

1. Alpha 1a adrenergic blocker giving symptomatic relief in BPH?

a) Tamsulosin

b) Prazosin

c) Oxazocin

d) Dolazoline

Correct Answer - A

Tamsulosin REF: KDT 7th ed p. 135, Goodman Gillman's 11th ed p. 173

Tamsulosin:

This unselective α_1/α_m blocker has been found to be as effective as terazocin for symptomatic control of BPH

Prazosin: blocks all subtypes of alpha receptors equally, used for symptomatic control of BPH Terazosin: long acting, more popular for BPH due to single daily dose

2. Which doesn't have a role in acute attack of asthma?

a) Cromolyn sodium

b) Ipratropium

c) Steroids

d) Salbutamol

Correct Answer - A

Cromolyn sodium REF: 11th edition of Goodman & Gilman's The Pharmacological Basis of Therapeutics page 463

Short-Acting B2 Adrenergic Receptor Agonists: Drugs in this class include albuterol, Levalbuterol, the (R)-enantiomer of albuterol, Metaproterenol, Terbutaline, and Pirbuterol. These drugs are used for acute inhalation treatment of bronchospasm. The most effective drugs in relaxing airway smooth muscle and reversing

bronchoconstriction are short-acting b2 adrenergic receptor agonists. They are the preferred treatment for rapid symptomatic relief of dyspnea associated with asthmatic bronchoconstriction.

Glucocorticoids: Systemic glucocorticoids long have been used to treat severe chronic asthma or severe acute exacerbations of asthma. Systemic glucocorticoids are used for acute asthma exacerbations

Cromolyn: The main use of cromolyn and nedocromil is to prevent asthmatic attacks in individuals with mild- to-moderate bronchial asthma. These agents are ineffective in treating ongoing bronchoconstriction. When inhaled several times daily, Cromolyn inhibits both the immediate and the late asthmatic responses to antigenic challenge or to exercise.

Ipratropium: In acute bronchoconstriction, the combination of a b2

adrenergic agonist and ipratropium is more effective than either agent alone and more effective than simply giving more b2 adrenergic agonist. Thus, the combination of a selective b2 adrenergic agonist and ipratropium should be considered in acute treatment of severe asthma exacerbations.

3. Rituximab is antibody against?

a) CD20

b) VEGF

c) EGFR

d) IL-2

Correct Answer - A

CD20 REF: Goodman and Gillman 11th edition page 901

See APPENDIX-34 for "FDA APPROVED MONOCLONAL ANTIBODIES"

"Rituximab, sold under the trade names Rituxan and MabThera, is a chimeric monoclonal antibody against the protein CD20, which is primarily found on the surface of B cells. Rituximab is used in the treatment of many lymphomas, leukemias, transplant rejection and some autoimmune disorders"

4. Which one of the following drugs cause hypomagnesemia by increased excretion

a) Frusemide therapy

b) Cisplatin

c) Digitalis

d) Aminoglycosides

Correct Answer - A

Frusemide therapy [Ref: Lawrence 10th ed p. 487; Goodman & Gilman 12th ed p. 751]

"Loop diuretics cause the abolition of transepithelial potential difference that results in marked increase in excretion of Ca²⁺" and Mg²⁺".

- *Loop and thiazide diuretics cause significant urinary loss of magnesium.*
 - Magnesium deficiency brought about by diuretics is rarely severe enough to induce the classic picture of neuromuscular irritability.

5. Carbimazole is associated with all except :

a) >Choanal atresia

b) >Cleft lip and cleft palate

c) >Scalp defect

d) >Neck swelling

Correct Answer - B

Cleft lip and palate [*Brigg's and Freeman Drugs in pregnancy and lactation 6th/e p 888*]

Congenital malformations associated with carbimazole

- *Scalp or patchy hair defect (aplasia cutis congenita)*
 - *Choanal atresia*
 - *Sacral pilonidal sinus*
 - *Tracheoesophageal fistula*
 - *Fetal goitre*
 - *Hypoplastic or absent phalanges (low set fifth finger)*
 - *Psychomotor delay*
 - *Minor facial anomaly (Flat face, low set ears, upper lip retraction)*
- Pregnancy and thyroid disease
- *Thyrotoxicosis occurs in about 2% of pregnancies and is caused most frequently by Grave's disease.*
 - *Antithyroid drugs are the t/t of choice ; radioactive iodine is clearly contraindicated in pregnancy.*
 - *Historically, propylthiouracil has been preferred over methimazole because transplacental spread was thought to be lower, however, it has been proved that propylthiouracil and methimazole cross the placenta equally.*
 - *As clearance of these drugs is very slow in the fetus, they tend to accumulate with the risk of fetal hypothyroidism and goitrogenesis.*

- Current data suggest that *either may be used safely* in the pregnant patients.
- The antithyroid drug dose should be *minimal* in order to keep the serum free thyroxine index in the *upper half* of the normal range.
- As pregnancy progresses, graves disease *often improves* and it is not uncommon for patients either to be on very low doses or off antithyroid drugs completely by the end of pregnancy.
- Propylthiouracil is the *drug of choice* in nursing women since very *small amounts of the drug appear in the breast milk*, and do not appear to affect thyroid function in the suckling baby.

Common teratogenic drugs

Isotretinoin

- Craniofacial abnormality
 - Cleft lip and palate
 - Microcephaly
- Cardiovascular anomaly
 - ASD
- C.N.S. anomaly
 - Neural tube defect
 - Microcephaly

Lithium

- Ebstein anomaly
- Fetal goitre

Alcohol

- *Fetal alcohol syndrome Fetal micmcephaly Maxillary hypoplasia Mental retardation Cardiac (ASD, PDA) Hype rkinetic child Growth retardation Small eve*

Methanol

- Craniofacial abnormality
 - Microcephaly
 - Maxillary hypoplasia
- Mental retardation/growth retardation

Phenytoin

- *Fetal hydantoin syndrome Microcephaly Cleft lip and palate Hypoplastic phalanges Gum hyperplasia Warfarin*

- Contradil syndrome
 - *Croniofacial abnormality - Chondrodysplasia punctata*
- Barbiturates
- Congenital heart disease
- Cleft lip and palate
- Neonatal dependence
- Respiratory depression
- Stilbesterol
- Vagina[carcinoma
- Tetracycline
- Discoloured teeth
- Bone growth retardation
- Thalidomide
- Phocornelia
- Valproate
- Neural tube defects
- Indomethacin
- Premature closure of ductus arteriosus

6. True about Trastuzumab are all except:

a) Better combination with paclitaxel

b) Used in metastatic breast cancer

c) Causes upregulation of HER2/neu

d) No bone marrow toxicity

Correct Answer - C
Causes upregulation of HER2/neu

7. Mechanism of action of Montelukast is:

a) Inhibition of leukotriene production

b) Inhibits alpha receptors

c) Beta receptor agonist

d) Phosphodiesterase inhibition

Correct Answer - A
Inhibition of leukotriene production

8. Which of the following produces neuropsychiatric symptom?

a) Cycloserine

b) Cyclosporine

c) Cephalosporine

d) Ethambutol

Correct Answer - A

Cycloserine is an antibiotic effective against **Mycobacterium tuberculosis**.

The side effects are mainly **central nervous system (CNS) manifestations**, i.e. headache, irritability, depression, psychosis and convulsions. *Co-administration of pyridoxine can reduce the incidence of some of the CNS side effects (e.g. convulsions).*

9. Filgrastim is used in treatment of:

a) Anemia

b) Neutropenia

c) Malaria

d) Filarial

Correct Answer - B

Filgrastim is a recombinant human granulocyte colony stimulating factor (G-CSF) which is a 175 - aminoacid glyco-protein.

It differs from the natural granulocyte stimulating factor due to its lack in glycosylation and the presence of an extra N-terminal methionine. It has proved to be effective in the treatment of severe neutropenia.

Ref: Goodman and Gilman's The Pharmacological Basis of Therapeutics, 11th Edition, Pages 1429-32; Immunopharmacology By Manzoor M. Khan, Pages 49-50

10. Finasteride is a:

a) 5 alpha reductase inhibitor

b) PDE inhibitor

c) Alpha 1a blocker

d) Androgen receptor blocker

Correct Answer - A

Finasteride is a competitive inhibitor of the enzyme 5-alpha reductase which is responsible for the conversion of testosterone into a more active dihydrotestosterone responsible for the androgen action.

When used in benign prostatic hypertrophy, it reduces the prostate size and increased peak urinary flow rate.

It is also used in male pattern baldness and as a palliative treatment in prostatic carcinoma.

Ref: K D Tripathi Textbook of Pharmacology, 5th Edition, Page 272

11. Most common side effect of mifepristone

a) Fever

b) Headache

c) Diarrhea

d) Rash

Correct Answer - C

Mifepristone (RU 485)

- It is a 19 norsteroid with potent antiprogestational and significant antiglucocorticoid and antiandrogenic activity.
- It is used in termination of pregnancy, cervical ripening postcoital contraceptive, once a month contraceptive, in induction of labour and to treat cushing's syndrome.
- Commonly reported side effects include vaginal bleeding, cramping, nausea, vomiting, diarrhea, dizziness, back pain & tenderness.

12. Which of the following group of antibiotics possess additional anti inflammatory and immunomodulatory activities ?

a) **Tacrolimus**

b) Polypeptide antibiotics

c) Fluoroquinolones

d) Macrolides

Correct Answer - A

Tacrolimus is a macrolide antibiotic, it acts by inhibiting cytokine production. It possess anti-inflammatory and immunomodulatory activities.

Mechanism: Tacrolimus binds to FKBP 12 and forms a complex. This then binds to calcineurin and inhibits calcineurin phosphates activity. Because of this it cannot dephosphorylate NFATc, and prevents its migration into nucleus and activation of cytokines.

Ref: Immunopharmacology By Manzoor M. Khan, Pages 91-3

13. Which of the following is the most appropriate drug used for chelation therapy in beta thalassemia major?

a) Oral desferoxamine

b) Oral deferiprone

c) Intramuscular EDTA

d) Oral Succimerq

Correct Answer - B

Deferiprone is a recently introduced orally active iron chelator which has simplified the treatment of transfusion siderosis in thalassemia patients. Oral desferrioxamine is poorly absorbed when given orally so not preferred in the oral route.

Oral Deferiprone is a less effective alternative to injected desferrioxamine.

Deferiprone has also been indicated for acute Iron poisoning & for iron load in liver cirrhosis.

Ref: Essentials of Medical Pharmacology By KD Tripathi, 5th Edition, Pages 813-5

14. Fraction of drug that reaches in the blood is ?

a) $T_{1/2}$

b) Absorption

c) Bioavailability

d) Elimination

Correct Answer - C

Ans. is 'c' i.e., Bioavailability

"Bioavailability is a measure of fraction (F) of administered dose of a drug that reaches the systemic circulation".

15. Dosage of drug is determined by following except ?

a) Volume of distribution

b) Halflife

c) Lipid solubility

d) None

Correct Answer - D

Ans. is 'None'

o Loading dose is governed by volume of distribution and volume of distribution is affected by lipid solubility. o Maintenance dose is governed by clearance (excretion) of drug and half life.

o For one option go ahead for option b ie half life because :

"Clearance is the most important factor for maintenance dose".

16. All are pharmacogenetic conditions, except -

a) Adenosine deaminase deficiency

b) Malignant hyper-pyrexia

c) Coumarin insensitivity

d) G6PD deficiency

Correct Answer - A

Ans. is 'a' i.e., Adenosine deaminase deficiency

o Examples of pharmacogenetic conditions are (i) Atypical pseudocholinesterase (prolonged succinylcholine apnea); (ii) Glucose-6-phosphate dehydrogenase (G-6-PD) deficiency; (iii) Acetylator polymorphism; (iv) Acute intermittent porphyria; (v) Malignant hyperthermia by halothane; (vi) Resistance to coumarin anticoagulants; (vii) inability to hydroxylate phenytoin; (viii) CYP2D6 abnormality; and (ix) Precipitation of acute angle closure glaucoma by mydriatics.

17. True statement about phase 2 clinical trials is ?

a) Large number of healthy volunteers are studied

b) Used to determine maximum tolerated dose

c) Used to determine efficacy

d) Used to determine toxicity

Correct Answer - C

Ans. is 'c' i.e., Used to determine efficacy

o Phase 2 trial is done to determine efficacy and safety. It involves small number of patients.

18. A new born developed cleft lip and cleft palate and atrial septal defect. Which of the following drug is likely to be consumed by the mother so as to cause such type of congenital anomalies -

a) Digoxin

b) Methanol

c) ACE Inhibitors

d) Isotretinoin

Correct Answer - D

Ans. is 'd' i.e., Isotretinoin

Isotretinoin causes

o Craniofacial abnormality o CVS anomaly o CNS anomaly

Cleft, lip & palate

ASD

Neural tube defect

Microcephaly

Microcephaly

19. Renal dose of dopamine is-

a) 2.5 lig/kg/min

b) 5-10 $\mu\text{g}/\text{kg}/\text{min}$

c) 10-20 $\text{pg}/\text{kg}/\text{min}$

d) 1-2 $\text{pg}/\text{kg}/\text{min}$

Correct Answer - D

Ans. is 'd' i.e., 1-2 $\text{pg}/\text{kg}/\text{min}$

Dopamine produces dose dependent action:

- i) At low dose (1-2 $\mu\text{g}/\text{kg}/\text{min}$) causes dilation of renal and mesenteric vessels often referred as renal dose.*
- ii) At moderately high dose (2-10 $\mu\text{g}/\text{kg}/\text{min}$) produces a positive inotropic effect by stimulating β_1 receptor on heart cardiac dose.*
- iii) At high doses (> 10 $\text{pg}/\text{kg}/\text{min}$) produces vasoconstriction by stimulating α_1 receptors --> vascular dose.*

20. Which of the following is an selective α 2 antagonist?

a) Prazosin

b) Labetalol

c) Yohimbine

d) Butoxamine

Correct Answer - C

Ans. is 'c' i.e., Yohimbine

Selective α 2-antagonists are *yohimbine* and *idoxoxon*.

21. Alpha 1a adrenergic blocker giving symptomatic relief in BPH?

a) Tamsulosin

b) Prazosin

c) Oxazocin

d) Dolazoline

Correct Answer - A

Ans. is 'a' i.e., Tamsulosin

Tamsulosine is a uroselective blocker (α_{1A} blocker)

o It decreases the tone of smooth muscle in bladder trigone, sphincter and prostate → urine flow in patient with BHP is improved.

22. Glaucoma drug which is β -1 selective α -blocker is ?

a) Timolol

b) Levobunolol

c) Carteolol

d) Betaxolol

Correct Answer - D

Ans. is 'd' i.e., Betaxolol

o Among the given options, only betaxolol is β -1 selective.

23. A patient came to the casualty with acute bronchial asthma after treatment for glaucoma. The probable drug may be -

a) Timolol

b) Betaxolole

c) Latanoprost

d) Anticholinesterase

Correct Answer - A

Ans. is 'a' i.e., Timolol

o As you all know β_2 receptors cause bronchodilatation, blockade of β_2 mediated bronchodilatation can precipitate bronchospasm and acute attack of asthma.

o Timolol is a non-selective β -blocker (blocks β_1 and β_2 receptors).

Therefore, it can precipitate acute attack of asthma. o Betaxolo is also a β -blocker. But it is a cardioselective β -blocker (blocks β_1 receptors, not β_2).

24. Which of the following drug are used in β - blocker overdose?

a) Atropine

b) Acetylcholine

c) Glucagon

d) a and c

Correct Answer - D

Ans. is 'a' i.e., Atropine; 'c' i.e., Glucagon

β -blocker poisoning

o Overdose, including self poisoning, causes bradycardia, **heart** block, hypotension and low output heart failure that can proceed to cardiogenic shock.

o *Death is more likely with agents having membrane stabilizing action.*

o Severe bronchoconstriction may occur.

o Loss of consciousness may occur with lipid-soluble agents that penetrate the CNS.

Treatment of β -blocker poisoning.

o **Atropine** - is used to eliminate unopposed vagal activity that contribute to bradycardia.

o Glucagon and calcium - Are used for hypotension and symptomatic bradycardia.

o Isoprenaline can be used if there is no response. It has direct cardiac stimulant action via β_1 receptors.

o Other sympathomimetics may be used according to desired agonist actions β_1 , β_2 , a) required by the clinical conditions, e.g. dobutamine, *dopamine*, *dopexamine*, *adrenaline*, *noradrenaline*.

o Amrinone can be used for inotropic effect.

o Salbutamol or *aminophylline* may be used to counteract bronchoconstriction.

25. All are true about losartan, except ?

a) Angiotensin II antagonist

b) Causes hyperuricemia

c) Does not cause cough

d) Long acting metabolites

Correct Answer - B

Ans. is 'b' i.e., Causes hyperuricemia

Losartan is a mild uricosuric agent, Le causes hypouricemia

o Losartan is a *competitive antagonist* of angiotensin II (10000 times more *selective for AT1 than AT2*).

o In liver it gets converted to *long acting metabolite* (E 3174) which is *10-30 times more potent non competitive antagonist* of AT1

o Plasma t $\frac{1}{2}$ of

i) Losartan ---> 2hr

ii) E3174 —> 6-9 hrs.

o It has several advantages over ACE inhibitors

It does not cause cough and angiodema

It does not cause dysguesia (altered taste sensation)

It does not cause first dose hypotension

AT-11 antagonists are more effective than ACE inhibitors in blocking the vasopressor action of angiotension-II

Similarities with ACE inhibitor

3 *Hyperkalemia and, hypotension*

3 *Teratogenic Contraindicated in pregnancy*

Why do AT-II antagonists not cause cough and angiodema, while ACE inhibitors do ? Lets see

- Bradykinin and sustance P are substrate for ACE.
- ACE inhibitors increase level of these kinins by inhibiting ACE, which

is responsible for cough and angiodema.

- AT-II antagonists do not inhibit ACE (they block AT-II receptors) --> No increase in the level of bradykinin and substance P —> No cough & angiodema.

26. One of the following is not true about nesiritide ?

- a) It is a brain natriuretic peptide analogue
- b) It is used in actually decompensated heart failure
- c) It has significant oral absorption
- d) It has a short half-life

Correct Answer - C

Ans. is 'c' i.e., It has significant oral absorption

o Nesiritide is a recombinant form of human BNP (Brain natriuretic peptide) that dilates the arterial and venous circulation in a balanced manner.

o It is only available for parenteral administration (oral bioavailability is poor)

o It has been approved for use in acute cardiac failure.

o Its $t^{1/2}$ is only 18 minutes.

