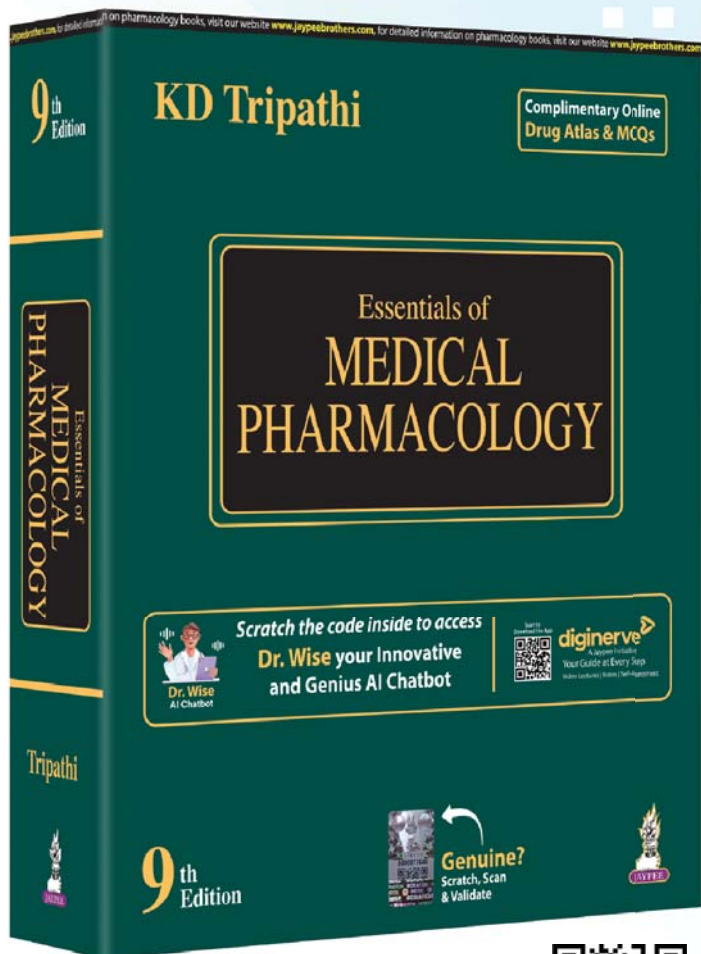




Essentials of MEDICAL PHARMACOLOGY

KD Tripathi


9th
Edition



Complimentary Online
Drug Atlas & MCQs

Molecular class/ Name of Drug	Mechanism of action	Dosage	Indications	Side effects	Brand names	Important Note
Antisecretory-Antispasmodics						
Quaternary compounds						
Oxyphenonium	competitive antagonists of inverse agonists at constitutively active sites	5-10 mg (children 3-5 mg) oral	Peptic ulcer, gastrointestinal hypermotility and colics	<ul style="list-style-type: none"> Dry mouth, difficulty in swallowing and talking. Dry, flushed and hot skin (especially over face and neck), fever, difficulty in micturition, decreased bowel sounds. A scarlet rash may appear. 	ANTRENYL 5, 10 mg tab	
Cidinium	competitive antagonists or inverse agonists at constitutively active sites	2-5 mg oral	Nervous dyspepsia, gastritis, irritable bowel syndrome (IBS), and colic	<ul style="list-style-type: none"> Dilated pupil, photophobia, blurring of near vision, palpitation. Excitement, psychotic behaviour, ataxia, delirium, dreadful visual hallucinations. 	In SPASRIL, ARWIN 2.5 mg tab with chlordiazepoxide 5 mg, NORMAXIN, CIBIS 2.5 mg with dicyclotime 10 mg and chlordiazepoxide 5 mg	used in combination with benzodiazepines for nervous dyspepsia, gastritis, irritable bowel syndrome (IBS), and colic
Cimetropium bromide	competitive antagonists or inverse agonists at constitutively active sites	50 mg 2-3 times a day	IBS	<ul style="list-style-type: none"> Hypotension, weak and rapid pulse, cardiovascular collapse with respiratory depression. 	IBSCIM 50 mg tab	

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What is new in this edition?

