

Objective of Nutrition is to Provide all Essential Nutrients for Animals

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Description

Nutrition involves various chemical reactions and physiological processes which transform foods into body tissues and activities. It involves the ingestion, digestion, and absorption of the various nutrients, their transport to all body cells, and the removal of unusable elements and waste products of metabolism. Nutrition had its beginning as an art, and remained an art until the chemist became interested in the nature of foods and give analytical methods for their analysis. The physiologists and biochemists contributed a great deal for the advancement of nutrition.

Thereafter chemistry became an important tool in nutrition studies. A. Lavoisier introduced the balance and thermometer into nutrition studies. He discovered that combustion was an oxidation and he showed that respiration in the body involved the combination of carbon and hydrogen with oxygen from inspired air and that the quantities of oxygen absorbed and carbon dioxide given off depended on the food intake and the work done. Through application of chemistry in physiological studies the old idea that the nutritive value of food resided in a single "aliment" was proved wrong in the first quarter of the nineteenth century. For the remainder of the century, nutritional science and practice were concerned primarily with these nutrients and a few mineral elements Ca, Cl, F, Fe, Mg, K, Na, S were known and considered to be important in the body although critical research proving their essentiality was lacking. The large expansion in the nutrition field has occurred from around 1910 onwards with the discovery of the vitamins, of the role of amino acids, and of several more essential mineral elements. Objective of Nutrition The objective of nutrition is to provide all essential nutrients in adequate amounts and in optimum proportions.

Though weight gain was similar, large differences became evident during reproduction. Wheat plant fed cows delivered bad or dead calves and milk production was also less. Over eighty years ago revealed that simplified diets must be used for

the solution of nutrition problems. It stimulated the use of the purified diet method which resulted in the discovery of the first vitamin in 1913. Vitamin A was discovered by two independent teams of scientists McCollum and Davis and Osborne and Mendel.

The modern discoveries in nutrition have resulted from studies with a wide variety of species. The contributions of the laboratory rat to our knowledge of vitamins, amino acids and minerals have been enormous. The discovery of insulin and of the role of nicotinic acid in the prevention and cure of pellagra exemplifies the debt that we owe to the dog. Guinea pig experiments showed us the specific cause of scurvy and how to prevent it. Chick helped the discovery of thiamin and has continued to help solve many puzzles in the field of vitamins. The chicken has played a prominent role as an experimental animal throughout the history of the discovery, isolation and identification of all the vitamins. Hart and associates of Wisconsin used chicks in their classic studies of vitamin A and D. The expanding developments in the field of nutrition have resulted from the application of the knowledge and techniques of many different sciences. Physiologists and biochemists have long worked as a team in studying the body's need for food and how this food is metabolized. Then organic chemists isolated and synthesized the various vitamins. Thanks to their efforts, commercial sources of many of them have become available both for further experimental work and also for use in feeding practice. Physicists have given radiographs, the spectrograph, isotopes, chromatography, etc. and have shown us how they can be used for the advancement of nutrition Nuclear Magnetic Resonance (NMR), Near Infrared Spectroscopy (NIRS). X-ray crystallography has joined with computers to enable molecular biochemists to unravel the structure of certain proteins and thus help explain their functions. Geneticists have discovered breed differences in nutritive requirements and in the efficiency of food utilization. They have even developed new strains of certain lower forms that will detect specific vitamin and amino acid deficiencies in our foods.