27. Which of the following drugs can cause Torsades de pointes ?

a) Quinidine

b) Lignocaine

c) Esmolol

d) Flecainide

Correct Answer - A
Ans. is 'a' i.e., Quinidine

28. Mechanism of action of sodium nitroprusside in cyanide poisoning -

a) Produces methemoglobinemia

b) Increased blood flow to liver

c) Increased blood flow to heart

d) Increased blood flow to kidney

Correct Answer - A

Ans. is 'a' i.e., Produces methemoglobinemia

o Nitrates generate methaemoglobin which has high affinity for cyanide and forms cyanomethaemoglobin.

o Cyanomethaemoglobin may again dissociate to release cyanide, therefore, sodium thiosulfate is given to form sod.

29. All of the following statements about Ranolazine are true, except;

- a) Piperazine derived antianginal agent
- b) May be used as first line agent in chronic angina
- c) May improve glyceemic control
- d) Hypotension is an established adverse effect

Correct Answer - D

Ans. is 'd' i.e., Hypotension is an established adverse effect

- Ranolazine is an effective newer *anti-anginal drug* but unlike CCBs and beta-blockers it *does not significantly alter the heart rate or blood pressure*.
- It is a *piperazine derivative*.
 - o Ranolazine appears to have other promising non-anginal effects, including *glycemic control*, improvement in endothelial function and decreases the incidence of atrial fibrillation and other arrhythmias.
 - o Ranolazine has been generally well tolerated in clinical trials *its most common adverse effects are nausea, constipation and dizziness*.

About option b

o Most of the text books have mentioned that ranolazine can be used as *add-on therapy* in *chronic stable angina*. o However, it has recently been approved as first line agent:

" *Previously limited by its FDA indication to use in angina in combination with a calcium channel blocker, beta blocker or nitrate; ranolazine is now approved for use as a first line agent in chronic angina*". .. *The Heart. org*.

30. Which of the following can cause first dose syncope?

a) Prazosin

b) Propranolol

c) ACE inhibitors

d) a and c

Correct Answer - D

Ans. is 'a' i.e., Prazosin & 'c' i.e., ACE inhibitors

"First dose effect (postural hypotension) is now uncommon and occurs mainly with drugs having an action on veins (α-adrenoreceptor blockers, ACE inhibitors) when baroreceptors reflex is impaired e.g. old age or with contracted intravascular volume following diuretics"

31. A patient taking ketoconazole and terfenadine both, is prone to -

a) Cardiac arrhythmia

b) Toxicity of ketoconazole

c) Congestive cardiac failure

d) All of the above

Correct Answer - A

Ans. is 'a' i.e., Cardiac arrhythmia

o Terfenadine causes blockade of delayed rectifier K^+ channels in the heart at higher concentration and can cause *Torsades De Pointes (Polymorph ventricular tachycardia)* —> *Prolonged QT interval*.

Drugs inhibiting the metabolism of terfenadine by inhibiting CYP3A4 enzyme, can precipitate ventricular arrhythmia Erythromycin, clarithromycin, itraconazole, *ketoconazole*.

32. 5HT_{2A} antagonist drug is ?

a) Clozapine

b) Cisapride

c) Sumatriptan

d) Ketanserin

Correct Answer - D
Ans. is 'd' i.e., Ketanserin

33. Drugs used in migraine prophylaxis are all except

a) Flunarizine

b) Propranolol

c) Cyproheptadine

d) Sumatriptan

Correct Answer - D

Ans. is 'd' i.e., Sumatriptan

Sumatriptan is DOC for acute severe migraine. It is not indicated for prophylaxis of migraine attacks.

34. Alprostadil is not used for -

a) Erectile dysfunction

b) Pulmonary hypertension

c) Patent ductus arteriosus

d) Critical limb ischemia

Correct Answer - C

Ans. is 'c' i.e., Patent ductus arteriosus

o Alprostadil is used to keep the ductus open and not to treat patent ductus arteriosus.

35. Which enzyme is irreversibly inhibited by aspirin?

a) Lipoxygenase

b) Cyclooxygenase

c) Thromboxane synthase

d) Phospholipase

Correct Answer - B
Ans. is 'b' i.e., Cyclooxygenase

36. HbA1C is decreased most by?

a) Biguanides

b) Sulfonylureas

c) Thiazolidinediones

d) Acarbosc

Correct Answer - B

Ans. is 'b' i.e., Sulfonylureas

Effect of oral hypoglycemic in lowering blood glucose can be measured by reduction in HbA1C level

i) *Oral hypoglycemic with maximum decrease in HbA1c sulfonylureas.*

ii) *Oral hypoglycemic with minimum decrease in HbA1C Glucosidase inhibitors (Acrarbose, Migital)*

37. Which of the following has least mineralocorticoid activity-

a) Fludrocortisone

b) Dexamethasone

c) Triamcinolone

d) Betamethasone

Correct Answer - C

Ans. is 'c' i.e., Triamcinolone

o Zero mineralocorticoid activity ----> Triamcinolone, Paramethasone, Dexamethasone, Betamethasone

o Mineralocorticoid with zero glucocorticoid activity —> DOCA (Deoxycorticoisterone acetate)

o Most potent glucocorticoid - Betametasone

o Least potent glucocorticoid - Cortisone

o Maximum mineralocorticoid activity - Aldosterone

• Maximum glucocorticoid activity - Dexamethosone & Betametasone

38. Major estrogen in normal adult women is -

a) Estradiol

b) Estrone

c) Estriol

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Estradiol

o Estradiol is the major estrogen secreted by the ovary.

39. All of the following statements about hormone replacement therapy (HRT) are true except ?

a) It increases the risk of coronary artery disease

b) It increases bone mineral density

c) It increases the risk of breast cancer

d) It increases the risk of endometrial cancer.

Correct Answer - D

Ans. is 'd' i.e., It increases the risk of endometrial cancer.

- Hormone replacement therapy increases the risk of MI (coronary artery disease). The increased risk is attributed to progestin component.
 - o HRT restore Ca^{++} balance, further bone loss is prevented and the excess fracture risk is nullified.
 - o There is a higher incidence of breast cancer.
 - o Risk for endometrial carcinoma is not increased as protective effect of progestin nullify the carcinogenic effect of estrogen.
 - o There is increased risk for gall stone and migraine.
 - o There is a small protective effective of HRT on colorectal cancer.
- Note :?
- o Usually in HRT combination of estrogen and progestin is given (combined HRT), except in hysterectomized women where estrogen alone is given.
 - o With estrogen alone there is increased risk of endometrial cancer and decrease risk of coronary artery disease (as estrogen increases HDL and decreases LDL and triglyceride level).
 - o So for HRT with estrogen alone the answer of this question will change. In that case it will be option 'a' i.e., increased risk of

change. In that case it will be option a) not, increased risk of coronary artery disease.

40. Initial starting dose of clomiphene citrate in case of infertility is -

a) 30mg/d

b) 40mg/d

c) 50mg/d

d) 60mg/d

Correct Answer - C

Ans. is 'c' i.e., 50mg/d

o It acts as a *pure estrogen antagonist in all human tissues.*

Ovulation should be induced with clomiphene citrate (CC), with a dose of 50 mg/day starting from day 2 to day 6 of the cycle for 5 days.

If the response to 50 mg CC is not satisfactory, the dose of CC should be increased to 100 mg/day from day 2 to day 6.

41. Which of the following is a selective progesterone receptor modulator-

a) Onapristone

b) Ulipristal

c) Nomegestrol

d) Toremifene

Correct Answer - B

Ans. is 'b' i.e., Ulipristal

o Ulipristal is a SPRM approved for use as an Emergency Contraceptive.

o SPRM (selective progesterone receptor modulators) : Asoprisnil, ulipristal, onapristone, mifepristone.

42. Bisphosphonates are not used in?

a) Hypercalcemia

b) Osteoporosis

c) Cancer induced osteolysis

d) Vitamin D intoxication

Correct Answer - D
Ans. is `d' Vitamin D intoxication

43. Which of the following drug causes osteonecrosis by giving IV route?

a) Zolendronate

b) Dalteparin

c) Calcitriol

d) Zidovudine

Correct Answer - A

Ans. is 'a' i.e., Zolendronate

o Bisphosphonates (e.g. zolindronate) can cause *osteonecrosis of jaw*.

44. Drug of choice in lignocaine toxicity -

a) Bretylium

b) Amiodarone

c) Isoprenaline

d) Diazepan

Correct Answer - D

Ans. is 'd' i.e., Diazepan

o If lignocaine toxicity is suspected, stop the injection immediately.

o Ensure adequate oxygenation, whether by face mask or by intubation.

o Anticonvulsants such as benzodiazepines and barbiturates are the drug of choice for seizure control. o *Succinylcholine* is sometimes also used to terminate the neuromuscular effects of seizures.

o If CVS symptoms occur (cardiac depression and hypotension), *IV fluid and vasopressor agents* may be required.

o If metabolic acidosis develops, use of *sodium bicarbonate* can be considered, although, as in other instances of acute metabolic acidosis, this is controversial.

45. All are surface anaesthetics except -

a) Lignocaine

b) Bupivacaine

c) Procaine

d) Cinchocaine

Correct Answer - B

Ans. is 'b' i.e., Bupivacaine

o Topical anaesthesia (surface anaesthesia) is produced by topical application of local anaesthetics to mucous membrane or abraded skin.

o Surface anaesthetics are

Dibucaine (Cinchocaine) *Lignocaine* Benoxinate

Oxethazaine Prilocaine

Tetracaine (Amethocaine) Cocaine Benzocaine

Butamben

o Procaine has very less potent surface anaesthetic action (1/10) —
> not used as surface anaesthetic.

o But amongst the given options best answer is bupivacaine, it does not have surface anaesthetic action.

46. Drug contraindicated for Bier's block-

a) Lidocaine

b) Prilocaine

c) Dibucaine

d) Bupivacaine

Correct Answer - D

Ans. is 'd' i.e., Bupivacaine

- Intravenous regional anaesthesia (IVRA) is used most often for surgery of the forearm and hand, but can also be used for distal leg and foot.
- Lidocaine without adrenaline is the DOC for this technique.
- A few clinician prefers prilocaine over lidocaine because of its higher therapeutic index - least toxic LA.
- Torniquet cuff deflation, premature release or failure of torniquet can cause release of LA into circulation and toxicity may occur --> So, cardiotoxic LAs like bupivacaine and etidocaine are contraindicated for Bier's block.

47. Which one of the following inhalational anesthetics is most likely to cause fluoride ion nephrotoxicity ?

a) Methoxyflurane

b) Enflurane

c) Halothane

d) Isoflurane

Correct Answer - A

Ans. is 'a' i.e., Methoxyflurane

o Intrarenal metabolism of methoxyflurane and subsequent intrarenal production of fluoride ion is the significant cause of methoxyflurane renal toxicity.

48. Ketamine produces -

a) Emergence delirium

b) Hypotension

c) Bronchoconstriction

d) Depression of cardiovascular system

Correct Answer - A

Ans. is 'a' i.e., Emergence delirium

49. Inducing agent of choice in shock ?

a) Isoflurane

b) Desflurane

c) Ketamine

d) Thiopentone

Correct Answer - C

Ans. is 'c' i.e., Ketamine

- Inducing agent of choice in Asthma & COPD Ketamine.
- Inhalational agent of choice in Asthma & COPD —) Halothane.

50. Anaphylaxis is caused by-

a) N₂ O

b) Althesin

c) Halothane

d) Halothane

Correct Answer - B

Ans. is 'b' i.e., Althesin

Althesin

o Althesis is a *neurosteriod*

o It was used as a parenteral anaesthetic

o It was withdrawn from the market because of several severe *anaphylactic reactions*

51. Drug of choice for Epilepsy in pregnancy is -

a) Carbamazepine

b) Sodium valproate

c) Phenobarbitone

d) Phenytoin

Correct Answer - A
Ans. is 'a' i.e., Carbamazepine

52. All of the following are side effects of ropinirole except -

a) Sedation

b) Nausea

c) Retroperitoneal fibrosis

d) Hallucination

Correct Answer - C

Ans. is 'c' i.e., Retroperitoneal fibrosis

o Ropinirole can cause *nausea, sedation, hallucinations,* constipation and orthostatic hypotension.

53. Which of the following drugs can be used as a transcranial patch for treatment of parkinsonism?

a) Levodepa

b) Rotigotine

c) Apomorphine

d) Aprantine

Correct Answer - B

Ans 'b' i.e. Rotigotine

o Rotigotine is intended to be delivered through *transdermal patches*, so as to ensure a slow and constant dosage in a 24-hour period.

**54. Drug of choice in drug induced
Parkinsonism is ?**

a) Levodopa

b) Carbidopa

c) Amantadine

d) Benzhexol

Correct Answer - D
Ans. is 'd' i.e., Benzhexol

55. Which is a late side effect of typical anti psychotics?

a) Parkinsonism

b) Tardive dyskinesia

c) Acute muscular dystonia

d) Akathasia

Correct Answer - B
Ans. is 'b' i.e., Tardive dyskinesia

56. A 40 year old adult man on medication for psychiatric illness for the last 2 weeks, suddenly develops marked rigidity, immobility, fever, fluetuating BP and heart rate. Most likely diagnosis ?

a) Akathisia

b) Parkinsonism

c) Malignant neuroleptic syndrome

d) Catatonic schizophrenia

Correct Answer - C

Ans. is 'c' i.e., Malignant neuroleptic syndrome

57. Treatment of choice of bipolar mood disorder?

a) Fluoxetine

b) Imipramine

c) Lithium

d) Chlorpromazine

Correct Answer - C

Ans. is 'c' i.e., Lithium

Treatment of bipolar disorder

"Lithium carbonate is the mainstay of treatment in bipolar disorder, although sodium valproate and olanzapine are equally effective in acute mania, as is lamotrigine in the depressed phase" - Harrison.

Other drugs used in bipolar disorder

- Carbamazepine → Used for acute mania as well as bipolar illness.
- Valproate → Particularly useful for rapid cyclers.
- Atypical antipsychotics → Olanzapine, risperidone, aripiprazole or quetiapine with or without benzodiazepine is the treatment of choice for acute mania.
- Lamotrigine → Useful in rapidcycling bipolar depression.
- Topiramate and Gabapentin have shown some prophylactic effect in bipolar disorder.

Remember

- DOC for prophylaxis in bipolar disorder → Lithium
- DOC for acute mania → Olanzapine or other atypical antipsychotics with or without BZDs.

58. Drug of choice for prophylaxis of mania is ?

a) Lithium

b) Haloperidol

c) Clozapine

d) Carbamazepine

Correct Answer - A
Ans. is 'a' i.e., Lithium

59. An antidepressant found to be associated with tardive dyskinesia and neuroleptic malignant syndrome is -

a) Fluoxetine

b) Amineptin

c) Amoxapine

d) Trazodone

Correct Answer - C

Ans. is 'c' i.e., Amoxapine

o Amoxapine is the only antidepressant which *blocks D₂ receptors* along with inhibition of NA reuptake ----> has mixed antidepressant + neuroleptic property.

o Due to blockade of D₂ receptors it causes extrapyramidal side effects ---> Parkinsonism, *Tardive dyskinesia*, Akathisia, *neuroleptic malignant syndrome*

60. OCD Rx of choice -

a) Fluoxetine

b) Imipramine

c) Diazepam

d) None

Correct Answer - A

Ans. is 'a' i.e., Fluoxetine

SSRIs are drug of choice for ?

OCD

Panic disorder

Premenstrual dysphoric disorder

Eating disorders

Depression

Social phobia

Post

traumatic stress disorder

61. A patient ingested some unknown substance and presented with myoclonic jerks seizures, tachycardia and hypotension. The ECG showed a heart rate of 120/minute with QRS interval of 0.16 seconds. The atrial blood revealed a pH of 7.25, PCO₂ of 30 mmHg and HCO₃ of 15 mmol/L. the most likely cause of poisoning is ingestion of-

a) Amanita phalloides

b) Ethylene glycol

c) Imipramine

d) Phencyclidine

Correct Answer - C

Ans. is 'c' i.e., Imipramine

C/F of TCA (Tricyclic Antidepressant) poisoning

Tricyclic antidepressant poisoning

o TCAs act primarily by inhibiting serotonin and norepinephrine reuptake. It results in elevation of extracellular concentration of these neurotransmitters.

o The toxic effects of TCAs are caused by four main pharmacological properties:

(i) *Inhibition of norepinephrine reuptake at nerve terminals.*

(ii) *Direct alpha adrenergic block.*

Anticholinergic action

(iv) *Membrane stabilizing or quinidine like effect on myocardium*

Clinical features

o Clinical features of TCAs poisoning may be on various systems:

(i) *CNS: Seizures (convulsions), drowsiness, coma, muscle spasm, rigidity, pyramidal signs, delirium, respiratory depression, ophthalmoplegia*

(ii) *CVS: Tachycardia, hypotension, arrhythmias, ECG changes (Prolongation of PR/QRS/QT interval, right axis deviation, R wave greater than S wave, ST/T wave changes), heart block, vasodilatation, cardiogenic shock*
Anticholinergic: Dry mouth, blurred vision, dilated pupils, urinary retention, absent bowel sound, pyrexia

(iv) *Metabolic: Acidosis.*

62. Methadone is used in the management of opioid addiction because-

- a) Its analgesic activity is less than that of morphine
- b) It is an opioid receptor antagonist
- c) It is not addictive
- d) *It* is longer acting and causes milder withdrawal symptoms

Correct Answer - D

Ans. is 'd' i.e., It is longer acting and causes milder withdrawal symptoms

63. Doxapram is _____ drug-

a) Respiratory stimulant

b) Antiepileptic

c) Sedative

d) Antidiabetic

Correct Answer - A

Ans. is 'a' i.e., Respiratory stimulant

Doxapram

o A respiratory stimulant (analeptic).

o It acts by promoting excitation of central neurons.

o At low doses it is more selective for respiratory centre than other analeptics.

o Respiration is also stimulated by aortic and carotid body chemoreceptors.

Also know

o *Modafinil* - It is a recently introduced psychostimulant used in narcolepsy, sleep apnoea syndrome and shift-work sleep disorder.

