

Study Notes on Medicinal Chemistry



Medicinal Chemistry

Introduction:

Medicinal chemistry deals with the synthesis of pharmaceutical drugs. It helps to evaluate the properties of existing drugs. Compounds that are generally used as drugs are often organic compounds which can be further classified into broad classes of small organic molecules and biologics. Along with this, inorganic and organometallic compounds are also used as drugs. Generally, medicinal chemistry focuses on small organic molecules for the development of new therapeutic agents. It has been observed that in ancient civilizations, plants, animal parts and minerals were used as medicines.

Discovery of drug:

Natural products have been considered major sources of lead compounds in the discovery of new drugs to treat infectious diseases, neurological diseases, immunological and cardiovascular diseases. According to the history, drugs were discovered by identifying the active ingredient from traditional remedies.

A new approach basically deals with how disease and infection controlled at the molecular and physiological level. The discovery of drug involves the identification of sample, its synthesis, characterization, screening.

Types of pharmaceutical drugs:

- Antipyretics
- Analgesics
- Antimalarial
- Antibiotics
- Antiseptics

Antipyretics: This drug helps to reduce fever. "Anti" means against and "pyretic" means feverish. The most common antipyretics are aspirin and ibuprofen.

Analgesics: It is used as a painkiller to achieve analgesia. It helps to relieve pain without blocking the conduction of nerve impulses. Examples: Opioids, Tylenol.

Antimalarial: This drug is used to treat malaria infection. These are used to treat malaria in three categories:

Those with confirmed infection.

People who visited malaria endemic regions.

In broader group of individuals.

Examples: Quinine and chloroquine.

Antibiotics: These are drugs that help to stop infection caused by bacteria. "Antibiotic" means against life. It can be said that any drug which kills germs in the body is an antibiotic. This drug can treat various infections like:

- Ear and sinus infection
- Skin infection
- Dental infection
- Kidney infection
- Whooping cough

Examples: Penicillin, tetracyclines.

Antiseptics: It helps to stop the growth of micro-organisms and as a result, helps in prevention of infection. There are many chemical agents that can be used both as a disinfectant and antiseptics. These are used for cleaning wounds and minor cuts. Examples: Hexachlorophene, Isopropyl alcohol.

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