Bhoona Meat)

500 gms lean meat cut in squares
1½ Tsp ghee
1 onion large
2″ piece ginger
6 cloves garlic
1 Tbs vinegar, or
2 Tbs curd
2 Tbs coconut grated
2 large tomatoes
½ tsp each—zeera, dhania, turmeric (haldi) powder, red chillies, garam masala whole or powdered.
Salt to taste.
Coriander and green chillies for garnishing

Wash and boil meat with whole garam masala in salted water just enough to leave ½ cup of stock. Separate the pieces of meat from the stock. Mince the onion, ginger and garlic. Heat ghee and fry the onions, ginger and garlic. When lightly browned, add spices and chopped tomatoes—fry the masala adding a little stock till the fat separates from the masala. Add the pieces of meat and fry in the masala using the stock and vinegar. When the pieces of meat are fried well, add the remaining stock and cook on slow fire till the water dries up. Serve garnished with coconut, corriander and green chillies.

Yields—4 to 6 Servings.

Dals

The rich source of proteins and certain vitamins for those who do not consume meat and flesh. There are many different varieties of these. Made well, the Dal is a delicacy amongst the vegetarians.

Dals can be prepared in 5 major ways :

1. Dal curry
2. Dal dry
3. Dal with another equally important and prominent counterpart, e.g. Dal with greens called Dal Sag. Dal with meat called Dal Meat.
4. Dal with rice called Khichri.
5. Dals made into Kofta or made into Bhale or Dosa or Idli.

Dal Curry

1 cup Mussoor or Mong or Toor dal.
1 table-spoon ghee
1 onion (optional)
2 large tomato
½ tea-spoon each of zeera, seeds, dhania powder, turmeric (haldi) powder, red chillies.
1 green chilli (for garnishing)

Yields—4 Servings.

Pick, wash and soak dal for ½ hour. (If time permits, or cook immediately). Boil 4 cups of water and put the soaked dal in it, with salt and turmeric (haldi) powder and cook on slow fire stirring it occasionally till the dal grains are soft and the water is reduced to almost half. Add chopped tomatoes and stir well with a heavy spoon mixing the dal well. This may take about 5-7 minutes. Remove it from fire. Heat ghee in a pan—add sliced onion and fry till light brown in colour. Add zeera seeds, dhania powder and red chillies and the whole green chilli.

Pour hot dal on ghee and the masalas and leave it on fire another 1 minute, stir well and serve with either rice or chapaties.

Dal Dry

1 cup urad or green gram dal
1 medium onion
½ tsp each zeera seeds, chilli powder, turmeric (haldi) powder, and mango powder.
1 Tsp fat.
Salt to taste.

Pick, wash and soak dal overnight. (If time permits). Slice onions finely. Heat ghee in a pan and fry onions till light brown, add the dry masalas and toss in hot pan for a minute or two. Add the dal and salt. Add ½ a cup of water and cook on very slow fire in a covered pan—shaking the pan occasionally.

When all the water is absorbed and dal tender add chopped green chillies and mango powder. Serve dry (resembling rice) garnished with coriander or grated fresh coconut (optional).

Moghlai Dal

1 cup black gram
1/3 cup Rajmah (dried kidney beans)
1 Teaspoon finely shredded ginger
1 chopped Onion
2 Medium-sized ripe tomatoes
1/2 cup curd
1 2 green Chillies (optional)
1/4 Teaspoon red chilli powder
2½ Teaspoon salt
Juice of one Lemon (optional)
2-3 Tablespoon ghee, oil or butter
4-6 cups water

Clean and soak black gram and Rajmah over-night. Cook the soaked dal and Rajmah in 4-6 cups water along with salt till the dals are mushy and soft. Now add chopped tomatoes and one more cup of water and cook dals till tomatoes are part of the gravy. Add the beaten curd and the green chillies. Cook another 5 minutes. Heat oil, butter or ghee in a pan, add chopped ginger and onions and fry till light golden colour. Add red chilli-powder. Pour the prepared dals on the hot oil. Stir once or twice. Serve hot with rice or chapaties.

Yields—4 Servings.

Dhan Sak

1/2 cup red gram (arhar or tuver) dal
1/4 cup red lentile (Masoor) dal.
1 cup finely cut pumpkin
1 cup finely cut white pumpkin or lauki
1 Medium-size onion
1 Medium-size potato
2-3 Small tomatoes
2-3 Green chillies
1 Teaspoon fenugreek (dry) (optional)
1 Teaspoon Coriander leaves
1 cup finely diced pieces of meat.
2 Teaspoon cumin seeds
1 Teaspoon coriander seeds
1 Teaspoon turmeric
1 Tablespoon oil or ghee
2 Teaspoon salt
1 Tablespoon chopped ginger
2 Tablespoon chopped onion
2-4 Cloves garlic chopped fine.
6-8 cups water.

Clean and wash dals. Place dals, meat, vegetables, salt, chillies, turmeric and 6-7 cups of water in a big pan. Cook till dals are tender. If additional water is required, add hot water only. Remove from heat. Lift out meat and sieve dals and vegetables. Heat oil and add chopped onions, ginger and garlic. Fry for 2-3 minutes. Add cumin and coriander seeds and the pieces of boild meat. Fry the pieces of meat in the masala till golden brown. Now add dal and vegetable puree. Simmer on low heat for 5-10 minutes. Serve hot with rice.

Yields—4-6 Servings.

V. GREEN LEAFY VEGETABLES (SAAG)

Saags or green tops of certain vegetables are a special class by itself. They are the most inexpensive sources of some vitamins and minerals. The method of preparation ranges from simple like raddish or turnip top Bhujia to the most complicated Sarson-ka-Saag. The greens are seasonal and last for a short period of time during the year. The greens which are the top of certain root vegetables like raddish, carrots, turnips or beets are very inexpensive and are usually thrown away. These could be very effectively combined with certain other vegetables and made into nutritious dishes for the family without spending any extra money. Whenever possible, use the greens for feeding young and growing children.

Bhujia

4 cups finely chopped raddish tops
1 cup finely chopped raddish
1 onion (medium) slices
1-2 green chillies
1″ piece ginger
1 tsp red chilli powder
½ tsp zeera
½ tsp dhania (powder)
1 cup water
1 Tbs fat or ghee or cooking oil.

Heat fat in a pan. Add sliced onions, chopped ginger and green chillies. When slightly cooked add zeera, dhania and chilli powder. Fry one minute. Add the finely chopped raddish and raddish greens. Fry 2-3 minutes. Add water.

Cook on very slow fire in a covered pan for 10-15 minutes or till all the water has dried.

Yields—2 Servings.

Other vegetable tops can be cooked in a similar manner making minor adjustments to suit individual taste.

Cabbage Rolls

The outer large leaves of the cabbage are successfully used in this preparation.

6 large outer leaves of cabbage.
1 Tbs ghee or cooking oil
1 Tbs finely chopped onions
1 tsp finely chopped ginger
1 tsp finely chopped green chillies
1 Tbs Mint leaves (chopped)
Juice of ½ lemon
½ tsp red chilli powder
½ tsp garam masala powder
½ tsp salt.
1 cup finely diced boiled potatoes.
1 Tbs roasted peanuts or freshly grated coconut.
Fat for frying and 8 Tbs. bread crumbs

For Batter

1 Tbs Besan or Maida.
Salt, pepper and red chilli powder to taste.
4 Tbs water (to make batter).

Boil 1 cup water with ½ tsp salt in a wide pan. Put the cabbage leave one or two at a time and blanch them (or cook them) for 1-2 minutes. Remove from water, drain and cool and keep aside.

For the filling. Heat fat in a pan, add onion, ginger and green chillies finely chopped. Add other seasonings, salt, chilli powder and garam masala. Fry for 3-5 minutes. Add mint leaves and lemon juice before mixing in the diced potatoes. Fry on slow heat another 2 minutes. Add nuts. Remove from fire. Divide into 6 portions.