- Thoroughly updated chapters, incorporating new therapeutic approaches and recently marked drugs, such as long acting GLP-1 receptor agonists (Semaglutide) and SGLT-2 inhibitors (Dapagliflozin) for diabetes, neprilysin inhibitor (sacubitril) and SGLT-2 inhibitors for CHF, Orexin antagonists (Suvorexant) as hypnotic, Rho-Kinase inhibitor (Netarsudil) for glaucoma, adrenergic beta-3 agonist (Mirabegron) for overactive bladder, PCSK9 inhibitor (Inclisiran) as long acting hypocholesterolemic, CGRP receptor antagonists (Rimegepant) for migraine, PDE-4 inhibitor (Roflumilast) for COPD, and many others.
- Latest therapeutic and prophylactic regimens recommended under the National Health Programs for MDR/XDR-tuberculosis, leprosy, HIV, malaria, kala-azar, filariasis, viral hepatitis, etc.
- Drugs and vaccines for COVID-19 and the latest AIIMS/ICMR guidelines for management of COVID.
- Pharmacovigilance program of India.
- Evidence based medicine with authenticated reference to latest therapeutic guidelines from WHO; ACC/AHA; ISH; NICE; SIGN; Cochrane reviews, meta analysis and landmark clinical trials.
- The WHO classification of antibiotics into "AWaRe" (Access, Watch, Reserve) groups.
- A Separate chapter on alcohols, drug dependence and drugs of abuse.
- A new chapter on environmental toxicology, poisonings; snake/dog bites and scorpion/bee stings.
- Chapterwise listing of abbreviations for user convenience.
- Several new figures, flow charts, tables and highlight boxes.
- Full coverage of competency-based pharmacology curriculum of NMC for graduate medical students.



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Competency covered

PH 1.37 : Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used as *sex hormones (androgens)* and their analogues.

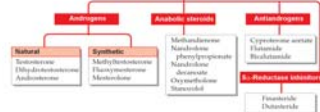
PH 1.40 : Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in *erectile dysfunction*.

Competency covered

PH 1.37 : Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used as sex hormones (androgens) and their analogues.
PH 1.40 : Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in erectile dysfunction.

Drugs that have androgenic action or that modify androgen function can be grouped as follows:

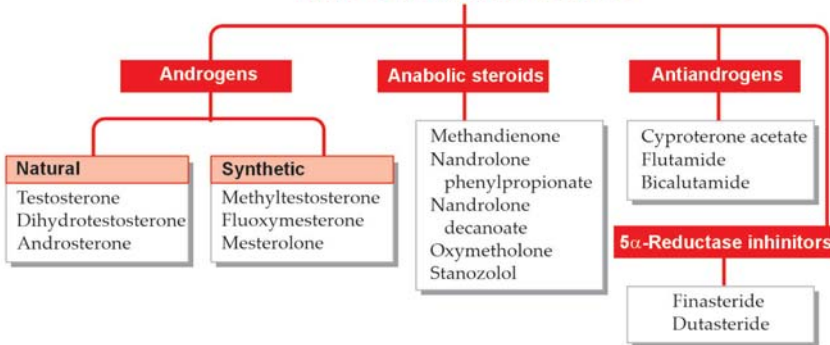
ANDROGENS AND RELATED DRUGS



Competency covered are given at the beginning of each chapter.

Drugs that have androgenic action or that modify androgen function can be grouped as follows:

ANDROGENS AND RELATED DRUGS



Feature flowcharts for better understanding.

Abbreviations

- ACh : Acetylcholine
- BSA : Body surface area
- BZDs : Benzodiazepines
- CB1 : Cannabinoid 1 receptor
- CGRP : Calcitonin gene related peptide
- CH : Cholesterol
- CINV : Chemotherapy induced nausea and vomiting
- CPZ : Chlorpromazine
- CTZ : Chemoreceptor trigger zone
- DA : Dopamine
- ENS : Enteric nervous system
- GERD : Gastroesophageal reflux disease
- g.i.t. : Gastrointestinal tract
- LES : Lower esophageal sphincter
- NANC : Nonadrenergic noncholinergic
- NK₁ : Neurokinin₁ receptor
- NTS : Nucleus tractus solitarius
- PAN : Primary afferent neurone
- PBC : Primary biliary cholangitis
- PONV : Postoperative nausea and vomiting
- THC : Tetrahydrocannabinol
- VC : Vomiting centre

Abbreviations are provided to simplify complex medical terms for clarity.