64. As a side effect the metabolic syndrome is most commonly associated with which of the following group of medications -

a) Anti-anxiety drugs

b) Anti-depressant drugs

c) Anti-psychotic drugs

d) Anti-cholinergic drugs

Correct Answer - C

Ans. is 'c' i.e., Anti-psychotic drugs

Metabolic syndrome (svndrome-X1

- Metabolic syndrome is a combination of medical disorders that increase the risk of developing cardiovascular disorder and diabetes.
- The components of metabolic syndrome are obesity, insulin resistance (resulting in high insulin level), elevated serum triglyceride and LDL, low HDL and hypertension.
- Antipsychotics can cause weight gain, diabetes and metabolic syndrome.
- Antipsychotics commonly implicated are clozapine, olanzapine, chlorpromazine and thioridazine.

65. Heparin is -

a) Polysaccharide

b) Lipoprotein

c) Monosaccharide

d) Polyenoic acid

Correct Answer - A

Ans. is `a' i.e., Polysaccharide
o Heparin is mucopolysaccharide.

66. Antilipidemic drugs that prevent hypercholesterolemia by inhibiting absorption -

a) Ezetimibe

b) Orlistat

c) Cholestyramine

d) Statins

Correct Answer - A

Ans. is 'a' i.e., Ezetimibe

Ezetimibe inhibits the absorption of cholesterol by binding to transporter [NPC-1L1 (Niemann Pick C1, like) SRBI, 145 KDa] located in intestinal brush border.

Note:

Orlistat also reduces cholesterol absorption, but it is an anti-obesity drug (not an antilipidemic drug).

67. Which of the following is a fourth generation Cephalosporin -

a) Ceftriaxone

b) Cefaclor

c) Cefepime

d) Cefuroxime

Correct Answer - C

Ans. is 'c' i.e., Cefepime

o Cefepime and cefepirome aree generation cephalosporins.

68. Aminoglycoside class of drugs causes hearing loss by damaging?

a) Inner hair cells of basal turn

b) Outer hair cells of basal turn

c) Inner hair cells of apical turn

d) Outer hair cells of apical turn

Correct Answer - B

Ans. is 'b' i.e., Outer hair cells of basal turn

o Aminoglycosides affect exclusively outer hair cells, particularly of basal coil of cochlea.

69. Which of the following drugs acts on "motilin" receptors-

a) Erythromycin

b) Tetracycline

c) Norfloxacin

d) Chloramphenicol

Correct Answer - A

Ans. is 'a' i.e., Erythromycin

o Erythromycin stimulates motilin receptors in the GIT-thereby, induces gastric contractions, hastens gastric emptying and promotes intestinal motility.

70. Which of the following is the major side effect of rifampicin?

a) Renal failure

b) Hepatotoxicity

c) Bone marrow suppression

d) Blood dyscrasias

Correct Answer - B

Ans. is 'b' i.e., Hepatotoxicity

71. All of the following drugs act on cell membrane, except-

a) Nystatin

b) Griseofulvin

c) Amphotericin B

d) Polymyxin B

Correct Answer - B

Ans. is 'b' i.e., Griseofulvin

Griseofulvin acts by interfering in mitosis, however it does not cause metaphase arrest like the typical mitotic inhibitors (colchicine, vinca alkaloids). It does not certainly act on the membrane.

72. Drug of choice for exo-erythrocytic stage of malaria is ?

a) Chloroquine

b) Primaquine

c) Proguanil

d) Mefloquine

Correct Answer - B
Ans. is 'b' i.e., Primaquine

73. Treatment of choice for severe falciparum malaria is -

a) Chloroquine

b) IV artesunate

c) IV quinine

d) IV quinidine

Correct Answer - B

Ans. is 'b' i.e., IV artesunate

Treatment of falciparum malaria

o Artemisinin derivatives are the drug of choice for any type of falciparum malaria

i) Uncomplicated

ii) Complicated/severe/cerebral

o Amongst artemisinin derivatives, artesunate is the DOC.

o Other drugs used for severe/complicated/cerebral falciparum malaria : *Artemether (2nd choice), Quinine (3rd choice), Quinidine.*

74. Which of the following drug is cell cycle phase specific?

a) Ifosfamide

b) Bleomycin

c) Cisplatin

d) Chlorambucil

Correct Answer - B

Ans. is 'b' i.e., Bleomycin

Bleomycin is specific for G2 phase.

o Alkylating agents (Ifosfamide, chlorambucil) and platinum compound (cisplatin) are cell cycle nonspecific.

75. A 58 year old woman has been diagnosed with locally advanced breast cancer and has been recommended for chemotherapy. She has five years history of myocardial infarction and congestive heart failure. Which antineoplastic drug should be best avoided -

a) Anthracycline

b) Alkylating agent

c) Platinum compound

d) Bisphosphonates

Correct Answer - A

Ans. is 'a' i.e., Anthracycline

o The major toxicity of anthracyclines is potentially irreversible cumulative dose related toxicity.

o They may cause arrhythmias and cardiomyopathy. Because of their cardiotoxicity these drugs should be avoided in the patient mentioned in the question.

76. Cetuximab and rituximab are ?

a) Humanized monoclonal antibodies

b) Murine monoclonal antibodies

c) Chimeric monoclonal antibodies

d) Antinuclear antibodies

Correct Answer - C

Ans. is 'c' i.e., Chimeric monoclonal antibodies

77. Cardiomyopathy is caused by which monoclonal antibody?

a) Trastuzumab

b) Infliximab

c) Eterncept

d) Adalimumab

Correct Answer - A

Ans. is 'a' i.e., Trastuzumab

o Trastuzumab, a HER2/neu receptor blocker and *is* used in breast carcinoma causes dilated cardiomyopathy.

78. Which is chemotherapeutic agent that must be included in treatment of ovarian carcinoma -

a) Methotrexate

b) Cyclophosphamide

c) Fluorouracil

d) Procarbazine

Correct Answer - B

Ans. is 'b' i.e., Cyclophosphamide

Drugs used for ovarian carcinoma

o *First line* -^p Cisplatin, Carboplatin, Paclitaxel, *Cyclophosphamide*, doxorubicin.

o *Second line* —> Melphalan, chlorambucil, 5-Fu, Methotrexate, Vincristine, Topotecan.

79. Cyclosporine acts by inhibiting the proliferation of

a) IL1

b) IL2

c) IL6

d) Macrophages

Correct Answer - B

Ans. is 'b' i.e., IL2

- *Cyclosporine enters target cells and bind to cyclophilin (an immunophilin).*
- *This cyclosporine-cyclophilin complex inactivates calcineurin*
- *IL-2 trascriptan and proliferation of T cells.*

80. Which of the following drug causes hirsutism?

a) Phenytoin

b) Valproate

c) Carbamazepine

d) Phenobarbitone

Correct Answer - A
Ans. is 'a' i.e., Phenytoin

81. Oral iron chelating agent(s) is/are -

a) Desferrioxamine

b) Deferiprone

c) Deferasirox

d) b and c

Correct Answer - D

Ans. is 'b' i.e., Deferiprone; 'c' i.e., Deferasirox

o Amongst the given options; desferrioxamine, deferiprone and deferasirox are used for iron poisoning. BAL and succimer are not used for iron poisoning.

o Desferrioxamine is given parenterally (IM or IV), whereas deferiprone and deferasirox are used orally.

82. Clinically significant drug interaction occurs between pyridoxine and all the following drugs except -

a) Isoniazid

b) Cyclosporine

c) Levadopa

d) Hydralazine

Correct Answer - B

Ans. is 'b' i.e., Cyclosporine

Drug interactions of pyridoxine

o *Isoniazid* produces a pyridoxine deficiency state.

o *Hydralazine*, *cycloserine* and *penicillamine* also interfere with pyridoxine utilization and action.

- *Oral contraceptives* reduce pyridoxal phosphate level in some women.
- Pyridoxine, by promoting formation of dopamine from *levodopa* in peripheral tissues, reduces its availability in brain.
 - o 4-deoxypyridoxine is a pyridoxine (antagonist).

83. True for Phase IV of clinical trials: *March 2012*

a) Done for paediatric drugs

b) Done for rare drugs

c) After-marketing surveillance of drugs

d) Human pharmacology and safety

Correct Answer - C

Ans: C i.e. After-marketing surveillance of drugs

Phases of clinical trial

- Phase IV of clinical trial is post marketing surveillance (data collected about the efficacy, acceptability and adverse effects of the drug). Further therapeutic trials involving special groups like children, elderly, pregnant/ lactating women, patients with renal/hepatic diseases etc.(which are generally excluded from clinical trials) may be undertaken at this stage
- Phase I of clinical trial is human pharmacology and safety

84. Therapeutic index of a drug signifies: *September 2005*

a) Dose which produces maximum effect

b) Safety margin

c) Efficacy

d) Maximum response that can be elicited by a drug

Correct Answer - B

Ans. B: Safety Margin

The therapeutic index/therapeutic ratio is a comparison of the amount of a therapeutic agent that causes the therapeutic effect to the amount that causes death.

It signifies safety margin.

Quantitatively, it is the ratio given by the lethal dose divided by the therapeutic dose.

A therapeutic index is the lethal dose of a drug for 50% of the population (LD₅₀) divided by the minimum effective dose for 50% of the population (ED₅₀).

A high therapeutic index is preferable to a low one: this corresponds to a situation in which one would have to take a much higher dose of a drug to reach the lethal threshold than the dose taken to elicit the therapeutic effect

Generally, a drug or other therapeutic agent with a narrow therapeutic range (i.e. with little difference between lethal and therapeutic doses) may have its dosage adjusted according to measurements of the actual blood levels achieved in the person taking it.

85. Area under time and plasma concentration curve signifies : *September 2005*

a) Potency

b) Extent of absorption of drug

c) Efficacy

d) Plasma clearance of a drug

Correct Answer - D

Ans. D: Plasma clearance of a drug

The area under the plasma concentration time curve (AUC) is very useful for calculating the relative efficiency of different drug.

It can be used to calculate the total body clearance (CL) and the apparent volume of distribution.

The area under the plasma (serum, or blood) concentration versus time curve (AUC) has a number of important uses in toxicology, biopharmaceutics and pharmacokinetics.

Toxicology-AUC can be used as a measure of drug exposure. It is derived from drug concentration and time so it gives a measure of how much - how long a drug stays in a body. A long, low concentration exposure may be as important as shorter but higher concentration.

- Biopharmaceutics-The AUC measured after administration of a drug product is an important parameter in the comparison of drug products. Studies can be performed whereby different drug products may be given to a panel of subjects on separate occasions.
- Pharmacokinetics-Drug AUC values can be used to determine other pharmacokinetic parameters, such as clearance or bioavailability.

86. Orphan drugs are:
March 2010, March 2013

- a) Commercially easy to obtain.
- b) Drugs to treat rare diseases usually
- c) Developed with an intention of monetary gain
- d) All of the above

Correct Answer - B

Ans. B: Drugs to treat rare diseases usually

An orphan drug is a pharmaceutical agent/biological products that has been developed specifically to diagnose/treat/ prevent a rare medical condition (the condition itself being referred to as an orphan disease) or a more common condition which is endemic only in poor resource countries.

There is no reasonable expectation that the cost of developing and marketing will be recovered from the sale of that drug.

Though these drugs may be life saving for some patients, they are commercially difficult to obtain.

The assignment of orphan status to a disease and to any drugs developed to treat it is a matter of public policy in many countries, and has resulted in medical breakthroughs.

A rare disease, sometimes known as an orphan disease, is any disease that is not common.

87. Inotropic drugs acts on which receptors: *March 2013*

a) Alpha1

b) Alpha2

c) Beta1

d) Beta2

Correct Answer - C

Ans. C i.e. Beta1

Beta adrenergic receptors

- Activation of beta-1 receptors induces positive inotropic, chronotropic output of the cardiac muscle, leading to increased heart rate and blood pressure, secretion of ghrelin from the stomach, and renin release from the kidneys.
- Activation of beta-2 receptors induces smooth muscle relaxation in the lungs, gastrointestinal tract, uterus, and various blood vessels. Increased heart rate and heart muscle contraction is also associated with the beta-2 receptors.
- Beta-3 receptors are mainly located in adipose tissue. Activation of the beta-3 receptors induces the metabolism of lipids.

88. Which of the following calcium channel blocker has a predominant peripheral action:

September 2006

a) Verapamil

b) Diltiazem

c) Nifedipine

d) Depranil

Correct Answer - C

Ans. C: Nifedipine

Sublingual nifedipine has previously been used in hypertensive emergencies. This was found to be dangerous, and has been abandoned.

Sublingual nifedipine causes blood-pressure lowering through peripheral vasodilation.

It can cause an uncontrollable decrease in blood pressure, reflex tachycardia, and a steal phenomenon in certain vascular beds

89. Effect of beta blocker's on heart are all of the following except:
September 2011

a) Decrease in heart rate

b) Decreases duration of systole

c) Decreases cardiac output

d) Precipitates heart failure

Correct Answer - B

Ans. B: Decreases duration of systole

In the presence of increased sympathetic tone, beta blocker reduces the automaticity and prevents rise in heart rate; reduces myocardial contractility, cardiac output and stroke work; slows AV conduction, reduces myocardial oxygen demand and improves exercise tolerance

- Beta blockers/Beta-adrenergic blocking agents/Beta-adrenergic antagonists/Beta-adrenoreceptor antagonists/Beta antagonists
- They are particularly for the management of cardiac arrhythmias, cardioprotection after myocardial infarction, and hypertension.
- As beta adrenergic receptor antagonists, they diminish the effects of epinephrine (adrenaline) and other stress hormones.
- Beta blockers block the action of endogenous catecholamines epinephrine (adrenaline) and norepinephrine (noradrenaline) in particular, on beta-adrenergic receptors, part of the sympathetic nervous system which mediates the "fight or flight" response.
- There are three known types of beta receptor, designated beta-1, beta-2 and beta-3 receptors.
- Beta-1-adrenergic receptors are located mainly in the heart and in

the kidneys.

- Beta-2-adrenergic receptors are located mainly in the lungs, gastrointestinal tract, liver, uterus, vascular smooth muscle, and skeletal muscle.
- Beta-3-adrenergic receptors are located in fat cells. Stimulation of beta-1 receptors by epinephrine induces a positive chronotropic and inotropic effect on the heart and increases cardiac conduction velocity and automaticity. Stimulation of beta-1 receptors on the kidney causes renin release. Stimulation of beta-2 receptors induces smooth muscle relaxation, induces tremor in skeletal muscle, and increases glycogenolysis in the liver and skeletal muscle.
- Stimulation of beta-3 receptors induces lipolysis.
- Beta blockers inhibit these normal epinephrine-mediated sympathetic actions, but have minimal effect on resting subjects. That is, they reduce excitement/physical exertion on heart rate and force of contraction, and also tremor and breakdown of glycogen, but increase dilation of blood vessels and constriction of bronchi. It is therefore expected that non-selective beta blockers have an antihypertensive effect. Antianginal effects result from negative chronotropic and inotropic effects, which decrease cardiac workload and oxygen demand.
- Negative chronotropic properties of beta blockers allow the lifesaving property of heart rate control.
- The antiarrhythmic effects of beta blockers arise from sympathetic nervous system blockade - resulting in depression of sinus node function and atrioventricular node conduction, and prolonged atrial refractory periods.
Sotalol, in particular, has additional antiarrhythmic properties and prolongs action potential duration through potassium channel blockade. Blockade of the sympathetic nervous system on renin release leads to reduced aldosterone via the renin-angiotensin-aldosterone system with a resultant decrease in blood pressure due to decreased sodium and water retention.
- Referred to as intrinsic sympathomimetic effect, this term is used particularly with beta blockers that can show both agonism and antagonism at a given beta receptor, depending on the concentration of the agent (beta blocker) and the concentration of

the antagonized agent (usually an endogenous compound such as norepinephrine).

- Some beta blockers (e.g. oxprenolol, pindolol, penbutolol and acebutolol) exhibit intrinsic sympathomimetic activity (ISA).
- These agents are capable of exerting low level agonist activity at the beta-adrenergic receptor while simultaneously acting as a receptor site antagonist.

These agents, therefore, may be useful in individuals exhibiting excessive bradycardia with sustained beta blocker therapy. Agents with ISA (intrinsic sympathomimetic activity) are not used in post-myocardial infarction as they have not been demonstrated to be beneficial.

- They may also be less effective than other beta blockers in the management of angina and tachyarrhythmia
Some beta blockers (e.g. labetalol and carvedilol) exhibit mixed antagonism of both beta- and alpha-1-adrenergic receptors, which provides additional arteriolar vasodilating action. They can also be used to treat glaucoma because they decrease intraocular pressure by lowering aqueous humor secretion.

- Non-selective agents

- Alprenolol
- Bucindolol
- Carteolol
- Carvedilol (has additional α -blocking activity)
- Labetalol (has additional α -blocking activity)
- Nadolol
- Oxprenolol
- Penbutolol (has intrinsic sympathomimetic activity)
- Pindolol (has intrinsic sympathomimetic activity)
- Propranolol
- Timolol

- Beta-1-Selective agents

Acebutolol (has intrinsic sympathomimetic activity)

- Atenolol
- Betaxolol
- Bisoprolol
- Celiprolol

Esmolol

- Metoprolol
- Nebivolol
- Beta-2-Selective agents
- Butaxamine (weak alpha-adrenergic agonist activity) - No common clinical applications.
- Pharmacological differences
 - Agents with intrinsic sympathomimetic action (ISA)
- Acebutolol, carteolol, celiprolol, mepindolol, oxprenolol, pindolol, labetalol.
 - Agents with greater aqueous solubility (hydrophilic beta blockers)
- Atenolol, celiprolol, nadolol, sotalol
 - Agents with membrane stabilizing effect
- Acebutolol, betaxolol, pindolol, propranolol
 - Agents with antioxidant effect
- Carvedilol, nebivolol
- Indication differences
 - Agents specifically indicated for cardiac arrhythmia
- Esmolol, sotalol, landiolol
 - Agents specifically indicated for congestive heart failure
- Bisoprolol, carvedilol, sustained-release metoprolol, nebivolol
 - Agents specifically indicated for glaucoma
- Betaxolol, carteolol, levobunolol, metipranolol, timolol
 - Agents specifically indicated for myocardial infarction
- Atenolol, metoprolol, propranolol
 - Agents specifically indicated for migraine prophylaxis
- Timolol, propranolol
- Propranolol is the only agent indicated for control of tremor, portal hypertension, and esophageal variceal bleeding, and used in conjunction with alpha-blocker therapy in phaeochromocytoma
- Indications for beta blockers include:
 - **Angina pectoris**
 - Atrial fibrillation
 - Cardiac arrhythmia
 - Congestive heart failure
 - Essential tremor
 - Glaucoma

- Hypertension
- Migraine prophylaxis
- Mitral valve prolapse

Myocardial infarction

Phaeochromocytoma, in conjunction with alpha-blocker

- Postural orthostatic tachycardia syndrome
- Symptomatic control (tachycardia, tremor) in anxiety and hyperthyroidism
- Acute aortic dissection
- Hypertrophic obstructive cardiomyopathy
- Marfan syndrome (treatment with propranolol slows progression of aortic dilation and its complications)
- Prevention of variceal bleeding in portal hypertension
- Social anxiety disorder and other anxiety disorders

**90. Drug of choice for managing asthmatic patient with hypertension:
*March 2009***

a) Timolol

b) Propranolol

c) Metoprolol

d) Amlodipine

Correct Answer - D

Ans. D: Amlodipine

The management of hypertension in a patient with asthma or chronic obstructive pulmonary disease (COPD) may be made difficult by the asthma-inducing effect of some antihypertensives. As an example, beta blockers should be used with great caution or not at all in patients with chronic asthma (including chronic obstructive pulmonary disease) or acute allergic or exercise-induced bronchospasm.

