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Pharmacology: Study of Pharmaceutical Science Related to Drugs

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Short Communication

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ABSTRACT

A drug may be defined as any artificial, natural, or endogenous (from within the body) molecule that exerts a biochemical or physiological effect on the cell, tissue, organ, or organism, and pharmacology is a branch of medicine, biology, and pharmaceutical sciences concerned with drug or medication. The field covers drug composition and properties, synthesis and drug design, molecular and cell migration mechanisms, organ/systems processes, signal transduction/cellular interaction, molecular testing, interactions, chemical biology, therapy, and medical applications and antipathogenic capabilities, as well as molecular diagnostics, conversations, medicinal chemistry, therapeutic, and therapeutic diagnosis and antipathogenic capabilities. Pharmacodynamics and pharmacokinetics are the two most important branches of pharmacology.

DESCRIPTION

The effects of a drug on biological systems are studied in pharmacodynamics, while the effects of biological systems on a drug are studied in pharmacokinetics. Pharmacodynamics is concerned with the interaction of chemicals with biological receptors, whereas pharmacokinetics is concerned with the absorption, distribution, metabolism, and excretion (Adsorbate) of chemicals from biological systems. It is the study of how chemicals interact with living organisms to impact normal or pathological biochemical function. Pharmaceuticals are defined as chemicals that have medicinal properties [1].

The terms pharmacology and pharmacy are not identical, and the two are commonly used interchangeably. Pharmacology is a biomedical discipline that studies the discovery, characterization, and biological effects of chemicals, as well as the explication of cellular and organismal function in connection to these chemicals. Pharmacy, on the other hand, is a health-care 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 their divisions between direct patient care, pharmacy practice, and pharmacology-driven science-oriented research.

Pharmacology can also focused on certain body systems. The effects of medications on various body systems are researched by divisions dedicated to bodily systems. Neuropharmacology, which deals with the peripheral neurological systems, and immunopharmacology, which deals with the immunological system, are two examples. Cardiovascular, renal, and endocrine pharmacology are some of the other divisions. The study of the use of pharmaceuticals that impact the psyche, mind, and behaviour (e.g. antidepressants) in the treatment of mental problems is known as psychopharmacology (e.g. depression). It is interested in the behavioural and neurological

processes of action of psychoactive drugs, and includes approaches and techniques from neuropharmacology, animal science, and personality psychology [2].

Neuropsychopharmacology is the study of pharmacological interactions with the gut micro biota. Pharmacogenomics is the use of genomic technology to find and characterise medications that are related to the entire genome of an organism. Pharmacogenetics is a branch of pharmacology that explores how genetic variation causes differences in medication responses. Pharmacoepigenetics is the study of the fundamental epigenetic marking patterns that cause differences in a human's reaction to medical therapy that studies the impact of medications on the neurological system and the mind [3].

Pharmacometabolomics, sometimes known as pharmacometabonomics, is a branch 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 evaluate the metabolism of pharmaceutical chemicals and gain a better understanding of a drug's pharmacokinetic profile. Pharmacometabolomics is a technique for measuring metabolite levels after a medicine has been administered in order to track how the drug affects metabolic pathways. A Pharmacomicrobiomics study shows how differences in the micro biome affect pharmaceutical distribution, activity, and toxicity [4].

Clinical sciences can gain from pharmacology. Clinical pharmacology is the study of medications in humans using pharmacological tools and principles. Posology is the study of how medications are dosed.

Toxicology and pharmacology are inextricably linked. The scientific disciplines of pharmacology and toxicology are both concerned with the properties and actions of chemicals. Toxicology, on the other hand, is the study of chemical adverse effects and risk assessment, whereas pharmacology focuses on the therapeutic effects of chemicals, which are usually medications or substances that potentially become drugs [5].

In medicine and pharmacy, pharmacological knowledge is utilized to prescribe medication. The study of developing new medications is known as drug discovery. It covers the subfields of medication development and design. Drug discovery begins with drug design, which is the process of coming up with innovative ways to find medications. In its most basic form, this entails the creation of molecules that are shape and charge complementary to a specific bio molecular target. Medicine development is the process of bringing a drug to market after a lead chemical has been found through drug discovery. Drug discovery is linked to pharmacoeconomics, which is a sub-discipline of health economics concerned with drug value.

Pharmacoeconomics assesses the costs and benefits of medications in order to determine the best allocation of healthcare resources.

CONCLUSION

Medication development is a critical topic in medical, but it also has significant economic and political repercussions. Many nations control the manufacture, sale, and administration of medication to protect consumers and prevent abuse. The Food and Drug Administration is the major regulatory authority for pharmaceuticals in the United States, enforcing standards specified by the United States Pharmacopoeia. The European Medicines Agency (EMA) is the principal regulatory body for pharmaceuticals in the European Union, and they enforce standards defined by the Pharmacopoeia.

For drug metabolism and toxicological research, the metabolic stability and reactivity of a library of prospective pharmacological molecules must be examined. Many methods for quantitative drug metabolism predictions have been developed. The structural activity connection describes how a little change in the chemical structure of a pharmaceutical substance affects its medical characteristics, depending on how the change interacts with the structure of the substrate or receptor site on which it works (SAR). Chemists will produce numerous similar compounds called analogues to try to maximize the desired medical effect once a useful activity has been identified.

REFERENCES

1. Burgess AW, et al. Applying established guidelines to team-based learning programs in medical schools: A systematic review. Acad Med. 2014; 89:678-688.
2. Parmelee DX, et al. Twelve tips for doing effective Team-Based Learning (TBL). Med Teach. 2010;32:118-122.
3. Levine RE, et al. The Facilitator Instrument for Team-based learning (FIT). Teach Learn Med. 2020;32:82-90.
4. Koles PG, et al. The impact of team-based learning on medical students' academic performance. Acad Med. 2010;85:1739-1745.
5. Zgheib NK, et al. The long-term impact of team-based learning on medical students' team performance scores and on their peer evaluation scores. Med Teach. 2016;38:1017-1024.