ANTIEMETIC, PROKINETIC AND BILIARY DRUGS

Abbreviations

- ACh : Acetylcholine
- BSA : Body surface area
- BZDs : Benzodiazepines
- CB1 : Cannabinoid 1 receptor
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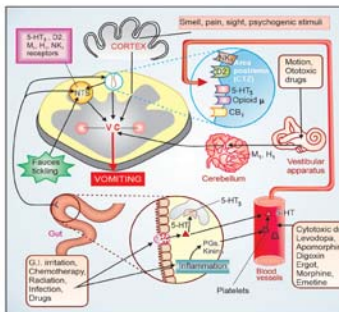
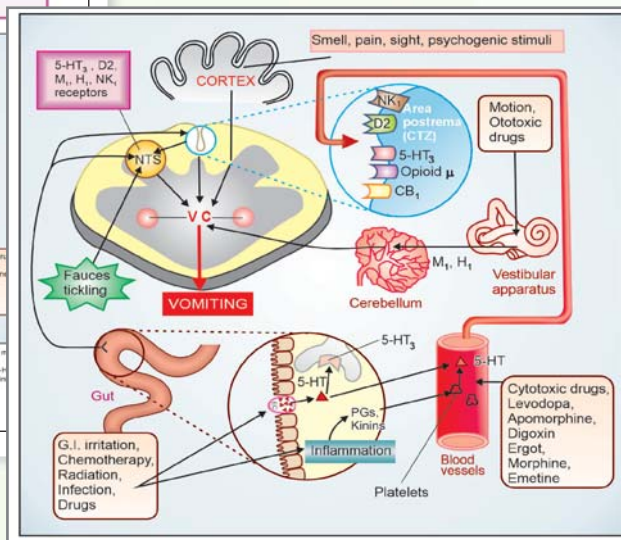


Fig. 47.1: Major central and visceral structures involved in emesis and the neurohumoral receptors in emetic responses. NTS-Nucleus tractus solitarius; VC-Vomiting centre; CTZ-Chemoreceptor trigger zone; 5-HT₃-5-HT₃ receptor; H₁-Histamine H₁ receptor; D₂-Dopamine D₂ receptor; M₁-Muscarinic M₁ receptor; NK₁-Neurokinin CB₁-Cannabinoid 1 receptor



Diagrams are included to enhance visual learning.

Categories of exposure for assessment of risk of HIV transmission*

Mild exposure

Exposure to mucous membranes / eyes / non-intact skin (e.g. superficial erosion) with small volumes, OR subcutaneous injections following small bore needles.

Moderate exposure

Exposure to mucous membranes with large volumes OR percutaneous superficial exposure with solid needle, e.g. a superficial cut OR needle-stick injury penetrating gloves

Severe exposure

Percutaneous exposure with large volume, e.g. an accident with high calibre needle (> 18 G) contaminated with visible blood.
 • a deep wound (haemorrhagic wound), transmission of a significant volume of blood,
 • an accident with material that has been previously used intravenously or intra-arterially

Important Topics are highlighted in the blue boxes.

Key information is highlighted using Tables.

Categories of exposure for assessment of risk of HIV transmission*

Mild exposure

Exposure to mucous membranes / eyes / non-intact skin (e.g. superficial erosion) with small volumes, OR subcutaneous injections following small bore needles.

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Exposure to mucous membranes with large volumes OR percutaneous superficial exposure with solid needle, e.g. a superficial cut OR needle-stick injury penetrating gloves

Severe exposure

Percutaneous exposure with large volume, e.g. an accident with high calibre needle (> 18 G) contaminated with visible blood.

Key information

The current NACO (2021) recommended regimens are presented in Table 59.5. The preferred and alternative regimens consist of 2 NRTIs along with one INSTI or boosted PI, or NNRTI. If the source person has already received one or more ART regimens, he / she may be harboring drug resistant virus. In such cases, the PEP regimen may be individualised after checking the drugs already received by the source.

Table 59.5 Post-exposure prophylaxis (PEP) regimens for HIV*

Exposed person

Preferred PEP regimens

Alternative PEP regimens

Adults and adolescents (> 10 years and > 30 kg body weight)

Tenofovir 300 mg + Lamivudine 300 mg (one FDC tab. daily)

Zidovudine + Lamivudine (dosage as per weight band) + Dolutegravir 50 mg (one tab. daily)

Children (6-10 years and weight > 20 kg)

Zidovudine + Lamivudine (dosage as per weight band) + Dolutegravir 50 mg (one tab. daily)

Children (< 6 years and weight < 20 kg)

Zidovudine + Lamivudine + Lopinavir/ritonavir (dosage as per weight band)

Duration of regimens: 4 weeks

*Recommended by NACO guidelines (2021)

*First dose of PEP should be administered at the earliest (within 2 hours), and not later than 72 hours of exposure.