Calcium channel blockers are suitable as first line antihypertensive agent for:

- Asthma/ COPD patients.
- Recurrent stroke prevention
- Elderly with poor arterial wall compliance
- Isolated systolic hypertension
- Raynaud's/PVD patients
- Pregnant hypertensives
- Diabetes

91. True statement regarding mechanism of action of sulfonylureas is:

March 2008, September 2010

- a) Increased peripheral utilization of glucose
- b) Reduce hepatic glucose output
- c) Act on SUR1 receptors on pancreatic beta cell membrane
- d) Transcription of genes regulating glucose metabolism

Correct Answer - C

Ans. C Act on SUR1 receptors on pancreatic beta cell membrane
Sulfonylureas (Tolbutamide/ chlorpropamide/Glibenclamide) bind strongly to plasma proteins. Sulfonylureas are only useful in Type II diabetes, as they act on SUR1 receptors on pancreatic beta cell membrane, stimulating endogenous release of insulin. They work best with patients over 40 years old, who have had diabetes mellitus for under ten years. They cannot be used with type I diabetes, or diabetes of pregnancy. They can be safely used with metformin or -glitazones. The primary side effect is hypoglycemia.

Meglitinides (Repaglinide/ nateglinide) help the pancreas produce insulin and are often called "short-acting secretagogues." They act on the same potassium channels as sulfonylureas, but at a different binding site. By closing the potassium channels of the pancreatic beta cells, they open the calcium channels, hence enhancing insulin secretion

Biguanides (Metformin) reduce hepatic glucose output and increase uptake of glucose by the periphery, including skeletal muscle. Although it must be used with caution in patients with impaired liver or kidney function, metformin, a biguanide, has become the most commonly used agent for type 2 diabetes in

become the most commonly used agent for type 2 diabetes in children and teenagers. Amongst common diabetic drugs, metformin is the only widely used oral drug that does not cause weight gain. Thiazolidinediones (TZDs) (rosiglitazone) bind to PPAR α , a type of nuclear regulatory protein involved in transcription of genes regulating glucose and fat metabolism. These PPARs act on Peroxisome Proliferator Responsive Elements (PPRE). The PPREs influence insulin sensitive genes, which enhance production of mRNAs of insulin dependent enzymes. The final result is better use of glucose by the cells.

92. An oral hypoglycemic agent used to treat obesity is:

September 2008

a) Tolbutamide

b) Glipizide

c) Gliclazide

d) Metformin

Correct Answer - D

Ans. D: Metformin

Agents used for treating obesity

- Orlistat reduces intestinal fat absorption by inhibiting pancreatic lipase. Orlistat may cause frequent, oily bowel movements (steatorrhea), but if fat in the diet is reduced, symptoms often improve.
- Sibutramine is an anorectic or appetite suppressant, reducing the desire to eat. Sibutramine may increase blood pressure and may cause dry mouth, constipation, headache, and insomnia.
- Rimonabant is a recently developed anti-obesity medication. It is a cannabinoid (CB1) receptor antagonist that acts centrally on the brain thus decreasing appetite. It may also act peripherally by increasing thermogenesis and therefore increasing energy expenditure.
- In people with Diabetes mellitus type 2, the drug metformin can reduce weight.
- Olestra is a sucrose polyester which can be used as a cooking medium in place of fat.
- Leptin analogues are under investigation.

93. Lithium toxicity is treated by following methods EXCEPT:

March 2004

a) Acidification of urine

b) Increased hydration

c) Sodium bicarbonate

d) Hemodialysis

Correct Answer - A

Ans. A i.e. Acidification of urine

**94. DOC for drug (phenothiazine) induced parkinsonism:
March 2013**

a) Levodopa

b) Benserazide

c) Benzhexol

d) Selegiline

Correct Answer - C

Ans. C i.e. Benzhexol

Trihexyphenidyl/Benzhexol

- It is used for the symptomatic treatment of Parkinson's disease in mono- and combination therapy.
- It is active in postencephalitic, arteriosclerotic, and idiopathic forms.
- The drug is also commonly used to treat extrapyramidal side effects occurring during antipsychotic treatment.
- It reduces the frequency and duration of oculogyric crises as well as of dyskinesic movements and spastic contractions.
- Excessive salivation may also respond.
- Trihexyphenidyl may improve psychotic depression and mental inertia frequently associated with Parkinson's disease and symptomatic problems caused by antipsychotic treatment.
- The drug cannot cure Parkinson's disease, but may provide substantial alleviation of symptoms.
- To increase therapeutic activity trihexyphenidyl is often given concomitantly with levodopa, other antimuscarinic or antihistaminic (e.g. diphenhydramine) agents.

95. Malignant neuroleptic syndrome is caused by:

March 2009

a) Antidepressants

b) Anxiolytics

c) Antipsychotics

d) Antiepileptics

Correct Answer - C

Ans. C: Antipsychotics

Neuroleptic malignant syndrome (NMS) refers to the combination of hyperthermia, rigidity, and autonomic dysregulation that can occur as a serious complication of the use of antipsychotic drugs.

The list of atypical antipsychotic drugs that may cause NMS include olanzapine, risperidone, paliperidone, aripiprazole, ziprasidone, amisulpride, and quetiapine.

Clozapine may also be associated with the development of NMS, but it appears to be less likely to manifest with extrapyramidal features, including rigidity and tremor.

The most widely accepted mechanism by which antipsychotics cause neuroleptic malignant syndrome is that of dopamine D2 receptor antagonism.

Central D2 receptor blockade in the hypothalamus, nigrostriatal pathways, and spinal cord leads to increased muscle rigidity and tremor via extrapyramidal pathways. Hypothalamic D2 receptor blockade results in an elevated temperature set point and impairment of heat-dissipating mechanisms.

Peripherally, antipsychotics lead to increased calcium release from the sarcoplasmic reticulum, resulting in increased contractility, which

the sarcoplasmic reticulum, resulting in increased contractility, which can contribute to hyperthermia, rigidity, and muscle cell breakdown.

96. Antidote for Restyl/Alprazolam is: *March 2010, March 2013*

a) Protamine sulphate

b) Flumazenil

c) EDTA

d) BAL

Correct Answer - B

Ans. B: Flumazenil

Pharmacokinetics of alprazolam

- Well absorbed (90%) from the GI tract; absorption is slower with extended-release tablets
- Widely distributed, crosses blood-brain barrier. Probably crosses the placenta and enters breast milk. Accumulation is minimal
- Metabolized by the liver (CYP3A4 enzyme system) to an active compound that is subsequently rapidly metabolized
- Half life is 12 hour

Uses of alprazolam

- Treatment of Generalized Anxiety Disorder (GAD)
- Panic Disorder
- Management of anxiety associated with depression
- Management of symptoms of premenstrual syndrome (PMS)
- Insomnia, irritable bowel syndrome (IBS) and other somatic symptoms associated with anxiety
- Used as an adjunct with acute mania, acute psychosis.

Actions

- Acts at many levels in the CNS to produce anxiolytic effect

- May produce CNS depression
- Effects may be mediated by GABA, an inhibitory neurotransmitter.

Contra-indicated in

- Hypersensitivity
- Cross-sensitivity with other benzodiazepines may exist
- Pre-existing CNS depression
- Severe uncontrolled pain
- Angle-closure glaucoma, obstructive sleep apnea, pulmonary disease
- Pregnancy and lactation
- Concurrent itraconazole or ketoconazole.

Lactation: Use in pregnancy or lactation may cause CNS depression, flaccidity, feeding difficulties, and seizures in infant

Use cautiously in

- Renal Impairment, Hepatic dysfunction.
- Concurrent use with nefazodone, fluvoxamine, cimetidine, fluoxetine, hormonal contraceptives, propoxyphene, diltiazem, isoniazid, erythromycin, clarithromycin, grapefruit juice.
- History of suicide attempt or alcohol/drug dependence, debilitated patients.
- Pediatric age: Safety and efficacy not established. Decreased dosage and frequent monitoring required.
- Geriatric age: Elderly patients have increased sensitivity to benzodiazepines. Appears on Beers list and is associated with increased risk of falls and excessive CNS effects.

Interactions

- Alcohol, antidepressants, other benzodiazepines, antihistamines and opioid analgesics -concurrent use results in CNS depression
- Hormonal contraceptives, disulfiram, fluoxetine, isoniazid, metoprolol, propoxyphene, propranolol and valproic acid metabolism of alprazolam, blood levels and its actions (dose adjustments may be necessary)
- CYP3A4 inducers (rifampin, carbamazepine, or barbiturates)
- CYP3A4 inhibitors (erythromycin, ketoconazole, itraconazole, fluvoxamine, cimetidine, nefazodone)

Toxicity and overdose

Flumazenil is the antidote for alprazolam toxicity or overdose.

(Flumazenil may induce seizures in patients with a history of

(Flumazenil may induce seizures in patients with a history of seizures disorder or who are on tricyclic antidepressants.)

**97. An anxiolytic benzodiazepine which is also antidepressant :
*September 2007***

a) Lorazepam

b) Oxazepam

c) Alprazolam

d) Chlordiazepoxid

Correct Answer - C

Ans. C: Alprazolam

Alprazolam is approved for the short-term treatment of panic disorder, with or without agoraphobia. Alprazolam is very effective in the short-term symptomatic relief of moderate to severe anxiety, essential tremor, and panic attacks.

Alprazolam is indicated for the management of anxiety disorders or the short-term relief of symptoms of anxiety. Alprazolam is recommended for the short-term treatment of severe acute anxiety. Alprazolam is sometimes prescribed for anxiety with associated depression.

The antidepressant effects of alprazolam may be due to its effects on beta-adrenergic receptors. Other benzodiazepines are not known to have antidepressant activity.

**98. Which of the following does not change
pH of stomach:
*September 2011***

a) Sucralfate

b) H2 blocker

c) Omeprazole

d) Ranitidine

Correct Answer - A

Ans. A: Sucralfate

Sucralfate has very poor acid neutralizing capacity and it has no antisecretory property

Sucralfate

- It is a cytoprotective agent, primarily indicated for the treatment of active duodenal ulcers.
- Sucralfate is also used for the treatment of gastroesophageal reflux disease (GERD) and stress ulcers.
- Unlike the other classes of medications used for treatment of peptic ulcers, sucralfate is a sucrose sulfate-aluminium complex that binds to the mucosa, thus creating a physical barrier that impairs diffusion of hydrochloric acid in the gastrointestinal tract and prevents degradation of mucus by acid.
- It also stimulates bicarbonate output and acts like an acid buffer with cytoprotective properties
- Sucralfate is a locally acting substance that in an acidic environment (pH < 4) reacts with hydrochloric acid in the stomach to form a cross-linking, viscous, paste-like material capable of acting as an acid buffer for as long as 6 to 8 hours after a single dose. It also attaches to proteins on the surface of ulcers, such as albumin

It also attaches to proteins on the surface of ulcers, such as albumin and fibrinogen, to form stable insoluble complexes.

These complexes serve as protective barriers at the ulcer surface, preventing further damage from acid, pepsin, and bile.

In addition, it prevents back diffusion of hydrogen ions, and adsorbs both pepsin and bile acids.

99. Which of the following is a potassium sparing drug:

September 2005, March 2013

a) Indapamide

b) Frusemide

c) Spironolactone

d) Mannitol

Correct Answer - C

Ans. C: Spironolactone

Potassium-sparing diuretics do not promote the secretion of potassium into the urine; thus, potassium is spared and not lost as much as in other diuretics. The term "potassium-sparing" refers to an effect rather than a mechanism or location; nonetheless, the term almost always refers to two specific classes that have their effect at similar locations:

- Aldosterone antagonists: Spironolactone, which is a competitive antagonist of aldosterone. Aldosterone normally adds sodium channels in the principal cells of the collecting duct and late distal tubule of the nephron. Spironolactone prevents aldosterone from entering the principal cells, preventing sodium reabsorption. A similar agent is potassium canreonate.
- Epithelial sodium channel blockers: amiloride and triamterene.

**100. Which antitubercular agent is associated with side effects as respiratory syndrome, cutaneous syndrome, Flu syndrome and abdominal syndrome:
*March 2010***

a) Isoniazid

b) Rifampicin

c) Pyrazinamide

d) Ethambutol

Correct Answer - B

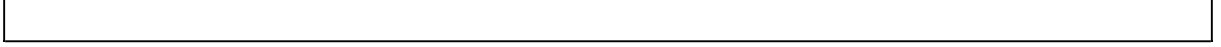
Ans. B: Rifampicin

During therapy, rifampicin is usually well-tolerated, however, adverse side-effects are common in intermittent rifampicin intake.

- Respiratory syndrome-breathlessness which may be associated with shock and collapse
 - Cutaneous syndrome-Flushing, pruritis, rash, redness and watering of the eyes.
 - Flu syndrome-Chills, fever, headache, malaise and bone pain
 - Abdominal syndrome-nausea, vomiting, abdominal cramps
- Other include febrile reaction, eosinophilia, leucopenia, thrombocytopenia, purpura, haemolysis and shock, hepatotoxicity and nephrotoxicity.

Gastrointestinal adverse reactions may be severe leading to pseudomembranous colitis.

Neurotoxic effects include confusion, ataxia, blurring of vision, dizziness and peripheral neuritis. A common toxic effect is red skin with orange discolouration of body fluids.



**101. Which of the following anti-cancer drug comes under monoclonal antibodies:
*March 2013***

a) Di-ethyl-stilbestrol

b) Tamoxifen

c) Ritumixab

d) Bortezomib

Correct Answer - C

Ans. C i.e. Ritumixab

Rituximab

- It is a chimeric monoclonal antibody against the protein CD20, which is primarily found on the surface of B cells.
- Rituximab destroys B cells, and is therefore used to treat diseases which are characterized by excessive numbers of B cells, overactive B cells, or dysfunctional B cells.
- This includes many lymphomas, leukemias, transplant rejection, and autoimmune disorders.

102. Bleomycin toxicity affects which organ predominantly:

March 2011

a) Bone marrow

b) Lungs

c) Liver

d) RBC

Correct Answer - B

Ans. B: Lungs

Toxicity of Bleomycin is nausea, vomiting, dermographia, scleroderma like changes in skin, pneumonitis and occasionally pulmonary fibrosis.

It is rarely a myelosuppressant

Bleomycin

- It is a glycopeptide antibiotic produced by the bacterium *Streptomyces verticillus*.
- Bleomycin refers to a family of structurally related compounds.
- When used as an anticancer agent, the chemotherapeutic forms are primarily bleomycin A2 and B2.
- It works by causing breaks in DNA.
- The drug is used in the treatment of Hodgkin's lymphoma (as a component of the ABVD regimen), squamous cell carcinomas, and testicular cancer, as well as in the treatment of plantar warts and as a means of effecting pleurodesis
- Bleomycin acts by induction of DNA strand breaks.
- DNA cleavage by bleomycin depends on oxygen and metal ions, at least in vitro.

- Therefore bleomycin is used in combination with doxorubicin in Hodgkins lymphoma, as they have additive and complementary effects on the DNA, since doxorubicin acts by intercalating between DNA strands, and also acts on topoisomerase II enzyme thus relaxing the topoisomerase complexes
- The most serious complication of bleomycin is pulmonary fibrosis and impaired lung function.
- It has been suggested that bleomycin induces sensitivity to oxygen toxicity
- Other side effects include fever, rash, dermatographism, hyperpigmentation, alopecia (hair loss) and Raynaud's phenomenon (discoloration of fingers and toes).

103. Mechanism of action of allopurinol: *September 2005*

- a) Inhibits the synthesis of uric acid
- b) Inhibits tubular resorption of uric acid
- c) Antinflammatory action
- d) Increases phagocytosis of urate crystals

Correct Answer - A

Ans. A: Inhibits the synthesis of uric acid

Allopurinol is a structural isomer of hypoxanthine (a naturally occurring purine in the body) and is an enzyme inhibitor, inhibiting xanthine oxidase.

Xanthine oxidase is responsible for the successive oxidation of hypoxanthine and xanthine resulting in the production of uric acid, the product of human purine metabolism.

In addition to blocking uric acid production, inhibition of xanthine oxidase causes an increase in hypoxanthine and xanthine, which are converted to closely related purine ribotides adenosine and guanosine monophosphates.

Increased levels of these ribotides cause feedback inhibition of amidophosphoribosyl transferase, the first and rate-limiting enzyme of purine biosynthesis.

Allopurinol therefore decreases both uric acid formation and purine synthesis.

**104. Which of the following drug causes gynecomastia:
September 2008, 2010**

a) Cimetidine

b) Ranitidine

c) Omeprazole

d) a and c both

Correct Answer - D

Ans.A, C: Cimetidine, Omeprazole

Many pharmacological agents have been linked to gynecomastia. These drugs can be categorized by their mechanisms of action.

- Drugs that act exactly like estrogens (e.g., diethylstilbestrol, birth control pills, digitalis, estrogen-containing cosmetics).
- Drugs that enhance endogenous estrogen formation (e.g., gonadotropins, progesterone, clomiphene).
- Drugs that inhibit testosterone synthesis and action (e.g., ketoconazole, metronidazole, and cimetidine (but not other H2 blockers)).
- Lately, few reports of gynecomastia and erectile dysfunction, possibly due to reduced testosterone level, on prolonged use of omeprazole have appeared.
- Drugs that act by unknown mechanisms (e.g., isoniazid, methyldopa, captopril, tricyclic antidepressants, diazepam, marijuana, heroin).

