

Biochemistry Services Section Front Page

Biochemistry is the study of the structure, composition, and chemical reactions of substances in living systems. Biochemistry emerged as a separate discipline when scientists combined biology with organic, inorganic, and physical chemistry and began to study how living things obtain energy from food, the chemical basis of heredity, what fundamental changes occur in disease, and related issues. Biochemistry includes the sciences of molecular biology, immunochemistry, and neurochemistry, as well as bioinorganic, bioorganic, and biophysical chemistry

Application:

The pharmaceutical industry greatly relies on biochemistry because the chemical make-up of the body must be studied in relationship to the chemicals we might put in our body via prescription or over the counter drugs. Certain medications have been developed specifically because of biochemistry research. Biochemistry helps to make the development of drugs like SSRIs possible because theories based on these drugs derive specifically from the study of chemicals produced by the body that affect mood. Biochemistry work in hormones, enzymes, proteins and cell interaction all enhance understanding of what type of chemicals might be needed to correct imbalances, without adversely affecting the other chemicals produced in the body. Thus pharmaceutical research and development remains an extremely important field for biochemistry.

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Future:

The present and the future role of biochemistry in the search for a new therapeutic agent is reviewed. It is stated that the great importance of the various disciplines of biochemistry, including pathobiochemistry and pharmacological biochemistry, is presently recognized, and the involvement of biochemistry in drug research is increasing. Biochemistry at the present time and in the future will utilize the already known basic biological principles for the new development of new and more useful medicines. It is emphasized that the limiting factor in new drug discovery

today, however, is the lack of new basic discoveries in biology.

In the last 20 years, the role of food biochemistry has assumed increasing significance in all major disciplines within the categories of food science, food technology, food engineering, food processing, and food biotechnology

Market:

Many biochemical reactions and their products are the basis of much of food science and technology. Food scientists must be interdisciplinary in their approaches to studying and solving problems that require the integration of several disciplines, such as physics, chemistry, biology and various social sciences (e.g. sensory science, marketing, consumer attitude/acceptability). For example, in the development of food packaging materials, one must consider microbiological, environmental, biochemical (flavour/nutrient) and economic questions in addition to material/polymer science. In today's market, product development considerations may include several of the following: nutritional, environmental, microbiological (safety and probiotic), nutraceutical and religious/cultural questions in addition to cost / marketing and formulation methods. An ideal food product would promote healthy gut microflora, contain 20 g of vegetable Food Biochemistry and Food Processing, protein with no limiting amino acids and have 25% of the daily fibre requirement. It would be lactose-free, nut-free, trans-fat free, antibiotic- and pesticide-free, artificial colour-free, no sugar added and contain certified levels of phytosterols. The product would contain tasteless, odourless, mercury-free, cold-pressed, bioactive omega 3-rich fish oil harvested using animal-friendly methods. Furthermore, it would be blood sugar-stabilising and heart disease-preventing, boost energy levels, not interfere with sleep, be packaged in minimal, compostable packaging and manufactured using 'green' energy, transported by biodiesel-burning trucks and be available to the masses at a reasonable price. Our greater understanding of food biochemistry has followed developments in food processing technology and biotechnology, resulting in improved nutrition and food safety. For example, milk-intolerant consumers can ingest nutritious dairy products that are either lactose-free or by taking pills that contain an enzyme to reduce or eliminate lactose.