

DEFINITION OF PHARMACOLOGY;
DRUGS; CLASSIFICATION AND
NAMING

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PHARMACOLOGY

Pharmacodynamics

- This deals with the action of drugs on living tissues , namely the type or quality of action, its quantitative aspect , as well as the mechanism of action .
- Adverse effects and safety of drugs on body tissues or systems are also included
- The main organ or tissue on which the drug acts , and for which it is used therapeutically, is called the target organ or tissue of drug action

PHARMACOLOGY :
It is the science that deals with interaction of drugs with living systems.

ADME

Pharmacokinetics

* ننتبه للأكلوات *

- This includes administration and absorption of drugs, their distribution inside body, and their elimination by metabolism or excretion

Drugs : These are chemical substances that shows biological activity (treatment or sometimes diagnosis).

OTHER TOPICS LINKED WITH PHARMACOLOGY:

pharmacotherapeutics

It is concerned with the proper use of drugs in treatment of disease in man

Clinical pharmacology

This includes: A- drug pharmacology
B- Clinical evaluation of drugs in treating disease in man , this is done by :
a- clinical trials. b- surveillance studies

Chemotherapy

It is used to imply the use of drugs to inhibit growth or kill either :
a. Microbes (i.e. anti-microbial agents)
b. Cancer cells (Cyto-toxic anti-cancer drugs)

Pharmacy

It is the science and profession that is concerned with the preparation, storage, dispensing, and proper utilization of drug products

Toxicology

It is the science that deals with the harmful effects of chemicals (including drugs) .

Drug sources

Synthetic sources

common at present
- these drugs are prepared by the labs or factories of the pharmaceutical industry. Nowadays, computers greatly assist in discovery of new drugs

Semi-synthetic drugs

these are obtained from natural sources, but are modified by pharmaceutical industry in order to improve their physical or chemical properties or pharmacological activity.

Natural sources

NOTE

Alkaloids are small organic molecules containing nitrogen .
e.g. atropine, morphine, caffeine, theophylline, quinine

Examples of drugs from plants are : alkaloids, steroids, some vitamins, tannins, volatile oils, gums

Non-Organic Sources

- metals : Platinum, Zinc
- non-metals : Sodium chloride , magnesium sulfate

Organic

Plants

Any part of the plant (stem, leaves, flowers, seeds, roots) may be used to extract active ingredients for drugs; same plant may contain more than one active principle. All of this is dealt with in **PHARMACOGNOSY**

Animals

these may include either proteins , oils, enzymes from exocrine glands, hormones, vaccines and anti-sera, and some vitamins

Microbes

like fungi, and sometimes bacteria which are sources of antibiotics

High yield

Rational drug design:

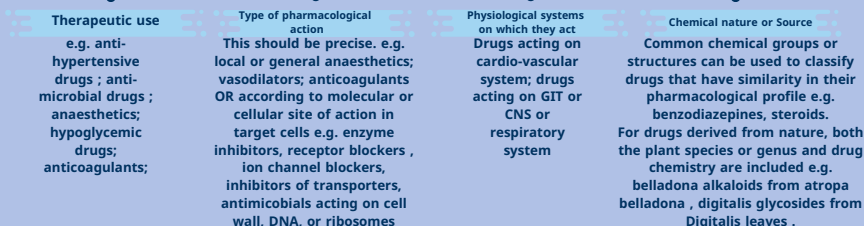
This implies the ability to predict the chemical structure of drug molecule on basis of 3-dimensional structure of its receptor, employing at present suitable computer programs. Only few drugs in clinical use at present were developed in this rational way.

Most drugs were in the past developed through random testing of chemicals, or modified molecules of known drugs that are known to have some pharmacological effect.

However, as more becomes known about detailed structure of receptors, rational drug design with the aid of computers would become more feasible

DRUG CLASSIFICATION

There is no fixed rule; classification is usually done according to their:



Chemical name



- Because of its complexity, the chemical structure is not usually used to name drugs.
- However, sometimes a shorthand name based on a simple chemical structure is employed e.g. acetylsalicylic acid (aspirin), acetaminophen (paracetamol)

DRUG NAMES

Generic (non-proprietary) name

This is a unique name that is given by official pharmaceutical bodies; It is present in pharmacopeas (BP or USP).

It is the approved scientific name, and must be used in scientific publications as well as in prescriptions esp. in hospitals.

Its use makes it easier for pharmacist to choose from many available brands of same drug.

Only few drugs show more than one generic name: Noradrenaline & adrenaline in UK but are named Nor-epinephrine and epinephrine, respectively, in USA & WHO; salbutamol in UK while albuterol in USA

Generic names of drugs in a classified group may have common endings e.g. -olol for beta-adrenoceptor blockers; -caine for local anaesthetic drugs. These endings may give a hint about the drug pharmacotherapeutic action

Commercial or trade or brand or proprietary name



This name is given by the specific pharmaceutical company synthesizing and marketing the drug.

Examples: Diclofenac Na (Voltaren, Inflanban, Diclogesic)

A single drug can have many brand names (this may be confusing) due to its manufacture and marketing by many pharmaceutical companies

Oral dose forms

It includes the following: A. Pill: Tablets and capsules B. Liquid: Syrup or suspension C. Powder D. Herbal plants: seeds, leaves etc... E. Pastes

Inhalational

A. Aerosol B. Inhaler C. Vaporizer (Solutions)

Parenteral

A. Intradermal (ID) B. Intramuscular (IM) C. Intraperitoneal D. Intravenous (IV) E. Subcutaneous (SC) F. Intrathecal (IT)

Topical

A. Cream, gel, ointment, lotion B. Eye drops (ophthalmic) C. Ear drops (otic) D. Skin patch (transdermal)

Suppository

A. Vaginal B. Rectal

DOSE FORMS OF DRUGS

It is the physical form of drug product that is suitable for administration to man. It contains specified dose or amount of drug in a specified quantity or unit of the formulation.

DOSE FORMS OF DRUGS

High yield

IT'S DONE BY :
BOSHRA ALQUDAH