Chronic alcohol abuse may result in hepatocellular destruction and scarring which may result in gynecomastia.

105. All of the following are true regarding sumatriptan except:
September 2009

a) 99% oral bioavailability

b) Contraindicated in coronary artery disease

c) Constricts cranial vessels

d) Selective 5-HT 1B/1D receptor agonist

Correct Answer - A

Ans. A: 99% oral bioavailability

Sumatriptan is structurally similar to serotonin, and is a selective 5-HT 1B/1D receptor agonist.

The specific receptor subtypes it activates are present on the cranial arteries and veins. Acting as an agonist at these receptors, Sumatriptan reduces the vascular inflammation associated with migraine.

It causes constriction of dilated cranial extracerebral blood vessels, especially the arterio-venous shunts in the carotid artery.

Dilatation of these shunt vessels during migraine attack is believed to divert blood flow away from the brain parenchyma. Sumatriptan is administered in several forms; tablets, subcutaneous injection, and nasal spray. Oral administration (as succinate) suffers from poor bioavailability, partly due to presystemic metabolism — some of it gets broken down in the stomach and bloodstream before it reaches the target arteries.

Sumatriptan is metabolised primarily by monoamine oxidase A into an indole acetic acid analogue, part of which is further conjugated with glucuronic acid. These metabolites are excreted in the urine and bile.

and other

Large doses of sumatriptan (200 mg/ day) can cause sulfhemoglobinemia, a rare condition in which the blood changes from red to greenish-black, due to the integration of sulfur into the hemoglobin molecule.

Serious cardiac events include coronary artery vasospasm, transient myocardial ischemia, myocardial infarction, ventricular tachycardia, and ventricular fibrillation.

106. Beta2 adrenergic receptors are not found on:

September 2010

a) Arterioles

b) Veins

c) Adipose Tissue

d) Uterus

Correct Answer - C

Ans. C: Adipose Tissue

Beta receptors:

- Beta 1 - Heart, JG cells in kidney.
- Beta 2 - Bronchi, blood vessels, uterus, liver, g.i.t, urinary tract, eye
- Beta 3 - adipose tissue

107. Most effective agent to prevent motion sickness is?

a) Ephedrine

b) Nedocromil

c) Cyproheptidine

d) Hyoscine

Correct Answer - D

Ans. is `d' i.e., Hyoscine

Motion sickness is more easily prevented than cured.

Transdermal hyoscine (scopolamine) is the best agent for the prevention of /notion sickness.

Antihistamines can also be used for prevention.

108. Cyclic peptide chain is present in ?

a) Gramicidin A

b) Gramicidin B

c) Gramicidin D

d) Gramicidin S

Correct Answer - D

Ans. is d i.e., Gramicidin S

Gramicidin

Gramicidin is a heterogeneous mixture of three antibiotic compounds, gramicidins A, B and C, making up 80%, 6%, and 14%, respectively, all of which are obtained from the soil bacterial species *Bacillus brevis* and called collectively gramicidin D.

Gramicidin D contains linear pentadecapeptides, that is chains made up of 15 amino acid.

This is in contrast to gramicidin S, which is a cyclic peptide chain. Gramicidin is active against Gram-positive bacteria, except for the Gram-positive bacilli, and against select Gram-negative organisms, such as *Neisseria* bacteria. Its therapeutic use is limited to topical application, as it induces hemolysis in lower concentrations than bacteria cell death, so it cannot be administered internally.

109. Beta blocker with membrane stabilizing property are all except ?

a) Acebutolol

b) Betaxolol

c) Carvedilol

d) Bevantolol

Correct Answer - D
Ans. is 'd' i.e., Bevantolol

110. Pramlintide is ?

a) Synthetic amylin analogue

b) Inhibitor of DPP 4

c) GLP 1 analogue

d) PPAR gamma

Correct Answer - A

Ans. is 'a' i.e., Synthetic amylin analogue

NEWER ANTIDIABETIC DRUGS

Exenatide

- *Exenatide is a synthetic glucagon-like peptide - 1 (GLP-1) analogue.*
- GLP-1 is an important incretin that is released from gut in response to oral glucose.
- But GLP-1 can not be used clinically as it is degraded rapidly by enzyme *dipeptidyl peptidase* → (DPP-4).
- Exenatide is resistant to DPP-4.
- It acts similar to GLP-1 → Enhancement of postprandial insulin release, suppression of glucagon release and appetite as well as slowing of gastric emptying.
- *It is given by subcutaneous route & used in type 2 DM*
- *Nausea is most important side effect.*

Sitagliptin

- This is *orally active inhibitor of DPP-4.*
- It prevents degradation of endogenous GLP-1 and other incretins, potentiating their action, resulting in limitation of postprandial hyperglycemia.
- It is used in *type 2 DM.*
- Other DPP-4 inhibitor is vildagliptin

Pramlintide

- This is a *synthetic amylin analogue* (Amylin is a polypeptide produced by pancreatic (3-cells which reduces glucagon secretion from a-cells and delays gastric emptying).
- Pramlintide attenuates postprandial hyperglycemia and exerts a centrally mediate anorectic action. o It is given by subcutaneous route and is used in *both Type 1 and Type 2 DM*.

Glucomannan

- This is powdered extract from tuber of konjar.
- It is promoted as a dietary adjunct for diabetes.
- It swells in stomach by absorbing water and is claimed to reduce appetite, blood sugar, serum lipids and relieve constipation.

Bromocriptine

- Recently bromocriptine has been approved by FDA, as an adjunct to diet and exercise to improve glycemic control in type 2 DM. It has been found that dopamine alter insulin resistance by acting on hypothalmus and bromocriptine blocks O₂ receptors.

111. Rivastigmine is used in ?

a) Dementia

b) Dissociation

c) Depression

d) Delusions

Correct Answer - A

Ans. is 'a' i.e., Dementia

Cognition Enhancers (Cerebroactive drugs)

- These are a heterogenous group of drugs developed for use in dementia and other cerebral disorders.
- Drugs are
 1. Cholinergic *activators* → Tacrine, Rivastigmine, Donepezil, Galantamine.
 2. *Glutamate (NMDA) antagonist* → Memanite
 3. *Miscellaneous* → Piracetam, Pyritinal (pyrithioxine), Piribedil, Dihydroergotoxine (Codergocrine). Important points about some important drugs.

Tacrine

- It was the first centrally active *anticholinesterase* to be used in AD.
- *Hepatotoxicity has restricted its use.*

Rivastigmine

- It is carbamate derivative of physostigmine.
- *It inhibits both acetylcholinesterase and butylcholinesterase.*
- It is selective for G_1 isoform of AchE which predominates in brain.
- It is used in AD.

Donepezil

- It is reversible inhibitors of cerebral AchE.
- *It has long PA (70 hours) → Single daily dose can be given.*

- It is used in AD.

Galantamine

- It inhibits cerebral AchE.
- It has some direct action on nicotinic receptors as well.

Acetyl - I - carnitine

- It has *antioxidant* property.
- It also *increases cholinergic transmission*.
- It decreases symptoms of AD as well as it decreases disease progression.

Memantine

- A NMDA receptor antagonist, used in AD.

112. Dose of centchroman is ?

a) 30 mg

b) 60 mg

c) 120 mg

d) 240 mg

Correct Answer - A

Ans. is 'a' i.e., 30 mg

Cetchroman (Saheli)

- Ormeloxifene, research product of Central Drug Research Institute, Lucknow, India.
- It is a potent non - steroidal compound with potent anti - estrogenic and weak estrogenic properties. It is taken orally (30 mg) twice a week for first three months then once a week.
- It works primarily by preventing implantation of fertilized ovum. It does not inhibit ovulation.
- It is avoided in PCOD, with liver and kidney diseases and in tuberculosis. There may be a tendency of oligomenorrhoea.
- The failure rate is 1 - 4/100 woman years of use. Failure rate is less with increased doses. It is devoid of any significant adverse metabolic effect.
- This may also be used as a emergency contraceptive.

113. Beta blocker with d isomer responsible for beta blocker action is ?

a) Nebivolol

b) Timolol

c) Esmolol

d) Propranolol

Correct Answer - A

Ans. is 'a' i.e., Nebivolol

Nebivolol is a novel beta-blocker with a greater degree of selectivity for beta₁-adrenergic receptors than other agents in this class and a nitric oxide (NO)-potentiating, vasodilatory effect that is unique among beta-blockers currently available to clinicians. Nebivolol is a racemic mixture with beta-blocker activity residing in the d-isomer; in contrast, l-nebivolol is far more potent in facilitating NO release.

Note :

- Beta blockers with 1 isomer having beta blocking activity are :?
- Propranolol, atenolol, metoprolol, esmolol, timolol

114. Rosiglitazone mechanism of action is ?

a) Acts as PPAR gamma agonist

b) Inhibitor of alpha glucosidase

c) Acts as amylin analogue

d) Acts as dipeptidyl peptidase inhibitor

Correct Answer - A

Ans. is 'a' i.e., Acts as PPAR gamma agonist

Rosiglitazone

- It is oral antidiabetic drug
- They are selective agonists for nuclear peroxisome proliferator activator receptor gamma (PPAR gamma) expressed in the fat and muscle cells.
- It enhances transcription of several insulin responsive genes.
- Reverse insulin resistance by enhancing GLUT 4 expression and translocation.

115. Incretin like function is seen in ?

a) Exenatide

b) Miglital

c) Poiglitazone

d) Repaglinide

Correct Answer - A

Ans. is 'a' i.e., Exenatide

- Exenatide is a synthetic glucagon-like peptide - 1 (GLP-1) analogue.
- GLP-1 is an important incretin that is released from gut in response to oral glucose.
 - But GLP-1 can not be used clinically as it is degraded rapidly by enzyme dipeptidyl peptidase → (DPP-4).
- Exenatide is resistant to DPP-4.
- It acts similar to GLP-1 → Enhancement of postprandial insulin release, suppression of glucagon release and appetite as well as slowing of gastric emptying.
- It is given by subcutaneous route & used in type 2 DM
- Nausea is most important side effect.

116. Glucuronidation takes place in ?

a) Liver

b) RBC

c) Pancreas

d) Thyroid

Correct Answer - A

Ans. is 'a' i.e., Liver

GLUCURONIDATION

- This is the most important synthetic reaction carried out by a group of UDP-glucuronosyl transferases (UGTs).
- Glucuronidation occurs mainly in the liver, although the enzyme responsible for its catalysis, UDP-glucuronyltransferase, has been found in all major body organs (e.g., intestine, kidneys, brain, adrenal gland, spleen, and thymus).
- Compounds with a hydroxyl or carboxylic acid group are easily conjugated with glucuronic acid which is derived from glucose.
- Examples are- chloramphenicol, aspirin, paracetamol, lorazepam, morphine, metronidazole.
- Not only drugs but endogenous substrates like bilirubin, steroidal hormones and thyroxine utilize this pathway.
- Glucuronidation increases the molecular weight of the drug which favours its excretion in bile.
- Drug glucuronides excreted in bile can be hydrolysed by bacteria in the gut-the liberated drug is reabsorbed and undergoes the same fate. This enterohepatic cycling of the drug prolongs its action, e.g. phenolphthalein, oral contraceptives.

117. Digitalis produces which of the following changes in ECG ?

a) Tall T waves

b) ST segment elevation

c) Prolonged QT interval

d) Prolonged PR interval

Correct Answer - D

Ans. is 'd' i.e., Prolonged PR interval

There are some characteristic ECG changes by digitalis use, some of which occur at therapeutic concentration and some occurs at toxic level :

At therapeutic level

- Prolongation of PR interval
- Scooping of ST segment → Also known as *digitalis wave* or *dig sag* there is down sloping ST depression (initially)
- Shortening of QT interval
- Decreased T wave amplitude/or T wave inversion

At toxic level: Above changes are amplified

- Prolongation of PR interval → conduction block may occur
- T wave inversion
- ST depression
- QT interval shortens further
- Increased automaticity → Arrhythmias

118. Antifungal which can be used orally but not iv is?

a) Voriconazole

b) Amphoterecin B

c) Terbinafine

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Terbinafine

119. Following are the advantages of sustained release preparation over the conventional preparations except ?

a) Decreased frequency of administration

b) Improved compliance

c) Less incidence of high peak side effects

d) Drugs with half life > 4 hours are suitable

Correct Answer - D

Ans. is 'd' i.e., Drugs with half life > 4 hours are suitable

- **Acts for a longer period.**
- Frequency of administration is reduced -more convenient.
- Improved patient compliance - a single morning dose is less likely to be forgotten/omitted than a 6 or 8 hourly regimen; a monthly or quarterly administered contraceptive over one that has to be taken daily.
- Large fluctuations in plasma concentration are avoided.
- Side effects related to high peak plasma level just after a dose (e.g. nifedipine) would be minimized.
- Better round-the-clock control of blood sugar, etc.
- Drug effect could be maintained overnight without disturbing sleep, e.g. antiasthmatics, anticonvulsants, etc.

120. Most serious side effect of valproate is

a) Fulminant hepatitis

b) Spina bifida

c) Weight gain

d) Thrombocytopenia

Correct Answer - A

Ans. is 'a' i.e., Fulminant hepatitis

Valproate

- **Valproate acts by multiple mechanism :**

1. Prolongation of inactivated Na⁺ channel.

2. Inhibition of T type Ca²⁺ current.

3. Inhibition of degradation of GABA by GABA transaminase → facilitation of GABA mediated Cl⁻ channel opening.

- *Its most serious adverse effect is fulminant hepatitis especially in children below 3 years.*

- *Used during pregnancy, it has produced spina bifida and other neural tube defects.*

- Uses (other than epilepsy) --> mania & bipolar illness, prophylaxis of migraine, trigeminal neuralgia, tardive dyskinesia.

Adverse effect of Valproate

- Neurological - Ataxia, sedation, tremor

- Systemic- Hepatotoxicity, thrombocytopenia, GI irritation, weight gain, transient alopecia, hyperammonemia, pancreatitis, coagulation disorder.

121. Special feature of glargine insulin is ?

- a) It produces a smooth peakless effect
- b) It is not suitable for once daily administration
- c) It remains soluble at pH 7
- d) It can control meal time hyperglycemia

Correct Answer - A

Ans. is 'a' i.e., It produces a smooth peakless effect

Insulin Glargine

- It is long acting biosynthetic insulin.
- It remains soluble at pH 4 of the formulation and precipitates at neutral pH on subcutaneous administration.
- Onset of action is delayed.
- It produces a smooth peakless effect.
- It is suitable for once daily administration.
- Low incidence of night time hypoglycemia.
- It does not control meal time hyperglycemia.

122. Drugs or biological products for diagnosis, treatment or prevention of a rare disease or condition are called?

a) Orphan drugs

b) Rare drugs

c) Extinct drugs

d) Essential drugs

Correct Answer - A

Ans. is 'a' i.e., Orphan drugs

Orphan drugs

- These are drugs or biological products for diagnosis/prevention of a rare disease or condition, or a more common disease (endemic only in resource poor countries) for which there is no reasonable expectation that the cost of developing and marketing it will be recovered from the sales of that drug.
- The list includes sodium nitrite, fomepizole, liposomal amphotericin B, miltefosine, rifabutin, succimer, somatropin, digoxin immune Fab (digoxin antibody), liothyronine (T₃) and many more.
- Though these drugs may be life saving for some patients, they are commercially difficult to obtain as a medicinal product.
- Government in developed countries offer tax benefits and other incentives to pharmaceutical companies for developing and marketing orphan drugs (e.g. Orphan Drug Act in USA).

123. Effect of dopamine on renal vessels ?

a) Vasodilatation

b) Vasoconstriction

c) Increased permeability

d) No effect

Correct Answer - A

Ans. is 'a' i.e., Vasodilatation.

- Injected dopamine produces renal vasodilation, probably by acting on a specific dopaminergic receptor.
- It also produces vasodilation in the mesentery.
- Elsewhere; it produces vasoconstriction, probably by releasing norepinephrine, and it has a positive inotropic effect on the heart by an action on β_1 adrenergic receptors.
- The net effect of moderate doses of dopamine is an increase in systolic pressure and no change in diastolic pressure.
- Because of these actions, dopamine is useful in the treatment of traumatic and cardiogenic shock.

124. Cochlear involvement more than vestibular involvement drug ?

a) Sisomycin

b) Kanamycin

c) Gentamycin

d) Streptomycin

Correct Answer - B
Ans. is 'b' i.e., Kanamycin

125. Mechanism of action of paclitaxel is ?

a) Topoisomerase inhibition

b) Increase the polymerization of tubulin

c) Inhibition of protein synthesis

d) Alkylation of DNA

Correct Answer - B

Ans. is 'b' i.e., Increase the polymerization of tubulin

Taxanes

- *Paclitaxel* and *docetaxel* function as a mitotic spindle poison through high affinity binding to microtubules with *enhancement of tubulin polymerization*.
- The microtubules are stabilized and their depolymerization is prevented → inhibition of mitosis and cell division.
- Paclitaxel is metabolized in liver and undergoes enterohepatic circulation → dose should be reduced in liver dysfunction.
- Paclitaxel can cause hypersensitivity reaction which does not occur with a novel albumin-bound paclitaxel preparation.
- Paclitaxel and docetaxel both can cause bone marrow depression & peripheral neuropathy.

126. Crystallization and storage of insulin requires ?

a) Mn^{++}

b) Zn^{++}

c) Cu^{++}

d) Ca^{++}

Correct Answer - B

Ans. is 'b' i.e., Zn^{++}

- Zinc ions are essential for the formation of hexameric insulin and hormone crystallization.
- Following the synthesis of proinsulin, zinc promotes the formation of proinsulin hexamers and increases its solubility before conversion to insulin.
- Proinsulin binds 30 zinc ions, of which 2 to 4 are coordinated within the molecule. These zinc ions appear to be important for the solubility of proinsulin hexamers.
- With the removal of C-peptide from each proinsulin monomers, the resulting insulin increases its coordination of zinc to up to six ions per hexamer, which decreases its solubility and increases its crystallization within the secretory vesicle.
- The insulin, stored as crystalline hexamer, is resistant from proteolytic attack within the vesicle.
- Upon release of insulin into the bloodstream, zinc is also released and the insulin becomes soluble in the blood.

