

Pharmaceutical Sciences and its disciplinary

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Description

Pharmaceutics is the discipline of pharmacy that deals with all facets of the process of turning a new chemical entity (NCE) into a safe and effective medication. Pharmaceutics is the science of dosage form design. Pharmaceutics deals with the formulation of a pure drug substance into a dosage form.

Pharmaceutics is a subject that is included in all four years of B.Pharm. Apart from this, Pharmaceutics department handles the following subjects: Physical Pharmacy: This subject deals with application of physical chemical principles to problems in the pharmaceutical sciences.

Pharmaceutical Engineering: Is the study of machinery involved in large scale manufacturing of dosage forms. Microbiology: The branch of biology that deals with microorganisms and their effects on other living organisms. Dispensing Pharmacy: Handles development of formulations customised for individual patients. Hospital Pharmacy and Drug Store Management: It is a specialised field of pharmacy which forms an integrated part of patient health care in a health facility.

Cosmeticology: Deals with the formulation of varied cosmetic preparations and their use.

Biopharmaceutics and Pharmacokinetics: The science and study of the ways in which the pharmaceutical formulation of administered agents can influence their pharmacodynamic and pharmacokinetic behavior. The use of monolithic supports for a wide variety of applications has rapidly expanded during the past few years. The examples for applications of monoliths presented herein show that the chromatographic performance of bioreactors and affinity media prepared from monolithic media is superior to that of conventional particle-based systems. The ease of fabrication and modification combined with the long lifetime of the monolithic columns and their potential to be used in fully automated analytical systems make them attractive tools for an increasing number of applications.

Pharmaceutical (medicinal) chemistry is concerned with the design (drug design) and synthesis of biologically active molecules. The aim is to gain new chemical molecules that could enable the discovery of new pharmaceuticals or optimize already known drug structures, thereby to expand the portfolio of chemical drugs. Although organic chemistry plays a crucial role, only knowledgeable pharmaceutical chemists are able to work effectively in a highly interdisciplinary environment and interact with scientists in other disciplines, such as molecular biology, structural biology, pharmacology, physical chemistry, biochemistry, pharmacokinetics, pharmaceutical technology, toxicology or with experts from the field of translational medicine, etc.

The term pharmaceutical (medicinal) chemistry appeared first in the literature shortly after WW II. During the development of molecular pharmacology, it was possible to express the biological activity of any chemical compound by means of quantifiable molecular properties (e.g. IC₅₀, EC₅₀, pA₂). Since then the scientists have begun using the term “drug design” and started to develop new drugs systematically. After the computer technology and programming had been introduced, the possibility to study the relationship between the chemical structure and biological activity of a molecule (structure-activity relationships, SAR) in a quantitative sense (quantitative SAR, QSAR) was significantly increased. Nowadays, these rational methods in designing new drugs are preferred, although the observation of chance or adverse effects still plays significant role in the development of new drugs.