Spread out each one of the cooked cabbage leaves in a plate. Place the prepared filling on one edge, roll it gently. Keep aside.

Prepare the batter by dissolving besan in water and adding the required seasoning (salt, pepper & red chilli powder). Mix well till thoroughly mixed.

Dip each roll in batter, roll in bread crumbs and fry in hot deep fat to a golden brown colour. Serve hot.

Yields—6 Servings.

Dal Saag

1 cup dal (moong, masoor or urad)
4 cups chopped spinach or any other green
1 onion
1 tsp salt
½ tsp red chilli powder
½ tsp haldi
½ tsp mango powder
1 medium onion
2 Tbs fat or ghee
4-6 cups water.

Pick and wash dal. Cut the greens fine. Place in a heavy pan dal, greens, salt and haldi and 4 cups of water (if pressure cooking is done) or 6 cups (if cooking in an ordinary pan). Cook on slow fire for almost an hour stirring occasionally till it is a homogeneous mixture and is thick in consistency.

In another pan heat fat, add sliced onion and fry to a golden colour. Add red chilli powder and pour in the cooked dal saag mixture. Serve immediately.

Yields—2 Servings.

Stuffed Vegetables

Certain vegetables like capsicum, cabbage, tomatoes, cucumber, lauki can be stuffed with different fillings and made into a main dish for a meal. For filling the vegetables are to be washed, dried and carefully scooped from inside and filled in with different fillings and later either baked or fried. The vegetables could be tied with a piece of string to prevent the stuffing from coming out while cooking is done. The string to be removed before serving the dish.

Meat Stuffing

1 cup of minced meat
1 onion, (chopped fine)
1" piece ginger
½ tsp each haldi (turmeric) red chillies, zeera and dhania powder and amchur.
1 green chilli and 1 small bunch of hara dhania.
1 tablespoon fat.
Salt to taste.

Heat fat in a pan. Add chopped onion and fry to golden colour. Add dry masalas and the minced meat and fry till the fat starts to separate from the the masala. Add salt, green chillies and dhania and use it for filling different vegetables.

Vegetable Stuffing

Instead of 1 cup of minced meat use 1 cup of finely diced and boiled vegetables like carrots, beans, cauliflower, or boiled peas and potatoes either separately or in combination with other vegetables and made in exactly the same way as the meat filling.

Sprouted Gram Stuffing

Half cup each of sprouted moong dal and ½ cup of any other prepared vegetables can be used in exactly the same way.

Cottage Cheese Stuffing

Half cup of freshly made cottage cheese and ½ cup of other prepared vegetables could be used for stuffing.

Soybean Stuffing

1 cup prepared soybeans (soaked overnight, boiled and coarsely pounded) could be used for filling.

The vegetables stuffed with 1 cup of stuffing will yield—4 servings.

VI. SNACKS (Savoury and Sweet)

Snacks are favourite food items which can be served at any time of the day. They are not only important as they help to satisfy hunger between meals, but they also contribute towards the nutritional requirements. In fact snacks supplement the nutritional needs for both children as well as for adults.

Pakoras

½ cup besan or soybean flour
½ tsp black pepper
Salt & red chillies to taste
1 tsp mango powder
1 tsp coriander powder
Oil or ghee for frying
Vegetables like potatoes and onions (cut into rings) small pieces of cauliflower or spinach leaves can be used.

Mix salt, red chillies powder, mango powder and coriander powder to besan. Add ½ tsp of oil and mix well. Add water to mak a batter of the consistency of pancake batter. Beat well. Sprinkle little salt, red chilly powder and mango powder on the cut vegetables too. Coat the vegetables in besan batter and fry in hot fat till golden brown in colour. Drain off extra fat on a brown paper.

Samosas

For the Dough
1 cup maida
1 Tbs shortening

½ tsp salt
Lukewarm water to make the dough.

For the Filling

1 cup minced meat
1 medium sized potato
A few coriander leaves
1" piece ginger
1 medium sized onion
Salt & red chilli powder to taste.
½ tsp garam masala
1 green chilli.

For Vegetable Filling

Use 1 cup shelled peas instead of minced meat. Keep all other ingredients the same. Follow the same method.

Preparation of the Dough

Add salt to maida and rub in the fat to get bread crumb consistency.

Mix in lukewarm water sufficient to make the stiff dough (as for puris) and knead well.

Leave the dough for 15 minutes.

Preparation of the Filling

Boil mince till soft. Boil potatoes separately and mash. Mix the two together and add finely chopped coriander leaves, ginger, onion, green chilly, salt, red chilly powder, garam masala, mango powder all together. Filling is ready for the Mince Samosas.

Boil potatoes and peas. Chop the potatoes fine and add all the chopped masalas and flavourings as above and the peas. Put little ghee in a frying pan, heat

up and add cummin seeds till golden brown. Add the filling and cook till well minced. Filling is ready now.

Preparation of Samosas

Make small balls (size of a small walnut) and roll out very thin (about 1/10th of an inch thick) cut into half with a knife. Dampen the edges with a wet finger. Shape into a cone putting between the thumb and index finger.

Put in 1 tablespoon of filling and press the damp edges together to close the cone.

Deep fry in a frying pan till golden brown.

Put on a brown paper to drain off extra fat.

Shami Kabab

1 cup minced meat
1/4 cup Bengal gram dal
1" piece ginger (chopped fine)
1 medium sized onion (chopped fine)
Green chilli
Salt and red chillies to taste
½ tsp garam masala
A few coriander leaves (chopped fine)
1 tsp mango powder.

Boil meat and Bengal gram dal with a pinch of salt till soft and tender. Grind the mixture on grinding stone to fine paste. Season the paste with salt, red chillies, finely chopped ginger, onion, green chilli, garam masala, coriander leaves and mango powder. Make flat cakes of the paste ⅓" thick and 1½" in diameter. Deep fry the Kababs in hot fat till deep brown in colour but not burnt.

Yields—4 Servings (2 Kababs each).

Vegetarian Shami Kababs (Soybeans)

1 cup soybeans (boiled)
½ cup boiled mashed potatoes

1" piece ginger
1 medium sized onion (chopped fine)
1 green chilli.
Salt and red chillies to taste
½ tsp garam masala
1 tsp mango powder.
A few coriander leaves (chopped fine)

Boil soybeans till tender. Coarsely pound the beans on a grinding stone. Mix with potatoes. Season the mixture with salt, red chillies, finely chopped ginger, onion, green chilli, garam masala, coriander leaves and mango powder. Make flat cakes like Shami Kababs and deep fat fry to deep brown colour.

Yields—4 Servings (of 2 Kababs each).

Shahi Tukras

2 slices bread
½ cup milk
50 gm. khoa
2 Tbs sugar
1/4 tsp chopped Pistachio (6-8 in number)
Fat for frying
1 silver paper.

Cut each slice of bread into 4 neat pieces and fry in moderately hot fat till golden brown in colour. Drain on a brown paper. Take a frying pan, add sugar, milk and finely crumbled khoa and cook till thick paste is obtained. Pour this thick milk over fried bread in a bowl and leave it aside for 15 minutes. Garnish with cardamom powder and chopped pistachio and cover with silver paper.

Yields—2 Servings (4 pieces each serving).

Peanut Brittle

1 cup jaggery
1 cup roasted peanuts
1 tsp ghee
2 tsp water.

Heat fat and add the jaggery and the peanuts. Cook this on slow fire stirring constantly to prevent the jaggery from sticking to the base and sides of the pan. Cook till the jaggery turns colour and forms into a ball consistency. (Ball consistency is when a drop of the mixture dropped into a cup of cold water forms a small ball and floats on the surface). Grease well a plate or a marble slab and pour the mixture on it. Allow to set. When half set, make square markings with a knife.

Allow to set completely—then break into pieces and store in a dry airtight jar.

Yields—8 pieces.

