

Pharmacology: is the study of drugs and the action of drugs on living organisms. It comes from the Greek words pharmakon, which means “drugs,” and logos, which means “science.”

Toxicology: is the branch of pharmacology that deals with the undesirable effects of chemicals on living systems.

Drug: is a natural product, chemical substance, or pharmaceutical preparation intended for administration to a human or animal to diagnose, prevent or treat a disease.

Drugs may be hormones, neurotransmitters, or peptides produced by the body; conversely a **xenobiotic** is a drug produced outside the body, either synthetic or natural.

Poison: is a drug that can kill.

Toxin: is a drug that can kill and is produced by a living organism (poisons of biologic origin, i.e., synthesized by plants or animals).

Pharmacokinetics: what the body does to the drug. This involves the processes of absorption, distribution, metabolism/biotransformation, and excretion. (ADME)

Pharmacodynamics: what the drug does to the body (mechanism of action, pharmacological actions and adverse effects).

Receptors: Receptors are macromolecules (proteins) present either on the cell surface, cytoplasm or in the nucleus with which the drug binds and interacts to produce cellular changes.

Drug (D) + Receptor (R) \leftrightarrow Drug–receptor complex \rightarrow Response

Formation of the drug-receptor complex is usually reversible and the proportion of the receptors occupied (and thus the response) is directly related to the concentration of the drug.

Ligands: molecules capable of ligating themselves to the receptor protein leading to a series of biochemical reactions inside the cell (signal transduction). Ligands

are either exogenous compounds like drugs, or endogenous like neurotransmitters, hormones and growth factors.

Why A Dentist needs to Study Pharmacology?

- When you take your patient's history before performing dental procedures or prescribing drugs in your dental practice, you will need to ask about what medications they are using. You will need to understand whether any of the medications that your patient is using could have effects on their dental health (for example, causing dry mouth) or could impact on the dental procedures that you perform (for example, anticoagulant effects causing an increased risk of severe bleeding).
- If you are going to prescribe drugs for your patient, you will need to evaluate the risk of drug-drug interactions with the other medications that the patient is already taking.
- There are certain drugs that you will be more likely to prescribe in your dental practice. It is imperative that you are familiar with the mechanisms of action and potential adverse effects and interactions of these drugs.