Janta Vedic College, Baraut (BAGHPAT)

Dairy Science and Technology Department

M.Sc. Ag (III) Semester (D.S.T.)

J-3014 TECHNOLOGY OF FUNCTIONAL FOOD

TOPIC – FOOD AND NUTRITION

Nutrition is the process by which the body nourishes itself by transforming food into energy and body tissues. Food provides essential substances called nutrients. The body needs these nutrients to help it make energy; to grow, repair, and maintain its tissues; and to keep its different systems working smoothly. Nutrition is important for all living beings.

The term nutrition can also refer to the quality of someone's food choices or diet .A balanced foods/Diet provide all the nutrients needed in the right amounts. A balanced diet has many benefits. It can help people feel and look their best and stay energetic and healthy, both in the short term and later in life. Three major types of nutrients supply the body with energy, or calories: carbohydrates, proteins, and fats. Fat is a more-concentrated source of energy, with each gram providing nine calories. Water, vitamins, and minerals supply no energy in and of themselves, though the body uses many of them in energy-releasing processes.

The body needs the energy in food to do everything from blinking an eye to running a race. It also needs energy to perform such essential functions as breathing, maintaining body temperature, growing new cells, and even digesting food. The total number of calories needed each day depends on many factors, including a person's age, sex, weight, and especially level of activity.

NUTRIENTS

The nutrients are divided into six major types: carbohydrates, proteins, fats, vitamins, minerals, and water. Each nutrient performs specific functions to keep the body healthy. All the nutrients work together to contribute to good health.

1.CARBOHYDRATES : The body's main source of energy is carbohydrates, which include starches, sugars, and dietary fiber. The body breaks down starches and sugars into the simple sugar glucose. Glucose is also the main energy source for the brain and nervous system and can be used by muscles and other body cells. Fiber does not provide energy. Starches are complex carbohydrates. They are found in dry beans and peas, such as kidney beans, pinto beans, soybeans, chickpeas, lentils, and split peas; grains and grain products, such as breads and cereals; potatoes; and other vegetables. These foods can also be good sources of proteins, vitamins, minerals, and dietary fiber.

2.PROTEINS : Proteins are made of amino acids, small units necessary for growth and tissue repair. About one-fifth of the body's total weight is protein. Hair, skin, muscles, internal organs, and bones are made primarily of protein. Foods from animal sources—such as meat, poultry, fish, eggs, and dairy products—supply all the essential amino acids. These are complete proteins. Foods from plant sources are incomplete proteins, because they are low in or lack one or more of the essential amino acids. However, one can obtain all the essential amino acids by eating a variety of different protein-containing plant foods. Good plant sources of protein are legumes (including soybeans, tofu, and other soy products), nuts, and seeds. Plant sources supply all or much of the protein in the diets of vegetarians, who eat no meat, poultry, or fish. In addition, plant foods, which are often less expensive and lower in fat than meat, are an important supplementary source of protein for many non vegetarians around the world.

3. FAT : - Fats are a concentrated source of energy. Fats in the diet are needed for healthy skin and normal growth. Fats also carry certain vitamins to wherever they are needed in the body.The different fats found in food are made up of fatty acids. There are four basic kinds of fatty acids: saturated, polyunsaturated, monounsaturated, and trans. Each has a different effect on blood cholesterol levels. In general, saturated fatty acids and trans-fatty acids tend to increase one's risk of heart attack and other cardiovascular disease.

4.VITAMINS : Vitamins are needed in only small amounts, they are essential for good health. They help keep the body's tissues healthy and its many systems working properly. Each vitamin has specific roles to play. Many reactions in the body require several vitamins, and the lack or excess of any one can interfere with the function of another. **FAT-SOLUBLE VITAMINS** - A, D, E, and K. They are digested and absorbed with the help of fats in the diet. **Vitamin A.** is needed for good vision, healthy skin, and proper functioning of the immune system. Dark-green leafy vegetables and many orange fruits and vegetables.

Vitamin D. helps the body use calcium and phosphorus to build strong bones and teeth. With direct sunlight on the skin, the body can manufacture its own vitamin D.

Vitamin E. helps protect the body's cells from damage by oxygen. It is found in vegetable oils, nuts, seeds, wheat germ, and whole grains. **Vitamin K.** is necessary for normal blood clotting. Food sources include green leafy vegetables, cabbage, cauliflower, eggs, and liver.

WATER-SOLUBLE VITAMINS - The water-soluble vitamins dissolve in water. They include vitamin C and eight B vitamins. **Vitamin C.** or ascorbic acid, is essential for healthy teeth, gums, and blood vessels. It also helps the body heal wounds and resist infections. Good food .Sources of vitamin C include citrus fruits, berries, and green leafy vegetables.

Vitamin B- are thiamin, riboflavin, niacin, vitamin B6, vitamin B12, folic acid (folate), pantothenic acid, and biotin. They help turn carbohydrates into energy. They also are needed for a healthy nervous system and muscle coordination. Most of the B vitamins occur in a variety of foods from both animal and plant sources. However, vitamin B12 is found only in animal foods.

Vegetarians who eat no animal products (no meat, fish, dairy, or eggs) need to eat foods fortified with vitamin B12 (such as enriched cereals and soy milk) or take B12 supplements to avoid a deficiency of this vitamin.

5.MINERALS : Many people rightly think of rocks when they hear the term minerals. Minerals are also found in soil, metals, and water. To one's body, minerals are another group of essential nutrients, needed to regulate body processes and fluid balance. Minerals also give structure to bones and teeth.

Minerals can be divided into two categories—major and trace—depending on how much the body needs. Major minerals, which are needed in larger amounts, include calcium, phosphorus, magnesium, sulfur, sodium chloride, and potassium. Trace minerals, or trace elements, include chromium, copper, fluoride, iodine, iron, manganese, molybdenum, selenium, zinc, and cobalt. Almost all foods contribute to a varied intake of essential minerals.

6.WATER : - Water takes an active part in many chemical reactions in the body. It is also needed to carry other nutrients, to regulate body temperature, and to help eliminate wastes. About 50 to 60 percent of the body is water. Requirements for water intake can be met in many ways, such as drinking plain water, fruit juices, milk, and soups.