Puffed Rice Brittle

In the above recipe use 2 cups of roasted puffed rice instead of 1 cup of Peanuts—and prepare the brittle in the same way.

Besan Barfi

1 cup of besan
1 cup of sugar (ground or crystal)
1 cup of ghee.

Heat ghee and add besan—fry this on a slow fire till the mixture has a rich golden colour and the nice smell of roasted besan. Remove it from fire and add the ground sugar—stir well and keep on stirring till the mixture is cool.

Set this in a well-greased Thal or a plate. Leave it overnight before cutting into pieces.

Yields—4 to 8 pieces.

VII. RECIPES WITH SUBSTITUTE FOODS

Makki Cutlets

1 cup corn (Makki) (fresh)
1 cup potatoes (boiled and mashed)
1 egg (hard boiled) or 1 Tbs maida or besan for binding
2 Tbs bread crumbs and 1 egg for coating (use besan batter instead of egg for coating)
Salt and pepper to taste
1 green chilli, a few coriander leaves
Fat for frying.

Boil the corn in salted water—and coarsely pound it on grinding stone. Boil potatoes and keep aside. Chop up the boiled egg and mix it with pounded corn, and mashed potatoes. Add chopped green chillies and coriander. Shape mixture into cutlets. Dip in beaten egg and roll in bread and fry in deep fat to golden brown colour.

Yields—3 Servings (3 cutlet per serving).

Yam and Potato Cutlets

250 gms Yam
250 gms potatoes
250 gms mixed vegetables (carrots, peas, beans)

50 gms beet or any other leaves
1 onion medium (fine chopped)
Juice of 1 lemon, Salt,
pepper to taste
2 green chillies and some coriander
1 tsp amchur
1 egg or 2Tbs besan for coating
2-4 Tbs bread crumbs.

Cut the vegetables (carrots, peas and green leaves) very fine, wash and leave to drain. Boil yam and potatoes and mash them. Boil potatoes and keep aside. Add prepared vegetable, seasonings and chopped onion. Shape the mixture into cutlets. Dip in either beaten egg or besan dissolved in water to make a thin batter and rolled in bread crumbs. Fry to golden colour in deep fat.

Yields—3 Servings (3 cutlets per serving).

Banana Cutlets

6 raw bananas
250 gms vegetables (carrots, peas & beans)
1 egg for coating, or
2 Tbs besan dissolved in water
Salt and pepper to taste
1 tsp amchur
Juice of 1 lemon
2 green chillies and few coriander leaves
1 medium onion.

Boil bananas with skin—peel and mash and keep aside. Prepare vegetables and boil them in little salted water, drain and keep aside. Mix together boiled mashed bananas, prepared vegetables, salt, pepper, minced onion, juice of lemon, amchur, green chillies and coriander. Shape into cutlets, dip in either beaten egg or besan batter, roll in bread crumbs and fry in deep fat to a golden brown colour.

Yields—4 Servings (3 cutlet per serving).

Sago Cutlets
(Vegetarian)

1 cup sago
2 cups potatoes (boiled and mashed)
½ cup peanuts
2-4 green chillies
1 small bunch of hara dhania
Salt and pepper to taste
Juice of one lemon or ½ tsp amchur
Fat for frying.

Wash and soak sago for 10-15 minutes. Drain and keep aside. Roast and coarsely grind the peanuts. Chop up green chillies and dhania. Mix all the ingredients together and shape them into cutlets. Fry in deep fat.

Yields—4 servings (3 cutlets per serving).

Sago Cutlets
(Non-vegetarian)

1 cup sago
1 cup potatoes (boiled and mashed)
1 cup minced meat (boiled)
1 medium size onion
2" piece ginger
2-4 green chillies
1 small bunch of hara dhania
Salt & pepper to taste
Juice of 1 lemon or ½ teaspoon amchur
½ tsp garam masala
Fat for frying.

Wash and soak sago for 10-15 minutes. Drain and keep aside. Chop the onions, ginger, green chillies, and dhania. Heat 1 tablespoon fat in a frying pan and the onions and ginger and add the boiled meat, fry to a nice golden colour. Mix together all the ingredients (sago, mashed potatoes and the prepared meat, chopped up green chillies and hara dhania, salt and pepper and juice of lemon). Roll in shape of a small cutlets and fry in deep ghee.

Yields—4 Servings.

50 gms beet or any other leaves
1 onion medium (fine chopped)
Juice of 1 lemon, Salt,
pepper to taste
2 green chillies and some coriander
1 tsp amchur
1 egg or 2Tbs besan for coating
2-4 Tbs bread crumbs.

Cut the vegetables (carrots, peas and green leaves) very fine, wash and leave to drain. Boil yam and potatoes and mash them. Boil potatoes and keep aside. Add prepared vegetable, seasonings and chopped onion. Shape the mixture into cutlets. Dip in either beaten egg or besan dissolved in water to make a thin batter and rolled in bread crumbs. Fry to golden colour in deep fat.

Yields—3 Servings (3 cutlets per serving).

Banana Cutlets

6 raw bananas
250 gms vegetables (carrots, peas & beans)
1 egg for coating, or
2 Tbs besan dissolved in water
Salt and pepper to taste
1 tsp amchur
Juice of 1 lemon
2 green chillies and few coriander leaves
1 medium onion.

Boil bananas with skin—peel and mash and keep aside. Prepare vegetables and boil them in little salted water, drain and keep aside. Mix together boiled mashed bananas, prepared vegetables, salt, pepper, minced onion, juice of lemon, amchur, green chillies and coriander. Shape into cutlets, dip in either beaten egg or besan batter, roll in bread crumbs and fry in deep fat to a golden brown colour.

Yields—4 Servings (3 cutlet per serving).

Sago Cutlets
(Vegetarian)

1 cup sago
2 cups potatoes (boiled and mashed)
½ cup peanuts
2-4 green chillies
1 small bunch of hara dhania
Salt and pepper to taste
Juice of one lemon or ½ tsp amchur
Fat for frying.

Wash and soak sago for 10-15 minutes. Drain and keep aside. Roast and coarsely grind the peanuts. Chop up green chillies and dhania. Mix all the ingredients together and shape them into cutlets. Fry in deep fat.

Yields—4 servings (3 cutlets per serving).

Sago Cutlets
(Non-vegetarian)

1 cup sago
1 cup potatoes (boiled and mashed)
1 cup minced meat (boiled)
1 medium size onion
2″ piece ginger
2-4 green chillies
1 small bunch of hara dhania
Salt & pepper to taste
Juice of 1 lemon or ½ teaspoon amchur
½ tsp garam masala
Fat for frying.

Wash and soak sago for 10-15 minutes. Drain and keep aside. Chop the onions, ginger, green chillies, and dhania. Heat 1 tablespoon fat in a frying pan and the onions and ginger and add the boiled meat, fry to a nice golden colour. Mix together all the ingredients (sago, mashed potatoes and the prepared meat, chopped up green chillies and hara dhania, salt and pepper and juice of lemon). Roll in shape of a small cutlets and fry in deep ghee.

Yields—4 Servings.

Dal Cutlets
(Vegetarian)

1 cup chana dal or any other dal
1 cup sprouted moong dal
1 cup boiled mashed potatoes or raw bananas
2 Tsp chopped onions and ginger
2 Tsp grated coconut
Salt and pepper to taste
½ tsp amchur
½ tsp garam masala
2-4 green chillies
1 bunch dhania (fresh)
Fat for frying.

Keep the moong dal for sprouting 24 hours in advance. Soak the other dal for 3-4 hours. Coarsely ground the two dals and mix in all the other ingredients. Shape into cutlets and fry in deep fat.

Dal and Mince Cutlets

In the above recipe use 250 gms of boiled minced meat instead of sprouted moong dal and follow the same method.

Doughnuts

2½ cups flour (Atta or Maida)
3 teaspoon baking powder
a pinch of nutmeg (optional)
a pinch of Cinnamon (powdered)
1 egg (optional)
½ cup sugar
½ teaspoon salt
½ cup milk
2-3 teaspoon oil
Oil for deep frying.