Table 59.5 Post-exposure prophylaxis (PEP) regimens for HIV*

Exposed person	Preferred PEP regimen	Alternative PEP regimens
Adults and adolescents (> 10 years and > 30 kg body weight)	Tenofovir 300 mg + Lamivudine 300 mg + Dolutegravir 50 mg (one FDC tab. daily)	<ul style="list-style-type: none"> Tenofovir 300 mg + Lamivudine 300 mg (one FDC tab daily) + Lopinavir 200 mg/ritonavir 50 mg (2 tabs. twice daily) OR Tenofovir 300 mg + Lamivudine 300 mg + Efavirenz 600 mg (one FDC tab daily)
Children (6-10 years and weight > 20 kg)	Zidovudine + Lamivudine (dosage as per weight band) + Dolutegravir 50 mg (one tab. daily)	If Hb < 9 g / dL Abacavir + Lamivudine (dosage as per weight band) + Dolutegravir 50 mg (one tab daily)
Children (< 6 years and weight < 20 kg)	Zidovudine + Lamivudine + Lopinavir/ritonavir (dosage as per weight band)	If Hb < 9 g / dL Abacavir + Lamivudine + Lopinavir / ritonavir (dosage as per weight band)

Duration of regimens: 4 weeks

PROBLEM DIRECTED STUDY

32.1 A 25-year-old male was diagnosed as a case of schizophrenia on the basis of disturbed thinking process, inappropriate talking and behaviour, restlessness, bursts of temper, anxiety, poor self-care, disturbed sleep, delusional beliefs and occasional auditory hallucinations. He was treated with tab. haloperidol 5 mg once daily at bed time. The dose was increased to 7.5 mg daily in the 2nd week and to 10 mg daily in the 3rd week. His symptoms gradually subsided and he appeared more calm and organized. However, in the 5th week his family members reported that his restlessness has reappeared, he keeps pacing around in the room, but is not aggressive or combative. On questioning, the patient admitted an uncontrollable urge to move around and that he feels uncomfortable in remaining still. He is not worried or anxious, but has difficulty in falling asleep.

- What could be the reason for the motor restlessness? Should the dose of haloperidol be increased or decreased, or should it be changed to another antipsychotic drug?
 - Should any other drug be given to relieve the condition?
- (see Appendix-1 for solution)

Problem Directed Studies are given to explain the complexity of case-based learning.

ANTIPSYCHOTIC AND ANTIMANIC DRUGS

Nevertheless, it is a valuable alternative to lithium and valproate for resistant cases.

3. Lamotrigine There is now strong evidence of efficacy of this newer anticonvulsant for prophylaxis of depression in bipolar disorder. Lamotrigine is not effective for treatment as well as prevention of mania. It is now extensively used in the maintenance therapy of type II bipolar disorder (major depressive episodes alone or alternating with hypomania), because in this condition risk of inducing mania is minimal. Lamotrigine can be combined with lithium to improve its efficacy. Valproate inhibits the metabolism of lamotrigine to nearly double its half life, needing careful dose adjustment. The tolerability profile of lamotrigine is favourable.

ATYPICAL ANTIPSYCHOTICS.

Several studies have testified to the efficacy of atypical antipsychotics in acute mania. Olanzapine, risperidone, aripiprazole, quetiapine, with or without a BZD, are now the first

line drugs for cases requiring which i.e. old most effective the favoured in bipolar II as well as adj Maintenance th mania. Lack of long-term use: Olanzapine therapy of bipo and depressive considered suit to higher risk etc. Strong evi has emerged in of an atypical lithium has dec phases as well bipolar disord should be grad or lithium is a

PROBLEM DIRECTED STUDY

32.1. A 25-year-old male was diagnosed as a case of schizophrenia thinking process, inappropriate talking and behaviour, restlessness poor self-care, disturbed sleep, delusional beliefs and occasional was treated with tab. haloperidol 5 mg once daily at bed time 7.5 mg daily in the 2nd week and to 10 mg daily in the 3rd week subsided and he appeared more calm and organized. However members reported that his restlessness has reappeared, he keeps pacing around in the room, but is not aggressive or combative. On questioning, the patient admitted an uncontrollable urge to move around and that he feels uncomfortable in remaining still. He is not worried or anxious, but has difficulty in falling asleep.

