

01: Introduction to Pharmacology

History Of Pharmacology	Types Of Drug Interactions
<p>Materia medica: the science of drug preparation and medical use of drugs began to develop around the 17th century. Pharmacological studies developed from this.</p> <p>Magendie and Bernard: Laid the foundations for animal physiology and pharmacology in the 18th and 19th centuries.</p> <p>Pharmacogenomics: the study of how an individual's genetic make up affects his or her response to a drug.</p>	<p>Drug interactions can be divided into:</p> <ul style="list-style-type: none"> • Pharmacodynamic: the actions of the drug on the body <ul style="list-style-type: none"> • Agonist • Antagonist • Pharmacokinetic: the actions of the body on the drug <p>Agonists: initiate changes in cell function, producing effects of various types. Their potency depends upon their:</p>
<p>Introduction To Pharmacology Terminology</p> <p>Pharmacology: study of the way that substances interact with the systems of the body to activate or inhibit its processes.</p> <p>Toxicology: the term used to describe the undesirable effects of drugs.</p> <p>Drug: any substance that brings about a change in biological function through its chemical actions.</p> <p>Prodrug: a substance that is administered in its inactive form, but once absorbed, is converted into an active drug molecule.</p> <p>Xenobiotic: a drug molecule that is a chemical not synthesized by the body.</p> <p>Poison: drugs that cause harmful and undesirable effects.</p> <p>Toxins: poisons that are of biological origin.</p>	<p>• Affinity: the tendency to bind to receptors</p> <p>• Efficacy: the ability to initiate changes once bound</p> <p>Full Agonists:</p> <ul style="list-style-type: none"> • Produce maximal effects • Have high efficacy <p>Partial Agonist:</p> <ul style="list-style-type: none"> • Produce a lower response at full receptor occupancy than full agonists • Have intermediate efficacy <p>Antagonists: prevent agonists from activating receptors</p> <p>Reversible competitive antagonism:</p> <ul style="list-style-type: none"> • Progressively inhibit the agonist response; at maximal concentrations, they completely prevent the response. <p>Irreversible competitive antagonism:</p> <p>Non-competitive antagonism:</p> <ul style="list-style-type: none"> • Block the chain of events that leads to the production of a response by the agonist. <p>Non-Receptor Antagonists:</p> <ul style="list-style-type: none"> • Chemical antagonism: interaction of two substances in solution so that the effect of the active drug is lost • Pharmacokinetic antagonism: one drug affecting the absorption, metabolism or excretion of another drug • Physiological antagonism: two agents producing opposing physiological effects
<p>Physical Nature Of Drugs</p> <p>There are four characteristics of drugs that affect how they interact with the body.</p> <ul style="list-style-type: none"> • Drug size • Drug reactivity and drug-receptor bonds • Drug shape • Degree of ionization <p>Drug Size: affects binding to receptors as well as the permeability through membranes.</p> <p>Drug Reactivity and Drug-Receptor Bonds:</p> <ul style="list-style-type: none"> • Drugs may bind with receptor molecules through covalent, electrostatic and hydrophobic bonds • Covalent bonds: tend to be stronger and hence result in irreversible interactions • Hydrophobic bonds: on the other hand are relatively weak <p>Drug Shape: shape of the drug molecule is important factor in determining how well it will fit into its receptor</p> <p>Ionization State of a Drug: Drug molecules exist in ionized and unionized forms</p> <p>Henderson-Hasselbalch Equation: Calculates the percentage of ionized & unionized molecules in solution.</p>	<p>Pharmacodynamic effect: the duration of drug action depends upon how long the drug occupies the receptor.</p> <p>The Dose-Response Relationship: for a given dose of a drug, there will be a given biological response that is directly proportional to the given dose.</p> 

How to Use This Cheat Sheet: These are the keys related this topic. Try to read through it carefully twice then recite it out on a blank sheet of paper.