Sift all the dry ingredients together except the sugar. Add beaten egg, milk and fat to sugar in a separate bowl. Mix until very light and fluffy. Slowly add the dry ingredients to the milk and sugar mixture. Mix with a wooden spoon just enough to blend the ingredients. Transfer the mixture on a lightly floured board. Handle the mixture very gently and then roll it into 1/2—1/3" thickness. Cut into doughnuts shape with a cutter. Fry in deep fat, until brown turning only once or twice. Drain on a brown paper. Dredge with caster sugar.

Yields—12 doughnuts

Sour Milk Griddle Cakes

1 cup flour (Atta or Maida)
½ teaspoon salt
½ teaspoon soda
1 cup butter milk
1 egg well-beaten (optional)
2-3 teaspoon oil.

Sift all the dry ingredients together. Mix in a separate bowl butter-milk, egg and oil. Pour the liquid ingredients over the dry ingredients and mix just to combine. Drop the mixture by spoonfuls on a hot tawa which is slightly greased only. When cakes are slightly risen and show bubbles on the entire surface, loosen the edges with a flat spoon, turn and let cook on the other side. Serve with butter or honey.

Yields—8-12 Griddle Cakes.

Note : Substitute Corn meal (Makki-flour), Soybean flour or peanut flour for 1/4 of the flour in the above recipe for variation in taste texture and nutritive value.

Butter-Milk Residue Patti

1 cup butter-milk residue (after straining)
1 cup gur or sugar
2 tablespoons roasted peanuts
1 tablespoon roasted til
1 tablespoon oil.

Heat gur on a slow fire, add oil into it. When gur and ghee are well mixed, add the butter-milk residue to it. Cook the mixture on slow fire stirring it constantly, when the mixture is thick and starts coating the sides of the spoon, add the roasted peanuts and mix well. Pour the mixture in a greased plate and sprinkle roasted til on it. Allow it to cool well before cutting into small squares. When quite cool separate the pieces and store in a dry jar.

Yields—4 Servings.

Banana Peel Kachori

Peels of two ripe bananas.
1 tablespoon green gram dal
1 large onion
2" piece ginger
½ teaspoon anardana or juice of ½ lemon
1 Green chilli
Salt to taste
¼ tsp red chilli powder
2 tablespoons roasted peanuts
1 cup maida
Oil or ghee for frying.

Soak green gram dal for 2 hours, wash and remove the skin and grind the dal to a fine paste. Wash and grind the banana peels also and mix with the ground dal. Wash and grind the onions, ginger, anardana and green chillies. Heat 2 tsp. oil in a pan and fry the ground masalas for 2-3 minutes. Add salt and red chilli powder and the ground peels and dal. Cook on slow fire till the mixture is well-fried and dry. Sieve maida, add 1/4 tsp. salt and 2 teaspoons oil. Make a stiff dough adding little water at a time. Divide dough into 8 equal size balls. Flatten each ball into small rounds and fill it up with the prepared mixture (mixture of dal & peels). Roll it out into small rounds and fry them in deep fat to a golden brown colour.

Yields—8 Servings.

Milo Banana Fritters

3 cups finely ground milo
5 cups water
1 cup jaggery or sugar
4 small ripe bananas
½ cup roasted chopped peanuts
8 small cardamoms
2 cups cooking oil for frying
A pinch of powdered cloves.

Dissolve jaggery in water. Add ground milo to it and cook on slow fire till the mixture is nicely cooked and is thick. Add washed bananas, chopped nuts, cardamoms, and powdered cloves. Continue to cook further till the mixture is very thick and lumpy.

Heat oil until smokey. Drop cooked mixture by large spoonfuls into deep fat and fry until evenly browned. Serve hot or cold.

Yields—8 Servings.

Potato Gulab Jamun

1 cup boiled mashed potatoes
1 tablespoon khoa or powdered milk
1 teaspoon cornstarch
1 cup sugar or brown sugar
1 cup water
Oil for deep frying.

Mix together mashed potatoes, khoa and Cornstarch, until all the ingredients are well-blended. Divide the mixture into 12 equal size portions and shape into rounds. Heat oil and carefully fry the gulab jamuns to a rich golden colour. Keep outside.

Prepare sugar syrup with 1 cup sugar and 1 cup water of one thread consistency. Slightly cool the syrup then place the fried gulab jamuns in it for at least 1/2—1 hour before serving.

Yields—12 Gulab Jamuns.

Wheat Husk Chops (Bran)

1 cup wheat husk
½ cup chana dal (roasted)
1 teaspoon finely chopped ginger
2 green chillies
Small bunch of green dhania
1 small onion
1 small tomato
Juice of 1 lemon
Salt and pepper to taste.

Soak husk and dal over-night. Grind them separately. Chop the onion tomato, green chillies and green dhania. Mix husk and dal with green chopped ingredients. Add salt, pepper and lemon juice. Mix well. Shape into chops and fry them in shallow fat on a tawa or in a frying pan.

Note : Peanut powder, til or soybean flour can also be added to make the chops more nutritious.

Cheese Balls

1 cup cottage cheese
½ teaspoon oil or butter
1½ teaspoon maida or corn flour
½ teaspoon salt
A pinch of turmeric (for colour)
Oil for deep frying.

Knead all ingredients together. Shape into 12 balls. Fry in deep fat till golden brown. Serve hot.

Yields—3 Servings.

Shaker-ke-Laddoo

1 cup gur
1 cup whole wheat flour
½ cup khoa
½ cup roasted peanuts
1½ cup oil.

Mix 2 tablespoons oil in flour and make a stiff dough. Divide the dough into 8 equal size pieces. Shape each portion into small flat rounds. Fry in hot fat till golden brown. Fry khoa in one tablespoon oil. Add roasted peanuts. Mash the fried dough balls, khoa, roasted peanuts and gur. Shape into 8 equal size laddoos. Store overnight before using.

Yields—4 Servings.

Wheet Flour Khanjoor

1 cup wheat flour
½ cup gur or sugar
½ cup water
1½ cup oil for frying
½ cup roasted peanuts
Dry coconut grated.

Add one tablespoon oil to wheat flour. Dissolve gur in hot water. Use gur water to atta and knead to a stiff dough. Add coarsly crushed peanuts to the dough. Shape into small flat rounds and fry in hot fat on very slow fire till golden colour.

Yields—2-4 Servings.

Tomato Barfi

2 cups tomato juice
2 cups sugar
½ cup grated coconut (fresh)
2 tablespoon peanuts.

Add sugar to the tomato juice. Boil till it is of thick consistency. Add grated coconut and boil for two more minutes. Add the roasted peanuts. Cook further on slow fire stirring constantly till the mixture coats the spoon. Remove from fire and set the barfi in a greased plate. Allow to set and cut into 8 equal size pieces.

Yields—2-4 Serving

Banana Barfi

2 Ripe bananas
½ cup grated coconut (fresh)

2 tablespoon brown sugar
2 teaspoon roasted til
1 tablespoon ghee or oil.

Peel and mash the bananas. Add grated coconut and sugar to the mashed bananas. Heat oil and add the mashed bananas. Heat oil and add the mashed bananas, coconut and sugar. Cook on very slow fire stirring constantly to prevent the mixture from sticking to the pan. When the mixture is well-fried and the oil starts separating, add the roasted til, saving some to sprinkle on top. Pour the mixture on a greased plate and sprinkle the rest of the til on top. Allow it to cool, when quite set, cut into 8 equal size pieces.

Yields—2 Servings (4 pieces per serving)

VIII. SANDWICHES

Different Types of Sandwiches

Sandwiches form an important item for the mid-day meal and packed lunch programme. They are easy to pack, handle, and make, and can be made nutritious depending on the fillings used.

