

## NUTRITION

The process of nourishing or being nourished, especially the process by which a living organism assimilates food and uses it for growth and for replacement of tissues.

Processes of taking in and utilizing food substances. Food generates energy and supplies materials used in body tissues and processes. Calories are supplied by carbohydrates (sugars and starches), fats, and proteins. Other nutrients include minerals, vitamins, and dietary fibre. Minerals are used in many ways — iron for hemoglobin; calcium for bones, teeth, and cellular processes; sodium and potassium to regulate homeostasis, iodine to produce thyroid hormones. Trace minerals have functions that are less well-understood. Fibre is not broken down chemically in the body but aids digestion, lowers blood cholesterol, and may help prevent some cancers and hypertension. Different amounts of these nutrients exist in different foods; a varied diet ensures an adequate supply. Nutritional supplements, required by some people, do not compensate for an unhealthy diet. Sufficient water is always essential. Inadequate nutrient intake or absorption leads to malnutrition and disease.

**Nutrition (also called nourishment or aliment) is the provision, to cells and organisms, of the materials necessary (in the form of food) to support life. Many common health problems can be prevented or alleviated with a healthy diet.**

The diet of an organism is what it eats, which is largely determined by the perceived palatability of foods. Dietitians are health professionals who specialize in human nutrition, meal planning, economics, and preparation. They are trained to provide safe, evidence-based dietary advice and management to individuals (in health and disease), as well as to institutions.

### Overview

Nutrition science investigates the metabolic and physiological responses of the body to diet. With advances in the fields of molecular biology, biochemistry, and genetics, the study of nutrition is increasingly concerned with metabolism and metabolic pathways: the sequences of biochemical steps through which substances in living things change from one form to another.

Nitrogen is needed by animals to build proteins. Carnivore and herbivore diets vary in their source of nitrogen, which is a limiting nutrient for both. Herbivores consume plants to get  
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nitrogen and carnivores consume other animals to obtain nitrogen.[1] Nitrogen is a common element in the atmosphere but exists in a state that is not usable by most living organisms. Certain fungi and bacteria are able to convert atmospheric nitrogen into a form plants can adsorb and utilize.

The human body contains chemical compounds, such as water, carbohydrates (sugar, starch, and fiber), amino acids (in proteins), fatty acids (in lipids), and nucleic acids (DNA and RNA). These compounds in turn consist of elements such as carbon, hydrogen, oxygen, nitrogen, phosphorus, calcium, iron, zinc, magnesium, manganese, and so on. All of these chemical compounds and elements occur in various forms and combinations (e.g. hormones, vitamins, phospholipids, hydroxyapatite), both in the human body and in the plant and animal organisms that humans eat.

The human body consists of elements and compounds ingested, digested, absorbed, and circulated through the bloodstream to feed the cells of the body. Except in the unborn fetus, which receives processed nutrients from the mother, the digestive system is the first system involved in breaking down food prior to further digestion. Digestive juices, excreted into the lumen of the gastrointestinal tract, break chemical bonds in ingested molecules, and modulate their conformations and energy states. Though some molecules are absorbed into the bloodstream unchanged, digestive processes release them from the matrix of foods. Unabsorbed matter, along with some waste products of metabolism, is eliminated from the body in the feces.

Studies of nutritional status must take into account the state of the body before and after experiments, as well as the chemical composition of the whole diet and of all material excreted and eliminated from the body (in urine and feces). Comparing the food to the waste can help determine the specific compounds and elements absorbed and metabolized in the body. The effects of nutrients may only be discernible over an extended period, during which all food and waste must be analyzed. The number of variables involved in such experiments is high, making nutritional studies time-consuming and expensive, which explains why the

In general, eating a wide variety of fresh, whole (unprocessed), foods has proven favorable for one's health compared to monotonous diets based on processed foods.

In particular, the consumption of whole-plant foods slows digestion and allows better absorption, and a more favorable balance of essential nutrients per Calorie, resulting in better management of cell growth, maintenance, and mitosis (cell division), as well as better regulation of appetite and blood sugar.[2] Regularly scheduled meals (every few hours) have also proven more wholesome than infrequent or haphazard ones,[3] although a recent study has also linked more frequent meals with a higher risk of colon cancer in men.[4]