

Drug Composition and Characteristics in Pharmacology

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DESCRIPTION

Any artificial, natural, or endogenous (from within the body) substance that has a biochemical or physiological effect on a cell, tissue, organ, or organism is referred to as a drug, and pharmacology is a branch of medicine, biology, and pharmaceutical sciences concerned with drug or medication action (sometimes the word pharmacon is used as a term to encompass these endogenous and exogenous bioactive species). It is the study of how chemicals interact with living organisms to impact normal or pathological biochemical function. Pharmaceuticals are defined as substances that have medicinal properties.

Drug composition and characteristics, synthesis and drug design, molecular and cellular mechanisms, Organ/systems mechanisms, signal transduction/cellular communication, molecular diagnostics, interactions, chemical biology, treatment, and medical applications, as well as molecular diagnostics, interactions, chemical biology, therapy, and medical applications and antipathogenic capabilities are all covered in this topic. The two main branches of pharmacology are pharmacodynamics and pharmacokinetics. Pharmacodynamics is the study of a drug's impacts on biological systems, while pharmacokinetics is the study of a drug's effects on biological systems.

Pharmacodynamics is concerned with the interactions of chemicals with biological receptors, whereas pharmacokinetics is concerned with the uptake, distribution, metabolism, and excretion (ADME) of chemicals from biological systems.

The terms pharmacology and pharmacy are not synonymous, and the two are commonly used indiscriminately. Pharmacology is a biomedical science that studies the discovery, characterization, and biological effects of chemicals, as well as the elucidation of cellular and organismal function in connection to these chemicals. Pharmacy, on the other hand, is a healthcare profession concerned with the application of pharmacological principles in clinical settings, whether dispensing or providing clinical treatment. The fundamental difference between the two fields is the divisions they make between direct-patient care, pharmacy practise, and the science-oriented research field led by pharmacology.

Pharmacology can also concentrate on certain body systems. The effects of medications on various body systems are investigated by divisions dedicated to bodily systems. Neuropharmacology, which deals with the central and peripheral neurological systems, and immunopharmacology, which deals with the immunological system, is two instances. Other divisions include cardiovascular, renal, and endocrine pharmacology. Psychopharmacology is the study of the use of medications that affect the psyche, mind, and behaviour (e.g. antidepressants) in the treatment of depressive disorders (e.g. depression). It is interested in the behavioural and neurological mechanisms of action of psychoactive drugs and includes approaches and techniques from neuropharmacology, animal behaviour, and behavioural neuroscience. Neuropsychopharmacology is a related subject that investigates the impact of medications on the neurological system and the mind.

Pharmacometabolomics, commonly known as pharmacometabonomics, is a subdivision of metabolomics, which is concerned with the quantification and analysis of the body's metabolites. It refers to the direct measurement of metabolites in a person's body fluids in order to predict or analyse the metabolism of pharmaceutical compounds and gain a better understanding of a drug's pharmacokinetic profile. Pharmacometabolomics is a technique used to measure metabolite levels after a medicine has been administered in order to track how well the drug affects metabolic pathways. Pharmacomicrobiomics investigates how differences in the microbiome affect drug distribution, activity, and toxicity. Pharmacomicrobiomics is the study of pharmacological interactions with the gut microbiota. The application of genomic technology to drug discovery and further characterisation of medications related to an organism's full genome is known as pharmacogenomics. Pharmacogenetics is a branch of pharmacology that explores how genetic variation causes differences in medication responses. Pharmacogenetics is the study of the underlying epigenetic marking patterns that cause differences in a people's reaction to medical care.