Sandwiches are nothing but 2 slices of bread joined together with butter and some other filling. They have a tendency to dry very quickly when carried for school lunch box or packed for a husband or self for taking to the office. To prevent this it is advisable to use moist fillings, and take care to wrap the sandwiches in a grease-proof paper or plastic bags or a tin box.

A list of suggested sandwich fillings is given below :

Egg Filling (Good for Children)	1 Tsp butter 1 hard boiled and mashed egg a pinch of salt and pepper and mustard powder. Makes 2 sandwiches.
Cottage Cheese	1 Tsp butter 2 Tsp freshly prepared cottage cheese (or equal amount of grated cooking or processed cheese) A dash of pepper and mustard.

Cucumber	1 Tsp butter 2 Tsp of grated cucumbers or 5-6 rounds of cut cucumber Sprinkle of salt and pepper.
Tomatoes	Use sliced tomatoes instead of cut cucumber in the above recipe.
Chutney Filling	1 Tsp butter 1 Tsp mint chutney (or any other chutney—*see* recipe for making chutney "Under XI Fresh Chutneys")
Filling with Left-over Vegetables or Meat	1 Tsp butter 2-4 Tsp left-over dry cooked vegetables (like potatoes, peas, cauliflower, carrots etc.) mashed well, or (cooked left-over mince can also be successfully used for making sandwich filling).
Banana Filling (Sweet for Children	1 Tsp unsalted butter $\frac{1}{2}$ banana well-mashed $\frac{1}{2}$ tsp sugar.
Jam Filling	1 Tsp unsalted butter 1 Tsp any jam.

IX. SALADS

Different Types of Salads

Salads are useful items in our meal. They are easy to make and attractive to look at. Also they are nutritious as raw vegetables and fruits are used with some dressing and no nutrients are lost due to cooking. Salads should be included in diet as a rule and not as an excuse. Vegetables like boiled potatoes, peas, raw carrots, tomatoes, cucumbers, cabbage, radish, etc. can be successfully used. Certain fruits like grapes, oranges and bananas also along with vegetables can make attractive salads.

The vegetables can be cut, diced, grated or sliced, and arranged in proper combination will give best results. The salads can be served with or without dressing—without dressing the use of salt and pepper is enough, but some salad dressings add more taste to the salads.

Salad Dressings

1. Lemon juice/vinegar with salt & pepper.
2. 3 parts of vinegar & 1 part of salad oil, a big pinch of sugar, salt & pepper & mixed well is a good salad dressing.
3. Cream lemon juice, salt and pepper.
4. Fruit juice with a little vinegar and sugar make a good dressing.

X. SWEET DISHES

Cabbage Khir

250 gms cabbage
4 cups milk
¼ cup sugar
1 tsp cardamoms (powder)

Shred the cabbage, wash and cook in milk on slow fire till the cabbage is soft and the milk has thickened. Add sugar, cook another 5 minutes. Cool and add powdered cardamoms, chill and serve.

Yields—2 Servings

Rice Khir

4 cups milk
2 Tbs rice
2 Tbs sugar
¼ tsp cardamom powder
10 gms almonds & raisins (optional)

Pick and wash rice and soak for 15 minutes. Put milk to boil and when it starts boiling add soaked rice and allow it to cook on slow fire till the rice partially disperses into the milk. Add sugar and cardamom powder and cook for another five minutes. Take off the fire and add almonds and raisins.

Yields—2 Servings

Lauki Khir

200 gms bottle gourd (Lauki)
4 cups milk
2 Tbs sugar
¼ tsp cardamom powder
10 gms almonds and raisins (optional)

Peel bottle gourd and grate (thick). Boil the milk, add grated gourd and cook till gourd is soft and milk thickens. Add sugar and boil for 2-3 minutes with cardamom powder. Take off the fire and add almonds and raisins.

Yields—2 Servings

Carrot Halwa

250 gms carrots
4 cups milk
100 gms. Khoa
2 Tbs shortening
4 Tbs sugar
1 silver paper
¼ tsp (ground) cardamom
15 gms Nuts, almonds, Pistachio, raisins (optional)

Boil milk. Wash and grate the carrots. Add carrots to the boiling milk. Cook carrots in milk, stirring all the time to prevent sticking to the pan. When the milk is nearly dry add nicely crumbled khoa, sugar and half of the nuts and crushed cardamom. Then add shortening and fry it till the mixture gives a nice smell. When cooked, remove from fire and spread it on a plate. Decorate with silver paper and little of the finely chopped nuts already saved in the beginning.

Yields—4 Servings

Moong Dal Halwa

1 cup soaked and washed dal
¼ cup sugar
¼ cup shortening

1 Tbs (optional) nuts chopped
3-4 ozs water.

Drain dal thoroughly. Grind to a smooth paste. Put about two tablespoons of unmelted ghee in a frying pan on slow fire and add ground dal. Stir carefully and continuously on slow fire till dal becomes golden brown in colour and gives nice aroma. Add little water at a time till the capacity of dal to absorb water is no more. It becomes a smooth paste and also starts leaving the pan. Add sugar and keep stirring gently from the sides of the pan till it starts leaving the sides once again. Put it in a plate and decorate with finely chopped nuts and silver paper. Serve hot.

Yields—2 Serving.

Pumpkin Sweet

250 gms pumpkin (yellow)
2 cups milk
½ cup jaggery or brown sugar
1 packet gelatine
2 Tbs custard powder or cornflour
4–6 Elaichi (small)
½ cup cream (optional)

Peel and cut pumpkin into small pieces and boil in little water till tender. Mash the pumpkin with the back of a spoon or a fork and keep aside.

Heat milk and when boiling add 2 Tbs of custard powder dissolved in 4 Tbs of cold milk. Cook the custard on slow fire stirring all the time till the custard thickens. Allow it to cool.

Mix the mashed pumpkin, prepared custard and the jaggery and illachi powder.

Dissolve gelatine in 2 Tbs warm water and add to the above mixture. If cream is to be added, it should be added last. Allow this to stand in a cool place or in cold water. Serve very cold.

Yields—4 to 6 Servings

XI. FRESH CHUTNEYS

Mint and Coriander Chutney

1 cup picked leaves of Mint
½ cup picked leaves of coriander.
1 small onion (optional)
Juice of 1 lemon
1 green chilli
Salt to taste
½ tsp sugar.

Wash the leaves and chop the onion and green chilli fine. Place the leaves, onion and green chillies on a grinding stone and grind them into a fine paste. Place in a bowl and add sugar and juice of 1 lemon.

Coconut Chutney

½ fresh coconut finely grated
2 green chillies
1″ piece ginger
salt to taste
½ lemon

Grind grated coconut, green chillies, and ginger finely—add lemon juice and salt.

Green Mango Chutney

2 green mangoes
Salt, red chillies

1 tsp sugar
1 green chilli

Peel and cut the mangoes into small pieces, and grind them fine with salt, green chillies and a small piece of Hing (Asafoetida). Add sugar in the end.

Banana Peel Chutney

Peels of 2 ripe bananas
2 Tbs roasted peanuts (crushed)
2 Tbs grated coconut
1 raw mango or 1 teaspoon mango powder
1 onion (optional)
2″ piece ginger
2 green chillies
Salt to taste
Small piece of Asafoetida (Hing)
1 tsp sugar or shaker
Juice of 1 lemon.

Wash and cut the banana peels in small pieces. Grind it fine along with all the other ingredients. Add Shaker and lemon juice in the end.