127. Exocytic release of ACH is blocked by ?

a) Hemicholium

b) Botulinum

c) Alpha bungarotoxind

d) Vesamicol

Correct Answer - B

Ans. is 'b' i.e., Botulinum

ACETYLCHOLINE SYNTHESIS AND RELEASE

- Choline is actively taken up by the axonal membrane by Na⁺; choline cotransporter. (*Rate limiting step*). This step is blocked by Hemicholinium.
- Choline is acetylated with the help of ATP and coenzyme 'A' by the enzyme *choline acetyl transferase* present in the axoplasm.

128. Longest lag period in bacterial growth is associated with ?

a) Rifampicin

b) INH

c) Streptomycin

d) Ethambutol

Correct Answer - D
Ans. is 'd' i.e., Ethambutol

129. Bioavailability ?

a) Area of oral/ area of IV

b) Area of IV/ area of oral

c) Area of oral/ area of IV x 100

d) Area of IV/ area of oral x 100

Correct Answer - C

Ans. is 'c' i.e., Area of oral/ area of IV x 100

Bioavailability

- Refers to the rate and extent of absorption of drug from a dosage form as determined by its concentration-time curve in blood or by its excretion in urine.
- It is the measure of fraction (F) of drug, which reaches the systemic circulation in unchanged form.
- Bioavailability of a drug given by i.v. route is 100%. So the bioavailability of drug dosage form is determined by comparing it with the i.v. route.

130. Drug of choice for prevention of infection by animal bite ?

a) Amoxicillin/clavulanate

b) Tetracycline

c) Ciprofloxacin

d) Cotrimazole

Correct Answer - A

Ans. is 'a' i.e., Amoxicillin/clavulanate

131. True about propranolol is ?

- a) Metabolism of propranolol is not dependent on the hepatic blood flow
- b) Undergoes extensive first pass metabolism
- c) Hydroxylated product of propranolol has alpha blocking property
- d) Propranolol is lipophobic

Correct Answer - B

Ans. is 'b' i.e., Undergoes extensive first pass metabolism

Propranolol metabolism

- It is well absorbed after oral administration.
- It has low bioavailability due to high first pass metabolism in liver.
- It is lipophilic and easily penetrates into brain.
- Metabolism of propranolol is dependent on the hepatic blood flow.
- Bioavailability of propranolol is increased when it is taken with food.
 - o Hydroxylated product of propranolol has beta blocking activity.
- Metabolites are excreted in urine mostly as glucuronides.
- More than 90% of propranolol is bound to plasma proteins.

132. All are true for sublingual route except ?

a) Escape first pass metabolism

b) All drugs can be given

c) Action can be terminated any time

d) Rapid absorption

Correct Answer - B

Ans. is 'b' i.e., All drugs can be given

Sublingual route of administration

- The tablet or pellet containing the drug is placed under the tongue or crushed in the mouth and spread over the buccal mucosa.
- Only the lipid soluble and non-irritating drugs can be administered by this route
- Absorption is rapid and action can be produced in minutes
- Action can be easily terminated by spitting the drug after the desired effect is achieved.
- Liver is bypassed with this route, thus the drugs with high first pass metabolism can be easily given by this route.
- Drugs given by this route are: GTN, buprenorphine, desamino-oxytocin.

133. The iron preparation that can be given intravenously is ?

a) Ferrous sulphate

b) Iron dextran

c) Iron sorbitol citric acid complex

d) Colloidal ferric hydroxide

Correct Answer - B

Ans. is 'b' i.e., Iron dextran

134. Liposomes are used for all except?

a) Amphotericin-B

b) Doxorubicin

c) Propranolol

d) Vincristine

Correct Answer - C
Ans. is 'c' i.e., Propranolol

135. Digitalis acts in atrial fibrillation by

a) Increasing AV node refractoriness

b) Decreasing atrial contractility

c) Inhibiting $\text{Na}^+ \text{K}^+$ ATPase pump

d) Inhibiting $\text{Na}^+ \text{H}^+$ ATPase pump

Correct Answer - A

Ans. is 'a' i.e., Increase in A.V. node refractoriness

Digitalis in arrhythmia

- Digitalis is the drug of choice for controlling ventricular rate in atrial fibrillation (AF) with heart failure.
- Digitalis reduces the ventricular rate in AF by decreasing the number of impulses that are able to pass down the A-V node and bundle of His.
- It increases effective refractory period-ERP (refractoriness) of A-V node by direct, vagomimetic and antiadrenergic action - the minimum interval between consecutive impulses that can successfully traverse the conducting tissue is increased.
- A degree of A-V block is naturally established in AF.
- Because of the relatively long ERP of A-V node, many atrial impulses impinge on it while it is still refractory; others falling early in the relative refractory period get extinguished by decremental conduction - These concealed impulses leave upper margin of A-V node refractory for a further period.
- Thus, any influence which increases atrial rate in AF (e.g. digitalis), by itself reduces ventricular rate.

136. The most potent topical corticosteroids is ?

a) Hydrocortisone butyrate cream 0.1%

b) Betamethasone valerate cream 0.5%

c) Clobetasol propionate cream 0.5%

d) Clobetasone butyrate cream 0.5%

Correct Answer - C

Ans. 'c' i.e., Clobetasol propionate cream 0.5%

137. Drug with beta adrenergic blocking, with antioxidant, with calcium channel blocking, with alpha 1 antagonist activity is ?

a) Esmolol

b) Carvedilol

c) Nebivolol

d) Levobunolol

Correct Answer - B

Ans. is 'b' i.e., Carvedilol

Carvedilol

- Carvedilol is a $\beta_1 + \beta_2 + \alpha_1$ adrenoceptor blocker with $\alpha : \beta$ blocking property of 1 : 9.
- It has *antioxidant* and *antimitotic* property.
- *It produces peripheral vasodilation due to α -1 blockade as well as calcium channel blockade (direct effect).*
- It is used in hypertension and *angina*.
- It is used as *cardioprotective in CHF*.
- $t_{1/2}$ is 2-8 hrs.
- It is eliminated through liver and kidney.
- It causes *orthostatic hypotension*.

138. Drug highly distributed to body fat ?

a) Digoxin

b) Heparin

c) Mannitol

d) Thiopentone

Correct Answer - D

Ans. is 'd' i.e., Thiopentone

Redistribution of drugs

- Highly lipid soluble drugs get initially distributed to organs with high blood flow i. e. brain, heart, kidney etc.
- Later, less vascular but more bulky tissues take up the drug- plasma concentration falls and the drug is withdrawn from the highly perfused sites.
- If the site of action was in the highly perfused tissues, redistribution results in termination of the action of drug.
- Greater the lipid solubility of the drug faster is its redistribution.
- The drugs with high lipid solubility and faster redistribution are - thiopentone and diazepam.

139. True about zero order kinetics ?

a) Most of the drugs follow zero order kinetics

b) $T^{1/2}$ of drug elimination remains constant

c) Constant amount of drug eliminated per unit time

d) Rate of elimination is dependent on plasma concentration

Correct Answer - C

Ans. is 'c' i.e., Constant amount of drug eliminated per unit time

140.

Part of ethambutol in RNTCP regime ?

a) Bactericidal + detrimental to semidormant bacilli

b) Bactericidal + detrimental to dormant bacilli,

c) Bacteristatic + detrimental to fast multiplying bacilli

d) Bacteristatic + detrimental to slow multiplying bacilli

Correct Answer - C

Ans. is 'c' i.e., Bacteristatic + detrimental to fast multiplying bacilli

Ethambutol

- It is selectively bacteriostatic and is active against MAC as well as some other mycobacteria.
- Fast multiplying bacilli are more susceptible
- With the triple drug therapy it hastens the sputum conversion and also helps to prevent the development of resistance (primary purpose of using it).
- It inhibits arabinosyltransferase involved in arabinogalactan synthesis, thereby interfering with mycolic acid incorporation in mycobacterial cell wall.

141. Tamoxifen causes ?

a) Osteoporosis

b) Endometrial hyperplasia

c) Ovarian cancer

d) Decreased triglyceride level

Correct Answer - B

Ans. is 'b' i.e., Endometrial hyperplasia

142. Carboxypenicillins true is all except ?

a) Nephrotoxic

b) Sensitive to penicillinase

c) Effective against pseudomonas

d) Platelet aggregation affected

Correct Answer - A

Ans. is 'a' i.e., Nephrotoxic

Carboxypenicillins - Carbenicillin:

- It is active against pseudomonas and indole positive proteus.
- Klebsiella and gram positive cocci are unaffected by it
- It is neither penicillinase resistant nor acid resistant.
- It is inactive orally and is rapidly excreted in urine in 1 hr.
- At high doses it can cause bleeding by interfering with platelet function due to perturbation of agonists receptors on platelet surface.
- *Carbenicillin indanyl* is an orally active ester of carbenicillin, used for treatment of UTI caused by *pseudomonas* and *proteus*.

143. Which is not a side effect of dapsone ?

a) Hemolytic anemia

b) Myopathy

c) Hepatitis

d) Infectious mononucleosis type syndrome

Correct Answer - B

Ans. is 'b i.e., Myopathy

Adverse effects of dapsone

- The *most common* adverse effect of dapsone is *hemolytic anaemia* (Patients with *G-6-PP deficiency* are more susceptible).
- *Second most common* adverse effect is methemoglobinemia.
- Other side effects are - Nausea, anorexia, headache, paresthesia, drug fever, mental symptoms, rashes, fixed drug eruption, *hypermelanosis (Pigmentation)*, phototoxicity, exfoliative dermatitis, *hepatitis, agranulocytosis*, lepra reaction and sulfone syndrome, *infectious mononucleosis like syndrome*.

144. NK receptor antagonist that prevents vomiting ?

a) Bosutran

b) Gramisetron

c) Ondansetran

d) Aprepitant

Correct Answer - D

Ans. is d i.e., Aprepitant

Aprepitant

- Aprepitant is an antiemetic substance that belongs to a class of drugs called substance P antagonists.
- The compound mediates its effect by blocking the neurokinin 1 (NK1) receptor.
- Certain regions of brain have high expression of NK1 receptors. Substance P acts on these receptors and is *responsible for chemotherapy induced nausea and vomiting*. Aprepitant acts as a *substance P antagonist on NK1 receptors*.
- Aprepitant has little or no affinity for Serotonin 5-HT₃, dopamine or corticosteroid receptors.
- *Aprepitant crosses the blood brain barrier.*
- Aprepitant is used for *chemotherapy induced nausea & vomiting (CINV), and post-operative nausea & vomiting (PONY)*.
- After absorption aprepitant is bound extensively to plasma proteins (>95%); *it is metabolized avidly, primarily by hepatic CYP 3A4* and is excreted in the stools.
- Aprepitant is contraindicated in patients on cisapride or pimozone, in which life threatening QT prolongation has been reported.
- The recommended adult dose of a prepitant is 125 mg administered

1 hour before chemotherapy on day one, followed by 8 mg once daily in the morning on day 2 and 3 of the treatment regimen.

145. Minimum inhibitory concentration is ?

- a) The concentration of antibiotic which kills 99.9% of the bacteria
- b) Maximum concentration of an antibiotic which prevents visible growth of a bacterium
- c) Minimum concentration of an antibiotic which prevents visible growth of a bacterium
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Minimum concentration of an antibiotic which prevents visible growth of a bacterium

Antimicrobial sensitivity

To establish the activity of an antimicrobial agent, microorganisms are tested for their ability to grow in the presence of suitable concentration of drug.

Methods used are ?

1. Disc diffusion method
2. Broth culture with break point

Potency of antimicrobial agents is often referred as M1C.

1. Minimum inhibitory concentration (MIC)

Lowest concentration of an antibiotic which prevents visible growth of a bacterium.

2. *Minimum* bactericidal concentration (MBC)

The concentration of an antibiotic which kills 99.9% of the bacteria.

3. *A small difference between MIC and MBC indicates that the antibiotic is primarily bactericidal, while a large difference indicates bacteriostatic action.*

146. Following are the glycopeptide antibiotics except?

a) Teicoplanin

b) Daptomycin

c) Telavancin

d) Oritavancin

Correct Answer - B
Ans. is 'b' i.e., Daptomycin

147. True about $t_{1/2}$?

a) Time required to reduce the plasma conc. to half

b) Zero order kinetics - $t_{1/2}$ remains constant

c) First order kinetics - $t_{1/2}$ increases

d) Complete drug elimination occurs in 2-3 $t_{1/2}$

Correct Answer - A

**Ans. is 'a' i.e., Time required to reduce the plasma conc. to half
Half life PA**

- *It is the time required to reduce the plasma concentration to half (50%) of the original value.*
- It determines the dosing interval and time required to reach the steady state.
- It is a *secondary* pharmacokinetic parameter derived from two primary parameters, volume of distribution (V_d) and clearance (CL).

148. Mechanism of action of thiazides is by ?

a) Inhibiting Na^+/Cl^- symporter in DCT

b) Inhibiting Na^+/Cl^- symporter in PCT

c) Inhibiting $\text{Na}^+\text{K}^+\text{2Cl}^-$ in ascending limb of loop of henle

d) Inhibiting $\text{Na}^+\text{K}^+\text{2Cl}^-$ in descending limb of loop of henle

Correct Answer - A

Ans. is 'a' i.e., Inhibiting Na^+/Cl^- symporter in DCT

149. Drug inhibiting the enzyme folate synthetase is ?

a) Sulfonamide

b) Clindamycin

c) Rifampicin

d) Norfloxacin

Correct Answer - A

Ans. is 'a' i.e., Sulfonamide

SULFONAMIDES

- Sulfonamides are *bacteriostatic* and act by inhibiting folic acid synthesis by *inhibiting enzyme folate synthetase*.
- Bacteria synthesize their own folic acid of which para aminobenzoic acid (PABA) is a constituent - *Sulfonamides, being structural analogues of PABA, inhibit bacterial folate synthase competitively.*
- Sulfonamides are not effective in presence of pus and tissue extract because - (1) Pus contains purines and thymidine which decrease bacterial requirement for folic acid and (2) Pus is rich in PABA.

Classification

1. *Short acting* - Sulfadiazine, Sulfisoxazole, Sulfamethizole, Sulfacycline. 2. *Intermediate acting* - Sulfamethoxazole.
2. *Long acting* - Sulfadoxine, Sulfamethopyrazine.
3. *Topical Sulfonamides* - Sulfacetamide sodium, Mafenide, silver sulfadiazine.
4. *Sulfonamide for RA and ulcerative colitis* - Sulfasalazine.

Adverse effects

- *Most common adverse effects are due to hypersensitivity* → Drug fever, Skin rashes, exfoliative dermatitis, Photosensitivity, urticaria, nausea, vomiting and diarrhea - *Katzung 10th/e p. 764.*

- Crystalluria, Hepatitis, hemolysis in G-6-PD deficiency, kernicterus in newborn are other side effects.
- Primary pathway of metabolism of Sulfonamides is *acetylation*. *The acetylated derivative is less soluble in acidic urine - may precipitate and cause crystalluria.*

150. Following is true about inverse agonist ?

a) Affinity + Intrinsic activity +

b) Affinity + Intrinsic activity 0

c) Affinity - Intrinsic activity ?

d) Affinity + Intrinsic activity -

Correct Answer - D

Ans. is 'd' i.e., Affinity + Intrinsic activity -

Receptors are specific binding site with functional correlate.

In relation to action through receptors, two terms are important.

151. Pegvisomant is used in ?

a) Dwarfism

b) Acromegaly

c) Cretinism

d) Protein energy malnutrition

Correct Answer - B

Ans. is `b' i.e., Acromegaly

152. LD 50/ ED 50 is ?

a) Therapeutic index

b) Bioavailability

c) Potency

d) Efficacy

Correct Answer - A

Ans. is 'a' i.e., Therapeutic index

Therapeutic index

- Drugs usually have more than one action.
- The maximal response for different action of a drug may be different ie the DRCs (Dose response curves) for different effects of a drug may be different.
- The extent of separation of DRCs of a drug for different effects is a measure of its selectivity, e.g. the DRCs for bronchodilatation and cardiac stimulation are quite similar in case of isoprenaline but far apart in case of salbutamol - the latter is more selective.
- The gap between the therapeutic effect DRC and the adverse effect DRC defines the safety margin or the therapeutic index.

153. Nephrotoxic antiviral ?

a) Acyclovir

b) Enfuvirtide

c) Ritonavir

d) Didanosine

Correct Answer - A
Ans. is 'a' i.e., Acyclovir

154. Phase 1 biotransformation includes ?

a) Reduction

b) Acetylation

c) Sufate conjugation

d) Methylation

Correct Answer - A

Ans. is 'a' i.e., Reduction

Types of biotransformation reactions

- Biotransformation reactions (metabolism) of drugs can be classified :

A. Non-synthetic (phase I) reactions

- Metabolism brings about a change in the drug molecule by :

1. *Oxidation*
2. *Hydrolysis*
3. *Decyclization*
4. *Reduction*
5. *Cyclization*

- The new metabolite may retain biological activity or it may be an inactive metabolite.

- *Oxidation is the most important metabolizing reaction.*
- *The most important enzyme for oxidation reaction is cytochrome P450.*

B. Synthetic (phase II or conjugation) reaction

- Metabolism involves union of the drug with one of several polar (water-soluble) endogenous molecules that are products of intermediary metabolism, to form a water-soluble conjugate which is readily eliminated by kidney or, if the molecular weight exceeds 300, in the bile.
- Phase II metabolism almost invariably terminates biological activity,

i.e. metabolites are usually inactive. o Reactions are

1. *Acetylation*
2. *Glutathione conjugation*
3. *Nucleotide synthesis*
4. *Glucuronide conjugation*
5. *Sulfate conjugation*
6. *Glycine conjugation*
7. *Methylation*

155. Rifampin induces metabolism of which drug?

a) Zidovudine

b) Lamivudine

c) Nevirapine

d) Enfuvirtide

Correct Answer - C

Ans. is 'c' i.e., Nevirapine

Rifampin Interactions

- Microsomal enzyme inducer - increases CYP 450 isoenzymes.
- It thus induces its own metabolism as well as metabolism of other drugs like warfarin, oral contraceptives, corticosteroids, sulfonylureas, HIV protease inhibitors, non nucleoside reverse transcriptase inhibitors (NNRTI), theophylline, metoprolol, fluconazole, ketoconazole, clarithromycin and phenytoin.
- Nevirapine is an NNRTI and thus its metabolism is induced by rifampin.

