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HISTORY OF PHARMACOLOGY

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Abstract:
Pharmacology, the science of drugs and their effects on living organisms, has evolved significantly throughout human history. Its origins can be traced back to ancient civilizations such as Ancient Egypt, Ancient China, and Ancient India, where natural substances like plants and minerals were used for healing purposes. In the classical period, scholars like Hippocrates and Galen contributed to the systematic study of medicine. During the Middle Ages, Avicenna played a crucial role in advancing pharmacological knowledge through his influential works. His works "The Laws of Tib", "The Book of Three Healings", "The Book of Al-Hearts" contain medicinal substances used in medicine of that time. The first book, "The Laws of Chiba," presents about 900 simple medicinal substances, of which 612 are plants The Renaissance and early modern period marked a shift toward experimental science, highlighted by Paracelsus, who emphasized the importance of dosage. In the 19th and 20th centuries, pharmacology became an independent scientific discipline, with pioneers such as Oswald Schmiedeberg laying its foundations. Today, pharmacology continues to advance with innovations in molecular biology, biotechnology, and drug development, playing a vital role in modern medicine.

Keywords: Pharmacology, history of pharmacology, natural remedies, clinical pharmacology, Avicenna.

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Introduction

Pharmacology is the scientific study of drugs and their effects on living organisms. It is a fundamental discipline in medicine that combines knowledge from biology, chemistry, and physiology to understand how substances interact with the body. The history of pharmacology reflects the evolution of human attempts to treat diseases and improve health beginning with the use of natural remedies in ancient civilizations such as Ancient Egypt, Ancient China, and Ancient India.The word pharmacology is derived from the Greek (pharmacon - medicine, logos - doctrine, science), meaning the science of drugs. Pharmacology differs radically from other disciplines in the field of pharmacy dealing with drugs (pharmaceutical chemistry, pharmacognosy, drug technology, etc.) in its functions, goals and activities. Pharmacology is a medical-biological science that deals with and solves issues other than pharmacy. According to modern concepts, pharmacology solves the following tasks:

1. To study the effects of various chemicals, including drugs, on the animal and human body and the resulting changes in body organs and systems;
2. Analyze the effects of substances and the changes that occur in the body determines the origin or mechanism of action of drugs by science and practice;
3. To study the legal links between the chemical structure and biological effects of drugs, to find new drugs on the basis of other directions, purposes and their application in medical practice;
4. Resolves the dosage, administration, side effects and other issues of drugs approved for use in practice.

The history of pharmacology is closely linked to the development of human civilization. In ancient times, people relied mainly on natural sources such as plants, minerals, and animal products to treat diseases. Early medical knowledge was based on observation and experience rather than scientific experiments. Civilizations such as Ancient Egypt, Ancient China, and Ancient India made significant contributions by recording herbal remedies and traditional healing methods.

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In the classical period, pharmacology began to develop more systematically. Scholars such as Hippocrates introduced the idea that diseases have natural causes, while Galen created early systems for preparing and classifying medicines. These contributions laid the foundation for future medical science.

During the Middle Ages, important progress was made in the Islamic world. Avicenna greatly influenced medical and pharmacological knowledge through his famous work "The Canon of Medicine," which described many drugs and their effects in detail. His ideas were later used in both Eastern and Western medicine for centuries.

The Renaissance period marked a shift from traditional beliefs to experimental science. Scientists began to study drugs more systematically, and Paracelsus emphasized that the effect of a drug depends on its dosage, introducing the principle "the dose makes the poison." This idea became a key concept in modern pharmacology.

Abu Ali ibn Sina is one of the scholars who made a great contribution to the development of pharmacology as a science and to medicine in general.

Abu Ali ibn Sina (980–1037) was born in the village of Afshana in the Bukhara region. Despite his young age, he studied philosophy with Abdullo Notili and medicine with Nukhal Qumri, and by the age of 16–17 he had already become an experienced physician and a well-known scholar.

More than 280 works of his are known, 40 of which are dedicated to medical science. The most important of his medical works is The Canon of Medicine. It consists of five independent books, and Books 2 and 5 contain information on pharmacology.

Book 2 describes in detail the properties of more than 700 different medicines, as well as methods of their preparation and use. Book 5 explains the preparation methods of complex dosage forms, their effects on the human body, and ways of administration.

Ibn Sina's Canon of Medicine played a very important role in the formation and development of pharmacology. It served as a medical reference for physicians in European countries for six centuries. The study of medicinal plants mentioned in his works is still ongoing today.

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Natural remedies: Natural remedies are methods of treating illnesses using substances that come from nature, such as medicinal plants, herbs, roots, leaves, flowers, minerals, and sometimes animal-derived products. These remedies have been used for thousands of years, long before the development of modern pharmaceutical drugs.

In ancient medicine, people relied heavily on natural remedies because they did not have access to laboratory-made medicines. For example, herbal teas were used to reduce fever, plant extracts were applied to wounds, and mineral mixtures were used for digestive problems. Many traditional medical systems, such as Ayurveda and traditional Chinese medicine, are based almost entirely on natural remedies.

Clinical pharmacology: Clinical pharmacology is a branch of pharmacology that focuses on the study of drugs in humans. It examines how medicines work in the body, their therapeutic effects, side effects, and safe usage in patients. The main goal of clinical pharmacology is to ensure that drugs are used effectively and safely in medical practice.

This field connects laboratory research with real-life medical treatment. Clinical pharmacologists study how different factors such as age, weight, genetics, and health conditions affect the response to drugs. They also help determine the correct dosage for patients to achieve maximum benefit with minimum risk.

Clinical pharmacology plays an important role in clinical trials, where new medicines are tested on humans before being approved for public use. It also contributes to the development of treatment guidelines, drug safety monitoring, and personalized medicine.

Conclusion:

Pharmacology has developed from simple ancient healing practices into a highly advanced scientific discipline that is essential for modern medicine. In early history, people relied on natural remedies and traditional knowledge to treat diseases, but over time, scientific research transformed pharmacology into an evidence-based field. Contributions from scholars such as Hippocrates, Galen, Avicenna, Paracelsus, and Oswald Schmiedeberg played a key role in shaping

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its development. Today, pharmacology continues to grow rapidly with advances in molecular biology, biotechnology, and clinical research. It ensures the safe and effective use of medicines, supports drug discovery, and improves healthcare outcomes worldwide. The future of pharmacology is closely connected to personalized medicine and innovative drug development, making it one of the most important fields in modern science.

References:

1. Goodman & Gilman. The Pharmacological Basis of Therapeutics. McGraw-Hill Education.
2. Katzung, B. G. Basic and Clinical Pharmacology. McGraw-Hill.
3. Rang, H. P., Dale, M. M. Rang & Dale's Pharmacology. Elsevier.
4. Brunton, L. L. Goodman & Gilman's Manual of Pharmacology and Therapeutics.
5. Ritter, J. M., Flower, R. J., Henderson, G. Rang and Dale's Pharmacology.
6. Hardman, J. G., Limbird, L. E. Goodman & Gilman's Pharmacology.
7. World Health Organization (WHO). Medicines and Health Products Reports.
8. Encyclopaedia Britannica. History of Pharmacology.
9. European Medicines Agency (EMA). Drug Development and Safety Guidelines.
10. U.S. Food and Drug Administration (FDA). Clinical Pharmacology Resources.
11. Katzung, B. G. Introduction to Clinical Pharmacology.
12. Harvey, R. A., Champe, P. C. Lippincott's Illustrated Reviews: Pharmacology.