Table of Food Values

(Adapted from Series No. 42 of Nutritive Values Developed by the Indian Council of Medical Research)

Sr. No.	Name of Foodstuffs	Nature of Edible Material	Edible Portion %	Per 100 gms of Edible Portion			
				Protein	Fat	Hydrates	Calories
1	2	3	4	5	6	7	8
CEREALS AND GRAINS							
1.	Bajra	Dehusked sample	84	11.6	5.0	67.5	361
2.	Barley	As purchased	100	11.5	1.3	69.6	336
3.	Millet	Dehusked	79	12.3	4.3	60.9	331
4.	Maize tender	Grain only	37	4.7	0.9	24.6	125
5.	Ragi	As purchased	100	7.3	1.3	72.0	328
6.	Rice, Parboiled	-do-	100	6.4	0.4	79.0	345
7.	Rice (Raw, hand-pounded)	-do-	100	7.5	1.0	76.7	346
8.	Rice (Raw, milled)	-do-	100	6.8	0.5	78.2	345
9.	Rice (Raw, unmilled)	-do-	—	7.2	2.3	75.1	350
10.	Rice, flakes	-do-	100	6.6	1.2	77.3	346
11.	Rice, Puffed	-do-	100	7.5	0.1	73.6	325
12.	Suji	—	—	10.4	0.8	74.8	348
13.	Wheat (Whole)	As purchased	100	11.8	1.5	71.2	346
14.	Wheat flour (Atta) (Whole)	-do-	100	12.1	1.7	69.4	341
15.	Wheat flour (Refined)	-do-	100	11.0	0.9	73.9	348

1	2	3	4	5	6	7	8
PULSES AND LEGUMES							
16.	Bengal Gram (Whole)	As purchased	100	17.1	5.3	60.9	360
17.	Bengal Gram (Dehusked)	-do-	100	22.5	5.2	58.1	369
18.	Bengal Gram Dhal	-do-	100	20.8	5.6	59.8	372
19.	Black Gram Dhal	-do-	100	24.0	1.4	59.6	347
20.	Green Gram Whole	-do-	100	24.0	1.3	56.7	334
21.	Green Gram Dhal	-do-	100	24.5	1.2	59.9	348
22.	Peas, dried	-do-	100	19.7	1.1	56.5	315
23.	Rajmah	-do-	—	22.9	1.3	60.6	346
24.	Rawan	-do-	—	23.4	1.3	59.7	344
25.	Red Gram Dhal	-do-	100	22.3	1.7	57.6	335
26.	Soybean	-do-	100	43.2	19.5	20.9	432
LEAFY VEGETABLES							
27.	Amaranth, tender	Leaves and tender stalk	39	4.0	0.5	6.3	46
28.	Bamboo Shoots	Tender portion	54	3.9	0.5	5.7	43
29.	Bathua Leaves	—	—	3.7	0.4	2.9	30
30.	Beet Greens	Tender leaves	51	3.4	0.8	6.5	46
31.	Brussels Sprouts	As purchased	100	4.7	0.5	7.1	52
32.	Cabbage	All except the hard core	88	1.8	0.1	4.6	27
33.	Carrot Leaves	Leaves only	51	5.1	0.5	13.1	77
34.	Cauliflower Greens	—		5.9	1.3	7.6	66
35.	Celery Leaves	Tender leaves only	71	6.3	0.6	1.6	37
36.	Coriander Leaves	Leaves & tender stalk	70	3.3	0.6	6.3	44
37.	Curry Leaves	Leaves only	83	6.1	1.0	18.7	108

1	2	3	4	5	6	7	8
38.	Drumsticks	Leaves only	75	6.7	1.7	12.5	92
39.	Fenugreek	Leaves only	59	4.4	0.9	6.0	49
40.	Lettuce	Leaves only	66	2.1	0.3	2.5	21
41.	Mint	Tender leaves	45	4.8	0.6	5.8	48
42.	Onion Tops	—	—	1.2	0.8	5.3	33
43.	Parsley	Young leaves	82	5.9	1.0	13.5	87
44.	Radish Tops	—	—	2.7	0.6	3.4	30
45.	Spinach	Leaves only	87	2.0	0.7	2.9	26
ROOTS AND TUBERS							
46.	Beet Root	All except central stub	85	1.7	0.1	8.8	43
47.	Carrot	All except the stalk	95	0.9	0.2	10.6	48
48.	Potatoes	Whole including skin	100	1.6	0.1	22.6	97
49.	Onions	—	—	1.2	—	11.0	49
50.	Radish	All except small rootlets	99	0.7	0.1	3.4	17
51.	Sweet Potatoes	—	—	1.2	0.3	28.2	120
52.	Tapioca Chips (Dried)	As purchased	100	1.3	0.3	82.6	338
53.	Turnip	All except hard core	65	0.5	0.2	6.2	29
54.	Yam	—	—	1.4	0.1	26.0	111
OTHER VEGETABLES							
55.	Ashgourd	All except outer skin and seeds	67	0.4	0.1	1.9	10

1	2	3	4	5	6	7	8
56.	Beans	—	59	7.4	1.0	29.8	158
57.	Brinjal	All except stalk and Calyx	91	1.4	0.3	4.0	24
58.	Cauliflower	All except stalk	70	2.6	0.4	4.0	30
59.	Cucumber	All except the outer coat	83	0.4	0.1	2.5	13
60.	Ladies-fingers	All excep the tip and the stalk end	84	1.9	0.2	6.4	35
61.	Peas	Pods discarded	53	7.2	0.1	15.9	93
62.	Tomatoes green	—	98	1.9	0.1	3.6	23
NUTS AND OIL SEEDS							
63.	Almonds	—	—	20.8	58.9	10.5	655
64.	Cashewnuts	—	—	21.2	46.9	22.3	596
65.	Coconut dry	—	—	6.8	62.3	18.4	662
66.	Groundnut	—	—	26.7	40.1	20.3	549
67.	Pistachio-nut	—	—	19.8	53.5	16.2	626
68.	Walnut	—	4.5	15.6	64.5	11.0	687
CONDIMENTS AND SPICES							
69.	Asafoetida	—	—	4.0	1.1	67.8	297
70.	Cardamom	—	—	10.2	2.2	42.1	229
71.	Chillies dry	—	—	15.9	6.2	31.6	246
72.	Cloves dry	As purchased	100	5.2	8.9	46.0	285
73.	Coriander	—	—	14.1	16.1	21.6	288
74.	Ginger fresh	—	—	2.3	0.9	12.3	67
75.	Nutmeg	—	—	7.5	36.4	28.5	472

1	2	3	4	5	6	7	8
76.	Pepper dry	—	95	11.5	6.8	49.2	304
77.	Turmeric	—	—	6.3	5.1	69.4	349
FRUITS							
78.	Apple	All except core and stalk	90	0.3	0.1	13.3	55
79.	Banana	Peel rejected	74	1.1	0.1	24.7	104
80.	Cherries	—	88	1.1	0.5	13.8	64
81.	Dates (Dried)	Seeds rejected	86	2.5	0.4	75.8	317
82.	Figs	—	99	1.3	0.2	7.6	37
83.	Grapes	—	—	0.6	0.4	13.1	58
84.	Guava	As purchased	100	0.9	0.3	11.2	51
85.	Lemon	—	—	1.0	0.9	11.1	57
86.	Lime	—	—	1.5	1.0	10.9	59
87.	Musammi	—	71	0.8	0.3	9.3	43
88.	Malta	—	67	0.7	0.2	7.8	36
89.	Mango	—	85	0.6	0.1	11.8	51
90.	Melon (White)	—	80	0.6	0.1	5.4	25
91.	Orange	Peels and pips rejected	66	0.9	0.3	11.6	53
92.	Papaya (Ripe)	—	75	0.6	0.1	7.2	32
93.	Peaches	Flesh and skin	88	1.2	0.3	10.5	50
94.	Pears	—	85	0.2	0.1	12.4	51
95.	Pineapple	—	60	0.4	0.1	10.8	46
96.	Plums (Red)	All except seeds	93	0.7	0.4	11.7	53
97.	Pomgrenate	—	68	1.6	0.1	14.5	65
98.	Prunes	—	85	0.3	0.3	60.3	246
99.	Raspberry	—	—	1.1	0.6	11.6	59
100.	Strawberry		96	0.7	0.2	9.8	44
101.	Tomatoes		100	0.9	0.2	3 6	20