156. Drug distribution in tissue true is all except ?

a) Chloroquine - eye

b) Ephedrine - bone

c) Digoxin - skeletal muscle

d) Minocycline - adipose tissue

Correct Answer - B
Ans. is 'b' i.e., Ephedrine - bone

157. All true except ?

a) Cotrimoxazole is effective against P carinii

b) Clarithromycin effective against mycobacterium avium complex

c) Doxycycline is effective against legionella

d) Ceftriaxone is effective against gonorrhoea

Correct Answer - C

Ans. is 'c' i.e., Doxycycline is effective against legionella

158. Cyproheptadine acts on all receptors except ?

a) D2

b) H1

c) Muscarinic

d) 5HT2A

Correct Answer - A

Ans. is 'a' i.e., D2

Cyproheptadine

- It primarily blocks 5HT2A receptors and has additional H1 antihistaminic, anticholinergic and sedative properties.
- It is used in allergies and as antipruritic agent.
- It increases appetite and has been used in children and poor eaters to promote weight gain.
- It is used in controlling intestinal manifestations of carcinoid and post gastrectomy dumping syndrome as well as in antagonizing priapism/ or orgasmic delay caused by fluoxetine and trazodone.

159. Mechanism of action of sulfonylureas is ?

a) Insulin release

b) Alpha glucosidase inhibitor

c) PPAR γ inhibitor

d) Insulin sensitizer

Correct Answer - A

Ans. is 'a' i.e., Insulin release

Sulfonylureas act by

- *Sulfonylurease provoke a brisk release of insulin from pancreas.*
- They act on the so called "*Sulfonylurea receptors*" (*SUR1*) on pancreatic β -cell membrane - cause depolarization by reducing conductance of ATP sensitive K^+ channels. This enhances influx of Ca^{+2} \rightarrow degranulation.
- *They do not cause hypoglycemia in pancreatectomized animals and type 1 diabetes (Presence of at least 30% of functional β -cells in essential for their action).*
- A minor action reducing glucagon secretion by increasing insulin and somatostatin release has been demonstrated.

Extrahepatic action

- On chronic administration they sensitize the target cells (especially the liver) to the action of insulin.
- On chronic administration their action on pancreas (to release insuline) declines due to down regulation of sulfonylurea receptors.
- But glycemc control is maintained due to extrahepatic action.

160. Following is true about alendronate except?

- a) It is a second generation amino - BNP
- b) It is used in prevention and treatment of osteoporosis
- c) Oral bioavailability is 10%
- d) Iron interferes with alendronate absorption

Correct Answer - C

Ans. is 'c' i.e., Oral bioavailability is 10%

Alendronate

- Potent orally effective second generation amino - BNP.
- It is used primarily in the prevention and treatment of osteoporosis as well as for paget's disease.
- It is to be taken empty stomach with one glass of water and patient should not lie supine for half an hour to prevent esophagitis.
- Calcium, iron, antacids, mineral water, tea, coffee, fruit juice interfere with alendronate absorption.
- Oral bioavailability of alendronate is 1%.
- Adverse effects are: esophagitis, gastric erosion, retrosternal pain, flatulence, headache and bodyache.
- Terminal elimination T_{1/2} of alendronate has been measured as 10.5 years.

161. Penicillin is the metabolic product of ?

a) Amino adipic acid

b) Aminocaproic acid

c) Levulinic acid

d) Arachidonic acid

Correct Answer - A

Ans. is 'a' i.e., Amino adipic acid

- Penicillin is a product of secondary metabolic pathway of *Penicillium chrysogenum*.
- α -amino adipic acid is the precursor of penicillin.
- This compound is normally converted to lysine via primary metabolic pathway.
- However, when the growth of fungus is inhibited, α -amino adipic acid is converted to penicillin via secondary metabolic pathway.

162. Oral therapy of choice in MRSA skin infection is

a) Dicloxacillin

b) Clindamycin

c) Quinupristin

d) Dalfopristin

Correct Answer - B
Ans. is 'b' i.e., Clindamycin

163. Treatment of lithium induced tremor is ?

a) Propranolol

b) Amiloride

c) Modafinil

d) Trihexphenydydyl

Correct Answer - A

Ans. is 'a' i.e., Propranolol

- Toxic symptoms of lithium toxicity are frequent at serum level of lithium exceeds 1.5 meq/L and regularly seen at plasma concentration above 2 meq/L.
- The most common symptoms of acute lithium intoxication are neurological, i.e., tremor (being the most common). increased tendon reflexes, seizures, drowsiness, delirium, muscle twitching / weakness and coma.
- Gastrointestinal toxicity may also occur, e.g. Nausea, vomiting, diarrhea, abdominal pain, and metallic taste.
- Chronic intoxication can cause hypothyroidism and nephrotoxicity (diabetes insipidus, polyuria, polydipsia, nephrotic syndrome).
- **Amiloride is the DOC for lithium induced diabetes insipidus.**
- **Propranolol is used to treat lithium induced tremor in adults.**

164. Torcetrapib induces its hypolipidemic action by?

a) Inhibiting cholesterol ester triglyceride transport protein

b) Activating lipoprotein lipase

c) Inhibiting lipolysis

d) Inhibiting cholesterol absorption

Correct Answer - A

Ans. is 'a' i.e., Inhibiting cholesterol ester triglyceride transport protein

165. True about orphan drug is ?

a) Prevention of rare disease or condition

b) No aid is offered to pharmacological companies for developing orphan drugs

c) Rifabutin is not an orphan drug

d) Treatment of common disease in a resourceful country

Correct Answer - A

Ans. is 'a' i.e., Prevention of rare disease or condition Orphan drug

- Drugs or biological products for *diagnosis/ treatment/ prevention of a rare disease or condition or a more common disease* (endemic only in resource poor countries), for which there is no reasonable expectation that the cost of developing and marketing it will be recovered from the sales of that drug.
- Sodium nitrite, fomepizole, liposomal amphotericin B, miltefosine, rifabutin, succimer, somatropin, digoxin immune Fab, liethronine are some of the orphan drugs.
- Governments in developed countries provides tax benefits and other incentives to pharmaceutical companies for developing and marketing orphan drugs.

166. About biotransformation not true ?

a) Active metabolite generation

b) Polar to less polar

c) Less polar to more polar

d) Generate active drug from prodrug

Correct Answer - B

Ans. is 'b' i.e., Polar to less polar

167. A steady state plasma concentration is achieved in how many hours, if half life of drug is 40 hrs. ?

a) 140hrs

b) 160hrs

c) 180hrs

d) 200 hrs

Correct Answer - D

Ans. is 'd' i.e., 200 hrs

For all practical purposes, after 5 $t_{1/2}$ the amount of drug in the body will be constant and the plasma concentration will be at a plateau.

Thus for a drug with $T_{1/2}$ 40 hrs to reach the steady state plasma concentration 5 $T_{1/2}$ s will be required i. e. $5 \times 40 \text{ hrs} = 200 \text{ hrs}$.

Steady state plasma concentration

After 5 $t_{1/2}$, nearly complete drug is eliminated from the body

If a constant dose of drug is repeated before 5 $V/2$, the concentration in blood will be higher, because some remnant of the previous dose will be present in the body.

So, when a drug is infused at a constant rate the plasma concentration rises until a state is reached at which the rate of administration of drug to the body is exactly equal to the rate of elimination.

This is called the steady state → when it is attained the amount of drug in the body remains constant i.e. the plasma concentration is on a plateau → plateau principal of drug accumulation.

If a drug is administered by a constant rate the time to reach steady state depends only on the $t_{1/2}$.

With passage of each $V/2$ period of time. the plasma concentration

With passage of each $t_{1/2}$ period of time, the plasma concentration rises by half the difference between the current concentration and the ultimate steady state (100%) concentration.

168. Best mode to study response of wide number of drugs in population is ?

a) Dose Response Curve

b) Lethal dose response curve

c) Absorbed dose and Response curve

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Dose Response Curve

Dose-response relationship

When a drug is administered systemically, the dose-response relationship has two components :

1. Dose-plasma concentration relationship (DPCR)
2. Plasma concentration - response relationship (PCRR)

169. Gene responsible for INH resistance is ?

a) KAT G

b) rpo B

c) pnc A

d) emb B

Correct Answer - A
Ans. is 'a' i.e., KAT G

170. Drug of choice for cystitis ?

a) Amoxicillin

b) Chloramphenicol

c) Cotrimoxazole

d) Ciprofloxacin

Correct Answer - D

Ans. is 'd' i.e., Ciprofloxacin

Fluroquinolones form the first line of drugs to be used against cystitis.

Ciprofloxacin is a fluoroquinolone and so the most appropriate answer.

- Women with cystitis respond readily to any of several regimens. Most of the three-day regimens are usually 90-percent effective. Following are the three day regimes followed for management of cystitis:

3-day course

Amoxicillin, 500 mg three times daily

Ampicillin, 250 mg four times daily

Cephalosporin, 250 mg four times daily

Ciprofloxacin, 250 mg twice daily

Levofloxacin, 250 or 500 mg daily

Nitrofurantoin, 50 to 100 mg four times daily or 100 mg twice daily

Trimethoprim-sulfamethoxazole, 160/800 mg two times daily

171. Gancyclovir is used intravitreally for treatment of?

a) Influenza

b) Rhinovirus

c) HZV

d) CMV retinitis

Correct Answer - D

Ans. is 'd' i.e., CMV retinitis

Some drugs which are used intravitreally are :?

1) *Bevacizumab* : inhibits VEGF action; used in metastatic colorectal cancer; off label use as intravitreal injection to slow progression of neovascular macular degeneration.

2) *Foscarnet* : CMV retinitis.

3) *Gancyclovir* : CMV retinitis.

4) *Ranibizumab* : slow macular degeneration.

5) *Pegaptanib* : neovascular age related macular degeneration.

172. Which of the following drug is given intranasally?

a) Desmopressin

b) Ribavarin

c) Amiloride

d) Oseltamivir

Correct Answer - A

Ans. is 'a' i.e., Desmopressin

Drugs which can be given by intranasal route are :-

- Desmopressin
- Liposomes
- Butorphanol
- Zanamivir
- Calcitonin

173. Antiplatelet drug which inhibits cyclo-oxygenase 1 enzyme is?

a) Aspirin

b) Clopidogrel

c) Tirofiban

d) Dipyridamole

Correct Answer - A
Ans. is 'a' i.e., Aspirin

174. Sympathomimetic causing increase in mean blood pressure, heart rate and cardiac output on intravenous infusion is?

a) Adrenaline

b) Isoprenaline

c) Norepinephrine

d) Phenylephrine

Correct Answer - A
Ans. is 'a' i.e., Adrenaline

175. Fosphenytoin route of administration ?

a) Intravenous

b) Subcutaneous

c) Oral

d) Intradermal

Correct Answer - A

Ans. is 'a' i.e., Intravenous

Fosphenytoin:

- Water soluble prodrug of phenytoin
- Used in status epilepticus patients
- It is available as intravenous injection. It is less damaging to intima compared to phenytoin, can be injected at a faster rate of 150 mg/min, can be used in glucose solution drip.
- Its infusion requires ECG monitoring.

176. All of the following induce liver microsomal enzymes except?

a) Metyrapone

b) Glutethimide

c) Carbamazepine

d) Phenobarbitone

Correct Answer - A

Ans. is 'a' i.e., Metyrapone

Drug metabolizing enzymes

- The drug metabolizing enzymes are divided into two types :
- **Microsomal**
- These are *located on smooth endoplasmic reticulum* primarily in liver, also in kidney, intestinal mucosa and lungs.
- Examples are monooxygenase, *cytochrome P450*, glucuronyl transferase.
- They catalyze most of the oxidation, reduction, hydrolysis and glucuronide conjugation.
- They are *inducible* by drugs, diet and other agencies.
- **Non microsomal**
- These are *present in the cytoplasm and mitochondria* of hepatic cells as well as in other tissues including plasma.
- Examples are flavoprotein oxidase, esterases, amidases and conjugases.
- They catalyze some oxidation and reduction, many hydrolysis and all conjugation except glucuronidation.
- They are not inducible but many show genetic polymorphism (acetyl transferase, pseudochoolinesterase).

Drugs that induce microsomal enzymes

- Phenobarbitone
- Rifampin
- Isoniazid
- Phenylbutazone
- DDT
- Carbamazepine
- Clofibrate
- Ritonavir
- Chronic alcohol intake
- Cyclophosphamide
- Phenytoin
- Glucocorticoids
- Chloral hydrate
- Griseofulvin
- Omeprazole
- Meprobamate
- Glutethimide
- Cigarette smoking

Remember

- All Barbiturates are enzyme inducers except secobarbital, which inhibits the enzyme.
- Acutely, ritonavir is an inhibitor. while with chronic (repeated) administration it acts as an inducer.

177. Maintenance dose of drug is dependent on ?

a) Half life

b) Volume of distribution

c) Total body concentration

d) Loading dose

Correct Answer - A

Ans. is 'a' i.e., Half life

Loading dose is governed by volume of distribution.

Maintenance dose is governed by clearance or $P/2$.

The drug with *short $t_{1/2}$* with loading and maintenance dose concept → *Lignocaine*.

178. Best anti - Emetic for patient treated with radiotherapy -

a) Clonidine

b) Metoclopramide

c) Ondansetron

d) Cisapride

Correct Answer - C

Ans. is 'c' i.e., Ondansetron

Chemotherapy induced nausea and vomiting:

Cytotoxic drugs and radiation cause cellular damage which leads to release of 5-HT from intestine and activation of emetogenic 5-HT₃ receptors. Therefore, 5-HT₃ receptor antagonists (e.g. ondansetron) are the DOC for this condition.

Cisplatin is the most common culprit causing chemotherapy induced nausea and vomiting.

Drugs used to treat chemotherapy induced nausea and vomiting are:

i) 5-HT₃ antagonists (drug of choice): Ondansetron, dolasetron, palonosetron, granisetron.

ii) Other drugs: Dexamethasone, methylprednisolone, metoclopramide, BZDs (lorazepam) and aprepitant.

Cisplatin can induce vomiting within 24 hours or after 2 days. DOC for the early vomiting is ondansetron while for delayed vomiting is aprepitant (substant P antagonist).

179. Which of the following antibacterial drug is polar?

a) Ampicillin

b) Penicillin G

c) Clavulanic acid

d) Cefepime

Correct Answer - A

Ans. is 'a' i.e., Ampicillin

Ampicillin:

- It is an ionized highly polar drug.
- In the duodenum it exerts a zwitter ion effect and thus has a lower bioavailability.
- Though the oral absorption is incomplete it is adequate.
- It is an antibacterial drug acting both on gram positive and gram negative organisms.
- Main mode of excretion is by kidneys.
- It is partly excreted in bile and shows enterohepatic circulation.

180. Following drugs are the first choice in treating patients with candidiasis except?

a) Fluconazole

b) Nystatin

c) Amphotericin B

d) Caspofungin

Correct Answer - D
Ans. is 'd' i.e., Caspofungin

181. All of the following are true about biotransformation except?

a) It means chemical alteration of the drug in body

b) The primary site for drug metabolism is liver

c) Phase I biotransformation reactions are nonsynthetic

d) Products of phase II biotransformation reactions are mostly active drug metabolites

Correct Answer - D

Ans. is 'd' i.e., Products of phase II biotransformation reactions are mostly active drug metabolites

- Biotransformation reactions (metabolism) of drugs can be classified :
A) Non-synthetic (phase I) reactions
- The new metabolite may retain biological activity or it may be an inactive metabolite.
- *Oxidation is the most important metabolizing reaction.*
- *The most important enzyme for oxidation reaction is cytochrome P450.*
- B) Synthetic (phase II or conjugation) reaction
- Metabolism involves union of the drug with one of several polar (water-soluble) endogenous molecules that are products of intermediary metabolism, to form a water-soluble conjugate which is readily eliminated by kidney or, if the molecular weight exceeds 300, in the bile.
- Phase II metabolism almost invariably terminates biological activity, i.e. metabolites are usually inactive.

182. Most common phase I biotransformation reaction is?

a) Oxidation

b) Hydrolysis

c) Cyclisation

d) Reduction

Correct Answer - A

Ans. is 'a' i.e., Oxidation

Oxidation is the most important metabolizing reaction.

183. Tadalafil acts on Phosphodiesterase 5 and causes accumulation of?

a) cAMP

b) cGMP

c) PAF

d) IL 10

Correct Answer - B
Ans. is 'b' i.e., cGMP

184. Gemfibrozil/produces hypolipidemic action by?

a) Increasing activity of lipoprotein lipase

b) Decreased production of VLDL

c) Increase LDL receptors on hepatocytes

d) Increased conversion of cholesterol to bile acids

Correct Answer - A

Ans. is 'a' i.e., Increasing activity of lipoprotein lipase

185. Action of i. v. thiopentone is terminated by ?

a) Rapidly renal excretion

b) Oxidation

c) Redistribution

d) Conjugation

Correct Answer - C

Ans. is 'c' i.e., Redistribution

Three processes are involved in the termination of action of barbiturates: the relative importance of each varies with the compound.

Redistribution: it is important in the case of highly lipid soluble thiopentone. After iv injection the action of thiopentone is terminated in 6-10 mins by redistribution while the ultimate disposal occurs by metabolism ($t_{1/2}$ of elimination is 9 hours).

Metabolism: drugs with intermediate lipid solubility (short acting barbiturates) are primarily metabolized in liver by oxidation, dealkylation and conjugation. Their plasma $t_{1/2}$ ranges from 12 - 40 hours.

Excretion: barbiturates with low lipid solubility (long acting agents) are significantly excreted unchanged in urine. The $t_{1/2}$ of phenobarbitone is 80-120 hours. Alkalinization of urine increases ionization and excretion.

186. Which of the following is a prodrug?

a) Neostigmine

b) Captopril

c) Esmolol

d) Enalapril

Correct Answer - D
Ans. is 'd' i.e., Enalapril

187. Disulfiram mechanism of action ?

a) Stimulates alcohol dehydrogenase

b) Stimulates aldehyde dehydrogenase

c) Inhibits aldehyde dehydrogenase

d) Inhibits dopamine oxidase

Correct Answer - C

Ans. is 'c' i.e., Inhibits aldehyde dehydrogenase

188. Tetracycline is the drug of choice for all except?

a) LGV

b) Cholera

c) Plague prophylaxis

d) Pneumocystis carinii

Correct Answer - D

Ans. is 'd' i.e., Pneumocystis carinii

189.