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(see Appendix-1 for solution)

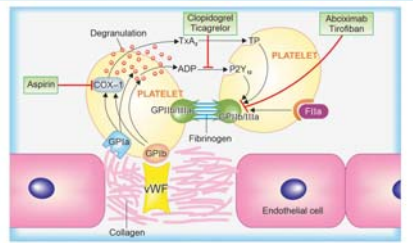


Fig. 44.4: Schematic depiction of platelet aggregation induced by damaged vascular endothelium and agonists. The site of action of antiplatelet drugs is also indicated. ADP—Adenosine diphosphate; COX-1—Cyclooxygenase-1; GPIa, GPIb, GPIIb/IIIa—Glycoprotein receptors; Fibrin (Factor I) which is Thrombin; P2Y₁—Purinergic P2Y₁ receptor; TP—Thromboxane receptor; TXA₂—Thromboxane; A₂—von Willebrand factor.

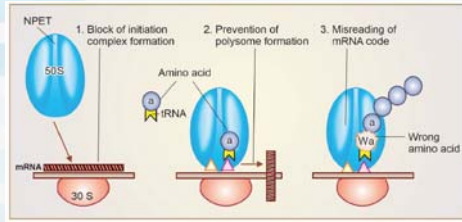


Fig. 53.1: Mechanisms of interference with bacterial protein synthesis by aminoglycoside antibiotics. NPET—Nascent peptide exit tunnel; tRNA—transfer RNA; mRNA—messenger RNA.

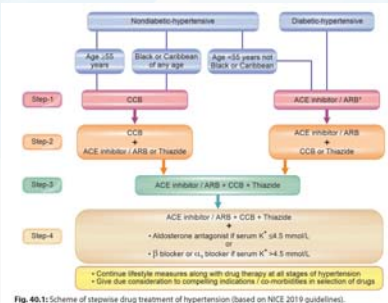


Fig. 40.1: Scheme of stepwise drug treatment of hypertension (based on NICE 2019 guidelines).

Each chapter features figures and flowcharts for better understanding

Online MCQs

Q1. Histamine H₂ blockers attenuate the gastric secretory response to acetylcholine and pentagastrin as well because:

Choose the answer:

- H₂ blockers block gastric mucosal cholinergic and gastric receptors as well
- H₂ blockers inhibit the proton pump in gastric mucosa
- Acetylcholine and gastrin act partly by releasing histamine in gastric mucosa
- Histamine, acetylcholine and gastrin all act through the phospholipase C/PLC/DAG pathway in gastric mucosa

Q1. Mucokinetic is a drug which:

Choose the answer:

- Reduces airway mucus secretion
- Increases airway mucus secretion
- Makes respiratory secretions more watery
- Stimulates mucociliary activity of bronchial epithelium

Save & Continue End Assessment

K D Tripathi's MCQs in Pharmacology > SECTION-01-final > Chapter-03

K D Tripathi_MCQ_Section-01_Chap-03

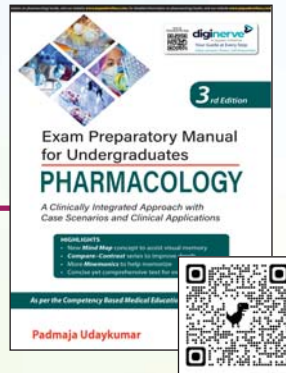
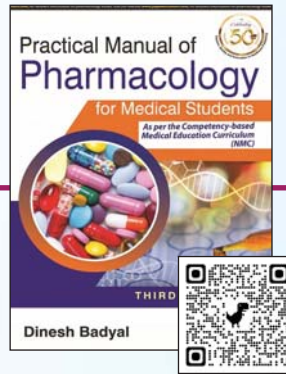
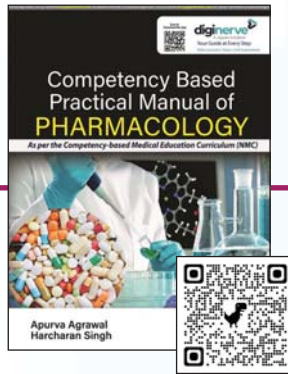
Q1. Biotransformation of drugs is primarily directed to:

Choose the answer:

- Activate the drug
- Inactivate the drug
- Convert lipid soluble drugs into nonlipid soluble metabolites
- Convert nonlipid soluble drugs into lipid soluble metabolites

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