1	2	3	4	5	6	7	8
FISHES							
102.	Bhetki	—	—	13.7	1.1	2.0	73
103.	Chela	—	—	14.6	4.3	1.5	103
104.	Indian Herring	Flesh portion	50	20.3	3.2	2.2	119
105.	Hilsa	-do-	—	21.8	19.4	2.9	273
106.	Lobster	—	—	20.5	0.9	0	90
107.	Oil Sardine	Flesh only	70	19.6	2.0	0.1	97
108.	Mackeral	-do-	61	18.9	1.7	0.5	93
109.	Pomphret	—	68	17.0	1.3	1.8	87
110.	Prawns	—	—	20.8	0.3	0	86
111.	Rohu	Flesh only	78	16.6	1.4	4.4	97
112.	Sardines	Flesh only	49	18.2	0.2	1.2	79
113.	Singhada	Flesh only	58	20.9	3.1	13.9	167
114.	Sole	All except viscera	100	19.5	4.7	—	120
115.	Bombay Duck	—	—	61.7	4.0	2.5	293
OTHER FRESH FOODS							
116.	Beef	—	—	22.6	2.6	—	114
117.	Duck	—	—	21.6	4.8	0.1	130
118.	Egg, ducks	—	—	13.5	13.7	0.8	181
119.	Eggs, hens	—	—	13.3	13.3	—	173
120.	Fowl	—	—	25.9	0.6	—	109
121.	Goat	—	—	21.4	3.6	—	118
122.	Liver	—	—	20.0	3.0	—	107
123.	Mutton	—	—	18.5	13.3	—	194
124.	Pork	—	—	18.7	4.4	—	114

1	2	3	4	5	6	7	8
FATS AND EDIBLE OILS							
125.	Butter	—	100	—	81.0	—	729
126.	Ghee	—	100	—	100	—	900
127.	Vegetable Cooking Oil	—	100	—	100	—	900
128.	Vanaspati (Hydrogenated oil)	—	100	—	100	—	900
MILK AND MILK PRODUCTS							
129.	Cow's milk	—	100	3.2	4.1	4.4	67
130.	Buffalo's milk	—	100	4.3	8.8	5.1	117
131.	Curds	—	100	3.1	4.0	3.0	60
132.	Cheese	—	100	24.1	25.1	6.3	348
MISCELLANEOUS FOODSTUFFS							
133.	Bread, White	—	—	7.8	0.7	51.9	245
134.	Bread, Brown	—	—	8.8	1.4	49.0	244
135.	Cane Sugar	—	100	0.1	—	99.4	398
136.	Honey	—	—	0.3	0	79.5	319
137.	Jaggery	—	—	0.4	0.1	95.0	383
138.	Sago	—	—	0.2	0.2	87.1	351
139.	Yeast, dried (Food)	—	—	35.7	1.8	46.3	344
140.	Yeast, dried (Brewers)	—	—	39.5	0.6	39.1	320

Table of Food Values

Minerals and Vitamins (per 100 g. Edible Portion)

S. No.	Name of the Foodstuffs	Calcium, mg.	Phosphorus, mg.	Iron, mg.	Vitamin A, I.U.	Thiamine, mg.	Riboflavin, mg.	Nicotinic acid mg.	Vitamin C, mg.
1	2	3	4	5	6	7	8	9	10
CEREALS AND GRAINS									
1.	Bajra	42	296	13.3	220	0.33	0.16	3.2	0
2.	Barley	26	215	3.0	7	0.47	0.20	5.4	0
3.	Millet	31	290	12.9	54	0.59	0.08	0.7	0
4.	Maize	10	348	2.0	150	0.42	0.10	1.4	0
5.	Rice, Raw (Hand Pounded)	10	190	3.2	4	0.21	0.16	3.9	0
6.	Rice, Raw (Milled)	10	160	3.1	0	0.06	0.06	1.9	0
7.	Rice flakes	20	238	20.0	0	0.21	0.05	4.0	0
8.	Rice puffed	23	150	6.6	0	0.21	0.12	4.1	0
9.	Suji	16	102	1.6	—	0.12	—	1.2	—
10.	Whole Wheat	41	306	4.9	108	0.45	0.12	5.0	0
11.	Wheat flour (Atta)	48	423	11.5	49	0.49	0.29	4.3	0
12.	Wheat flour refined (Maida)	23	121	2.5	43	0.12	0.07	0.9	0
PULSES AND LEGUMES									
13.	Bengal gram (Whole)	202	312	10.2	316	0.30	0.51	2.1	3
14.	Bengal gram (Dhal)	56	331	9.1	216	0.48	0.18	2.4	1

1	2	3	4	5	6	7	8	9	10
15.	Green gram (Whole)	124	326	7.3	158	0.47	0.39	2.1	1
16.	Green gram (Dhal)	75	405	8.5	83	0.72	0.15	2.4	0
17.	Peas dried	75	298	5.1	66	0.47	0.38	1.9	0
18.	Rajmah	260	410	5.8	—	—	—	—	—
19.	Rawan	80	430	4.3	—	—	—	—	—
20.	Soybean	240	690	11.5	710	0.73	0.76	2.4	—
LEAFY VEGETABLES									
21.	Bamboo Shoots	20	65	0.1	0	0.08	0.19	0.2	5
22.	Beet greens	380	30	16.2	9770	0.26	0.56	3.3	70
23.	Brussel Sprouts	43	82	1.8	210	0.05	0.16	0.4	72
24.	Cabbage	39	44	0.8	2,000	0.06	0.03	0.4	124
25.	Coriander Leaves	184	71	18.5	11,530	0.05	0.06	0.8	135
26.	Drumstick Leaves	440	70	7.0	11,300	0.06	0.05	0.8	220
27.	Lettuce	50	28	2.4	1,650	0.09	0.13	0.5	10
28.	Mint	200	62	15.6	2,700	0.05	0.08	0.4	27
29.	Onion Tops	78	14	—	—	—	—	—	—
30.	Parsley	390	175	17.9	3,200	0.04	0.18	0.5	281
31.	Spinach	73	21	10.9	9,300	0.03	0.07	0.5	28
ROOTS AND TUBERS									
32.	Beet root	200	55	1.0	0	0.04	0.09	0.4	88
33.	Carrot	80	530	2.2	3,150	0.04	0.02	0.6	3
34.	Onion	180	50	0.7	0	0.08	0.01	0.4	11
35.	Potato	10	40	0.7	40	0.10	0.01	1.2	17
36.	Radish	50	22	0.4	5	0.06	0.02	0.5	15
37.	Sweet Potato	20	50	0.8	10	0.08	0.04	0.7	24
38.	Tapioca	50	40	0.9	—	0.05	0.10	0.3	25
39.	Turnip	30	40	0.4	0	0.04	0.04	0.5	43

1	2	3	4	5	6	7	8	9	10
40.	Yam	60	20	1.3	130	0.07	0	0.7	—
OTHER VEGETABLES									
41.	Ashgourd	30	20	0.8	0	0.06	0.01	0.4	1
42.	Beans	50	160	2.6	57	0.34	0.19	0	27
43.	Brinjal	18	47	0.9	124	0.04	0.11	0.9	12
44.	Cauliflower	33	57	1.5	51	0.04	0.10	1.0	56
45.	Cucumber	10	25	1.5	0	0.03	0.01	0.2	7
46.	Drumsticks	30	110	5.3	184	0.05	0.07	0.2	120
47.	Ladies-Finger	66	56	1.5	88	0.07	0.10	0.6	13
48.	Peas	20	139	1.5	139	0.25	0.01	0.8	9
49.	Pumpkin	10	30	0.7	84	0.06	0.04	0.5	2
50.	Green Tomatoes	20	36	1.8	320	0.07	0.01	0.4	31
NUTS AND OIL SEEDS									
51.	Almonds	230	490	4.5	0	0.24	0.15	2.5	0
52.	Cashewnuts	50	450	5.0	100	0.63	0.19	2.1	0
53.	Coconut dry	400	210	2.7	0	0.08	0.06	0.6	7
54.	Groundnut	50	390	1.6	63	0.90	0.30	14.1	0
55.	Pistachionuts	140	430	13.7	240	0.67	0.03	1.4	0
56.	Walnut	100	380	4.8	10	0.45	0.12	1.6	0
CONDIMENTS AND SPICES ETC.									
57.	Asafoetida	690	50	22.2	8	0	0.04	0.3	0
58.	Cardamom	130	160	5.0	0	0.22	0.17	0.8	0
59.	Chillies Green	30	80	1.2	292	0.19	0.39	0.9	111
60.	Cloves	740	100	4.9	422	0.08	0.13	0	0
61.	Coriander	630	393	17.9	1,570	0.22	0.35	1.1	0
62.	Cumin Seeds	1080	511	31.0	870	0.55	0.36	2.6	3

