

Pharmacology Online: The Fundamental Principles

Course Introduction

Principles of Pharmacodynamics

Overview
The Drug Receptor
Drug Receptor Interaction
Receptor Signaling Mechanisms and Drug Action
Quantifying Drug-Receptor Interactions
Variations in Drug-Responsiveness
Antagonist Drugs

Pharmacokinetics

Overview
Life Cycle of a Prescription Drug
Overview of Pharmacokinetics and Pharmacodynamics
Absorption: Definition and Influencing Factors
Distribution
Biotransformation
Chapter Summary

Basic Principles of Autonomic Pharmacology

Overview
The Nervous System
Two Anatomic Entities
ANS: Parasympathetic Schema
ANS: Sympathetic Schema
ANS: Sympathetic and Parasympathetic
Opposing Actions on Same Target Cells: Heart
Opposing Actions on Different Target Cells: Eye-Pupil Size
No Opposing Actions: Eye - Accommodation
Same Actions on Target Cells
Effects of Autonomic System Stimulation
Drug Effects on Autonomic Ganglion

Drug Effects on the Muscarinic Nerve Terminal
Acetylcholine: Biosynthesis and Metabolism
Effects on Norepinephrine-Containing Nerve Terminal (alpha)
Norepinephrine and Epinephrine Biosynthesis
Norepinephrine and Epinephrine Metabolism
Glaucoma Treatment with Autonomic Drugs
Effects of Drugs on the Eye
The Cardiovascular System
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Basic Principles of Cardiovascular Pharmacology

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The Heart: Coronary Circulation
The Heart: Electrical Conduction
Cardiac Output
Drugs Acting on the Heart
Cardiac Muscle Cells
Cardiac Action Potential
Electrical Conduction By Excitable Cells
Anti-Arrhythmic Drugs
Myocardial Contractility
The Circulation
Overall Response of the Cardiovascular System to Drugs
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Central Nervous System

Overview

CNS Complexity and Drug Action:

Anatomical Complexity

CNS Neurotransmitters

Glutamate Receptors

Epilepsy

Alzheimer's Disease: Incidence

Analgesia: Mechanisms

Anxiolytics and Hypnotics

Depression: Typical Symptoms

CNS Dopamine Pathways

Schizophrenia: Typical Symptoms

Parkinson's Disease: Incidence

Drug Abuse

Chapter Summary

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