1	2	3	4	5	6	7	8	9	10
63.	Garlic Dry	30	310	1.3	0	0.06	0.23	0.4	13
64.	Ginger Fresh	20	60	2.6	67	0.06	0.03	0.6	6
65.	Nutmeg	120	240	4.6	0	0.33	0.01	1.4	0
66.	Tamarind	170	110	10.9	100	—	0.07	0.7	3
67.	Turmeric	150	282	18.6	50	0.03	0	2.3	0
FRUITS AND FRUIT PRODUCTS									
68.	Apple	9	20	1.0	0	0.12	0.03	0.2	2
69.	Apricots fresh	20	25	2.2	3,600	0.04	0.13	0.6	6
70.	Banana	10	30	0.5	124	0.05	0.17	0.3	6
71.	Cherries red	24	25	1.3	0	0.08	0.08	0.3	7
72.	Currants black	130	110	8.5	35	0.03	0.14	0.4	1
73.	Dates dried	120	50	7.3	44	0.01	0.02	0.9	3
74.	Figs	60	30	1.2	270	0.06	0.05	0.6	5
75.	Grapes	20	23	1.3	5	0.04	0.01	0.1	1
76.	Grape fruit	20	20	0.2	—	0.12	0.02	0.3	31
77.	Guava	10	28	1.4	0	0.03	0.03	0.4	212
78.	Prune	10	18	—	—	—	—	—	—
79.	Jack fruit	20	41	0.5	292	0.03	0.13	0.4	7
80.	Lemon sour	100	20	0.7	0	—	—	0.1	26
81.	Lemon sweet	30	20	0.7	0	—	—	0	45
82.	Lemon	70	10	2.3	0	0.02	0.01	0.1	39
83.	Lime	90	20	0.3	26	—	—	—	—
84.	Mausami	40	30	0.3	0	—	—	0	50
85.	Malta	45	22	0.7	0	—	—	0	54
86.	Mango	10	20	0.3	4,800	0.04	0.05	0.3	13
87.	Melon musk	65	20	1.3	0	0.02	0.04	0.1	1
88.	Melon white	15	10	2.0	130	—	—	0.1	29
89.	Mulberry	60	20	2.6	174	0.01	0.18	0.8	13

1	2	3	4	5	6	7	8	9	10
90.	Orange	50	20	0.1	1,800	—	—	0	30
91.	Papayya	17	13	0.5	1,110	0.04	0.25	0.2	57
92.	Peaches	15	41	2.4	0	0.02	0.03	0.5	6
93.	Pears	6	10	1.0	14	0.02	0.03	0.2	0
94.	Pineapple	20	9	1.2	30	0.20	0.12	0.1	39
95.	Plums red	15	25	0.8	166	—	—	0.1	0
96.	Pomegranate	10	70	0.3	0	0.06	0.10	0.3	14
97.	Prunes	80	40	4.8	317	0.56	—	1.6	2
98.	Raspberry	40	110	2.3	2,080	—	—	0.8	30
99.	Strawberry	30	130	1.8	30	0.03	0.02	0.2	52
100.	Tomato Ripe	48	20	0.4	585	0.12	0.06	0.4	27
FISH (FRESH AND SUN-DRIED)									
101.	Fish Bhetki	530	400	1.0	—	—	—	0.7	10
102.	Chela	590	340	2.0	—	—	—	—	—
103.	Hilsa	180	280	2.1	—	—	—	0.8	24
104.	Indian Herring	429	305	9.3	—	—	—	—	—
105.	Lobster	16	297	—	—	—	—	—	—
106.	Mackerel	429	305	4.5	—	—	—	—	—
107.	Oil Sardine	357	349	6.1	—	—	—	—	—
108.	Pomfrets	200	290	0.9	—	—	0.55	2.6	—
109.	Prawn	90	240	0.8	0	0.01	0.10	4.8	—
110.	Rohu	680	150	0.9	—	0.05	0.07	0.7	20
111.	Sardines	90	360	2.5	—	—	—	2.6	—
112.	Singhada	100	150	1.8	—	—	—	—	—
113.	Sole	140	95	0.5	—	—	—	0.5	9
114.	Bombay Duck	1389	240	19.1	—	—	—	—	—
OTHER FLESH FOOD									
115.	Beef	68	324	18.8	60	0.15	0.04	6.4	2

1	2	3	4	5	6	7	8	9	10
116.	Duck	4	235	—	—	—	—	—	—
117.	Egg, duck	70	260	3.0	1,200	0.12	0.28	0.2	—
118.	Egg, hen	60	220	2.1	1,200	0.10	0.18	0.1	0
119.	Fowl	25	245	—	—	—	—	—	—
120.	Goat	12	193	—	—	—	—	—	—
121.	Liver	17	297	—	—	—	—	—	—
122.	Mutton	150	150	2.5	31	0.18	0.27	6.8	—
123.	Pork	30	200	2.2	0	0.54	0.09	2.8	2
MILK AND MILK PRODUCTS									
124.	Cow's milk	120	90	0.2	174	0.05	0.19	0.1	2
125.	Buffalo's milk	210	130	0.2	160	0.04	0.10	0.1	1
126.	Curds	149	93	0.3	102	0.05	0.16	0.1	1
127.	Cheese	790	520	2.1	273	—	—	—	—
MISCELLANEOUS FOODSTUFFS									
128.	Cane Sugar	12	1	—	—	—	—	—	—
129.	Honey	5	16	0.9	0	0	0.04	0.2	4
130.	Jaggery	80	40	11.4	0	0.02	—	1.0	0
131.	Yeast dried (Food)	160	2090	21.5	—	3.20	—	27.0	—
132.	Yeast dried (Brewers)	440	1490	43.7	0	6.00	4.00	40.0	—

NOTES

NOTES

The International Cooperative Alliance

is one of the oldest of existing international voluntary bodies. It is a world-wide confederation of cooperative organisations of all types. Founded by the International Cooperative Congress held in London in 1895, it has now 164 affiliates spread over 64 countries and is serving over 255 million members at the primary level. It is the only international organisation entirely and exclusively dedicated to the promotion of cooperation in all parts of the world.

Besides the Head Office of the ICA, which is in London, there are two other offices of the ICA *viz.*, the Regional Office & Education Centre for South-East Asia located in New Delhi, India and the office for East and Central Africa at Moshi, Tanzania. The Regional Office in New Delhi was started in 1960 and the office in Moshi in 1968. The main tasks of the Regional Office & Education Centre are to develop the general activities of the Alliance in the Region, to act as a link between the ICA and its affiliated national movements, to represent the Alliance in its consultative relations with the regional establishments of the United Nations and other international organisations, to promote economic relations amongst member-movements, including trading across national boundaries, to help in the supply of technical assistance, to conduct educational activities for the movements in the Region and to bring out publications on the various aspects of cooperative development.

A greater part of the activities of the Regional Office & Education Centre is supported by the Swedish Cooperative Movement and the Swedish International Development Authority (SIDA). The Regional Office has so far conducted over 85 educational programmes of various types. These were attended by nearly 2,200 participants from the different countries of the South-East Asian Region.