Healthy Human volunteers part of which clinical trial phase?

a) I

b) II

c) III

d) IV

Correct Answer - A

Ans. is 'a' i.e., I

CLINICAL TRAILS

Before a new drug comes to the market, it is extensively tested in animals and invitro studies for safety and efficacy. If the drug is found to be promising in these studies, an application called IND (Investigational New Drug) is filed with United States food and drug administration (FDA), which is main regulatory authority. If the permission is granted, then drug is tested in humans. This testing is called clinical trial. These are divided into four phases.

190. Atropine and acetylcholine show the following type of antagonism?

a) Competitive

b) Non competitive

c) Both of the above

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Competitive

191. Which of the following is not true about bosentan

a) Used in pulmonary hypertension

b) Used in malignant hepatitis

c) Endothelin receptor antagonist

d) All are true

Correct Answer - B

Ans. is 'b' i.e., used in malignant hepatitis

Endothelin receptor antagonists

- There are two endothelin receptor subtypes - ET_A and ET_B.
- *Bosentan* is a nonselective endothelin antagonist - blocks both ET_A and ET_B.
- Bosentan is active intravenously and orally.
- Bosentan is currently approved for use in *pulmonary hypertension*.
- *Tezosentan* another nonselective antagonist is used in investigation for the treatment of acute heart failure.
- *Sitaxentan* and *ambrisentan* are selective ET_A antagonists.
- *Phosphoramidon* inhibits formation of endothelin by inhibiting endothelin converting enzyme. Remember
- *Bosentan* can cause severe *hepatotoxicity* - monthly liver function tests should be done.
- It is contraindicated in pregnancy.

192. How will you decrease aminoglycoside toxicity?

a) Total dose OD

b) Total dose BD

c) Low dose OD

d) Low dose BD

Correct Answer - A

Ans. is 'a' i.e., High dose OD

Authorities recommend giving a single total daily dose regime for aminoglycosides for patients with normal renal function. This is based on the following considerations:

- 1) Aminoglycosides exert concentration dependent bactericidal action and a long post antibiotic effect, therefore higher plasma concentrations attained after the single daily dose will be equally or more effective than the divided doses.
- 2) With the single daily dose the plasma concentration will remain subthreshold for ototoxicity and nephrotoxicity for a longer period each day allowing washout of the drug from the endolymph and renal cortex, thus decreasing the toxic effects.

193. Magaldrate is converted by gastric acid to ?

a) Magnesium hydroxide

b) Magnesium hydroxide and calcium carbonate

c) Magnesium hydroxide and Aluminium hydroxide

d) Calcium carbonate and aluminium hydroxide

Correct Answer - C

**Ans. is `c' i.e., Magnesium hydroxide and Aluminium hydroxide
Magaldrate:**

- Magaldrate is a common antacid drug that is used for the treatment of duodenal and gastric ulcers, esophagitis from gastroesophageal reflux.
- Magaldrate is a hydroxymagnesium aluminate complex that is converted rapidly in gastric acid to $Mg(OH)_2$, and $Al(OH)_3$, which are absorbed poorly and thus provide a sustained antacid effect.

194. Which of the following drug need not be stopped before surgery ?

a) Aspirin

b) Warfarin

c) Metformin

d) Digitalis

Correct Answer - D
Ans. is 'd' i.e., Digitalis

195. Chemotherapy of Ewings sarcoma includes all except?

a) Doxorubicin

b) Dactinomycin

c) Topotecan

d) 5 FU

Correct Answer - D

Ans. is 'd' i.e., 5 FU

Chemotherapy for Ewings Sarcoma:

- Systemic chemotherapy is the mainstay of therapy, often being used before surgery.
- Doxorubicin, cyclophosphamide or ifosfamide, etoposide, vincristine, and dactinomycin are active drugs.
- Topotecan or irinotecan in combination with an alkylating agent are often used in relapsed patients.
- Targeted therapy with an anti-IGF 1 receptor antibody appears to have promising activity in refractory cases.
- Local treatment for the primary tumor includes surgical resection, usually with limb salvage or radiation therapy.

196. Which drug is excreted unchanged in urine ?

a) Verapamil

b) Furosemide

c) Propranolol

d) Thiopentone

Correct Answer - B

Ans. is 'b' i.e., Furosemide

Furosemide pharmacokinetics

- Furosemide is rapidly absorbed orally but bioavailability is about 60%.
- Lipid solubility is low and it is highly bound to plasma proteins.
- It is partly conjugated by glucuronic acid and is mainly excreted unchanged by glomerular filtration and tubular secretion.

197. Shelf life of drug is?

- a) Same as expiration dating period
- b) Different from expiration dating period
- c) Time in which drug is completely degraded if stored
- d) Time in which the drug becomes harmful for consumption

Correct Answer - A

Ans. is 'a' i.e., Same as expiration dating period

Shelf life of drug

- It is same as expiration dating time.
- It is defined as the time at which the average drug characteristic remains within an approved specification after manufacture (FDA, 1987).
- In other words, it is the time period over which the potency, efficacy, safety and esthetics of the product can be assured.
- After the shelf life is over drug loses its therapeutic effect.

198. Latest oral direct thrombin inhibitor is?

a) Ximelagatran

b) Indraparinux

c) Dabigatran

d) Fondaparinux

Correct Answer - C

Ans. is 'c' i.e., Dabigatran

Ximelagatran was the first oral direct thrombin inhibitor approved; however, it was subsequently withdrawn from the market because of reports of liver failure.

Recently a new oral direct inhibitor, dabigatran, was approved for use in Europe for prevention of various thromboembolism in patients who have undergone hip or knee replacement surgery.

199. Chloroquine toxicity causes all except ?

a) Loss of vision

b) Lichenoid eruptions

c) Convulsions

d) Weight gain

Correct Answer - D

Ans. is 'd' i.e., Weight gain

Side effects with chloroquine administration are frequent and unpleasant and include Nausea, Vomiting, Anorexia, Uncontrollable itching, Epigastric pain, Uneasiness, Difficulty in accommodation & Headache. *Weight gain is not a feature of Chloroquine side effects.*

200. When one drug decreases or inhibits the action of other it is called?

a) Antagonism

b) Agonism

c) Inverse agonism

d) Synergism

Correct Answer - A

Ans. is 'a' i.e., Antagonism

When one drug decreases or inhibits the action of other.

Effect of drugs A + B < effect of drug A + effect of drug B.

Antagonism may be :

a) Physical

Based on physical property

b) Chemical

The two drugs react chemically and form an inactive product.

c) Physiological/functional

The two drugs act on different receptors or by different mechanisms, but have opposite overt effects on the same physiological function ie have pharmacological effect in opposite direction.

(E) Receptor

The antagonist interferes with binding of the agonist with its receptor or inhibits the generation of response consequent to such binding.

201. Renal threshold of drug means ?

a) Drug concentration above which it appears in urine

b) Drug concentration below which it appears in urine

c) Drug concentration above which it appears in blood

d) Drug concentration below which it appears in urine

Correct Answer - A

Ans. is 'a' i.e., Drug concentration above which it appears in urine

Renal Threshold

- The renal threshold is the concentration of a substance dissolved in the blood above which the kidneys begin to remove it into the urine. When the renal threshold of a substance is exceeded, reabsorption of the substance by the proximal convoluted tubule is incomplete; consequently, part of the substance remains in the urine.
- Thus renal threshold is the Drug concentration above which it appears in urine.

202. Bortezomib drug used in ?

a) Multiple myeloma

b) RCC

c) Liver cell carcinoma

d) Pancreatic carcinoma

Correct Answer - A

Ans. is 'a' i.e., Multiple myeloma

Uses of bortezomib:

- The prime indication of bortezomib is multiple myeloma, both for first line combined therapy as well as for relapsed disease.
- It is also used for refractory mantle cell lymphoma.

Note: The most prominent adverse effect of bortezomib is peripheral neuropathy. Others are diarrhea, fatigue, bone marrow depression especially thrombocytopenia.

203. Fusion inhibitor is?

a) Enfuvirtide

b) Ritonavir

c) Efavirenz

d) Didanosine

Correct Answer - A
Ans. is 'a' i.e., Enfuvirtide

204. Anticholinergic which is tertiary amine is?

a) Valethamate

b) Clidinium

c) Glycopyrolate

d) Hyoscine

Correct Answer - A

Ans. is 'a' i.e., Valethamate

Anticholinergic drugs

1. *Natural alkaloids* Atropine, Hyoscine (Scopolamine).
2. *Semisynthetic derivatives* Homatropine, Atropine methonitrate, Hyoscine butyl bromide, Ipratropium bromide, Tiotropium bromide.
3. *Synthetic compounds*
 - a) *Mydriatics* : Cyclopentolate, Tropicamide.
 - b) *Antisecretory-antispasmodics* :
 - i. *Quaternary compounds* : Propantheline, Oxypheonium, Clidinium, Pipenzolate methyl bromide, Isopropamide. Glycopyrolate.
 - ii. *Tertiary amines* : Dicyclomine, Valethamate, Pirenzepine
 - c) *Vasoselective* : Oxbutynin, Flavoxate, Tolterodine.
 - d) *Antiparkinsonian* : Trihexphenidyl (Benzhexol), Procyclidine. Biperiden.

205. Minimum quantity of filtered Na actually excreted is by which of the following diuretic?

a) Furosemide

b) Thiazide

c) Amiloride

d) Acetazolamide

Correct Answer - C
Ans. is 'c' i.e., Amiloride

206. Moraxella catarrhalis is resistant to which antibiotic?

a) Amoxicillin

b) Clarithromycin

c) Azithromycin

d) Amoxicillin and clavulanic acid combination

Correct Answer - A

Ans. is 'a' i.e., Amoxicillin

Treatment of M. catarrhalis infection:

M. catarrhalis rapidly acquired β -lactamases during the 1970s and 1980s; antimicrobial susceptibility patterns have remained relatively stable since that time, with >90% of strains now producing β -lactamase and thus resistant to amoxicillin.

Most strains of *M. catarrhalis* are susceptible to amoxicillin and clavulanic acid combination, extended-spectrum cephalosporins, newer macrolides (azithromycin, clarithromycin), trimethoprim-sulfamethoxazole, and fluoroquinolones.

207. Micro dosing studies done in which phase of clinical trials?

a) 0

b) 1

c) 2

d) 3

Correct Answer - A

Ans. is 'a' i.e., 0

- Phase 0 - Microdosing strategy in clinical trials
- Drug development is an activity that is long, complex and expensive.
- The concept of microdosing involves the use of extremely low, nonpharmacologically active doses of a drug to define the pharmacokinetic profile of the medication in human subjects.
- Microdosing, thus, appears as a new viable concept in the 'toolbox' of the drug development activity.

208. Advantage of ergotamine + caffeine ?

a) Decreased renal excretion

b) Increased renal excretion

c) Increased oral absorption

d) Decreased oral absorption

Correct Answer - C

Ans. is 'c' i.e., Increased oral absorption

Current status of ergotamine as antimigraine drug

- Because of the erratic oral absorption, frequent side effects, especially nausea and vomiting, and availability of triptans, ergot preparations are rarely used now, except for considerations of cost or when triptans fail.
- Ergot alkaloids have no prophylactic value: regular use is not justified- may itself produce a dull background headache and an attack may be precipitated on discontinuation.
- Caffeine 100 mg taken with ergotamine enhances its absorption from oral and rectal routes and adds to the cranial vasoconstricting action.

209. Level of which clotting factor falls first after giving warfarin?

a) V

b) VI

c) VII

d) VIII

Correct Answer - C
Ans. is 'c' i.e., VII

210. treatment of withdrawal is required in ?

a) LSD

b) Opium

c) Alcohol

d) Amphetamine

Correct Answer - A

Ans. is 'a' i.e., LSD

Clinically significant withdrawal syndrome (requires treatment) :-

Alcohol, opioids, amphetamines, Barbiturates, BZDs, Nicotine.

No or minimal clinically significant withdrawal syndrome (requires no treatment) :- *LSD (nil)*, Cannabis (minimal).

211. Oliguria causing drug is?

a) Acyclovir

b) Diazepam

c) Aspirin

d) Montelukast

Correct Answer - A

Ans. is 'a' i.e., Acyclovir

Drugs Causing Oliguria

- Drugs causing decreased renal perfusion - diuretics.
- Drugs causing nephrotoxicity - aminoglycosides and chemotherapeutic agents.
- Urine retention - adrenergic and anticholinergic drugs.
- Urinary obstruction associated with precipitation of urinary crystals - sulfonamides and acyclovir.

212. Mucopolysaccharide having anticoagulant action is?

a) Heparin

b) Phenindione

c) Rivoroxaban

d) Dabigatran

Correct Answer - A

Ans. is 'a' i.e., Heparin

Heparin

- It is a parenteral indirect thrombin inhibitor.
- It is a on uniform mixture of straight chain polysaccharides with molecular weight 10, 000 - 20, 000.
- It contains polymers of two sulfated disaccharide units D glucosamine L iduronic acid and D glucosamine D glucuronic acid.
- Heparin is the strongest organic acid present in the body.

213. Which of the following drugs cause diarrhea?

a) Morphine

b) Atropine

c) Lithium

d) Magnesium sulfate

Correct Answer - D

Ans. is 'd' i.e., Magnesium sulfate

214. Sucralfate

a) Reduces gastric acid secretion

b) Neutralises gastric acid

c) Is ulcer protective

d) Is anti H. pylori drug

Correct Answer - C

Ans. is 'c' i.e., Is ulcer protective

Sucralfate

- Sucralfate is an *ulcer protective agent*.
- It preferentially and strongly adheres to the ulcer base, especially duodenal, and acts as a physical barrier preventing acid, pepsin and bile from coming in contact with the ulcer base.
- However, this protective action is attributed to sucralfate because of certain properties which are achieved only in acidic medium :
 - Acidic medium gives it a viscous consistency, also
 - It polymerizes at $\text{pH} < 4$ by cross linkages of molecule assuming sticky gel like consistency.
- It is this viscous and gel-like properties that are responsible for its action.
- When antacids are given concurrently they raise the pH of gastric secretion and this interferes with the very basic mechanism of action of sucralfate (requires $\text{pH} < 4$) and thus makes them ineffective.

215. True statement regarding use of adrenaline in anaphylactic shock is?

- a) 0.5 mg dose is administered by s.c.route
- b) 1:10,000 concentration is commonly used
- c) It is repeated after every 4-6 hours
- d) Same concentration can be given for s.c.as well as i.v.route

Correct Answer - A

Ans. is 'a' i.e., 0.5 mg dose is administered by s.c.route

- Adrenaline 0.5 ml of 1:1000 solution (i.e., 0.5 mg) by s.c. or i.m. route is the DOC for anaphylactic shock.
- If not responding, it can be repeated after 5 minutes.
- In desperate circumstances i.v. route can be used but it must be diluted 10 times (i.e., 1:10000 concentration).

216. Antiretroviral drug causing increased liver enzymes is?

a) Didanosine

b) Zidovudine

c) Efavirenz

d) Tenofovir

Correct Answer - C

Ans. is 'c' i.e., Efavirenz

Characteristic side effects of important antiretroviral drugs

- Lamivudin - Nausea, headache, fatigue.
- Stavudine - *Peripheral neuropathy*, lipodystrophy, hyperlipidemia, pancreatitis, rapidly progressive ascending neuromuscular weakness.
- Didanosine - *Peripheral neuropathy*, pancreatitis, diarrhea, nausea, hyperuricemia.
- Zalcitabine - *Peripheral neuropathy*, oral ulceration, pancreatitis.
- Zidovudin - Macrocytic anemia, neutropenia, nausea, headache, insomnia, asthenia. Tenofovir - Asthenia, headache, diarrhea, nausea, vomiting, flatulence, renal insufficiency. Efavirenz - CNS effects, rash, i^s liver enzymes.
- Nevirapine - Rash, hepatitis, nausea, headache.
- Indinavir - *Nephrolithiasis*, nausea, indirect hyperbilirubinemia, headache, blurred vision, asthenia.

217. Therapeutic drug monitoring is used for all except?

a) Drugs with low safety margin

b) In case of poisoning

c) To check patient compliance

d) To check the therapeutic effects of drug

Correct Answer - D

Ans. is d i.e., To check the therapeutic effects of drug

Therapeutic drug monitoring is Particularly useful in following situations:

I. Drugswith lowsafetymargin -

- Tricyclic antidepressants
- Digoxin
- Anticonvulsants
- Antiarrhythmics
- Theophylline
- Aminoglycoside antibiotics
- Lithium

218. Angiotensin II level decreased by which antihypertensive ?

a) Hydralazine

b) Enalapril

c) Methyldopa

d) Nitroglycerine

Correct Answer - B
Ans. *is* 'b' i.e., Enalapril

219. Oral and topical drug for nasal decongestion is ?

a) Phenylephrine

b) Histamine

c) Methoxamine

d) Dopamine

Correct Answer - A

Ans. is 'a' i.e., Phenylephrine

Phenylephrine

- It is selective alpha 1 agonist.
- Topically it is used as nasal decongestant and in eye for producing mydriasis when cycloplegia is not required.
- It is also a part of oral nasal decongestant preparations.

220. Class III Vaughan - Williams classification consists of?

a) Na channel blocker

b) Beta blocker

c) K channel blocker

d) Calcium channel blocker

Correct Answer - C
Ans. is 'c' i.e., K channel blocker

221. Tachycardia due to nitrates in a patient with angina pectoris is blocked by?

a) Digoxin

b) Dobutamine

c) Beta blocker

d) Calcium channel blocker

Correct Answer - C

Ans. is 'c' i.e., Beta blocker

Use of beta blocker and long acting nitrate combination is rational in classical angina because :

- i. Tachycardia due to nitrate is blocked by beta blocker
- i. The tendency of beta blocker to cause ventricular dilatation is countered by nitrate
- i. The tendency of beta blocker to reduce the total coronary flow is opposed by nitrate

222. Which AKT drug avoided in pregnancy ?

a) INH

b) Rifampicin

c) Streptomycin

d) Ethambutol

Correct Answer - C

Ans. is 'c' i.e., Streptomycin

- *Streptomycin is an aminoglycoside antibiotic contraindicated in pregnancy due to risk of fetal ototoxicity.*
- Recommended treatment in pregnancy is (2HRZ + 4HR) for 6 months by WHO and British Thoracic Society.
- Ethambutol can be added during late but not early pregnancy.
- In India, treatment for pregnant women is 21-IRE + 7 HR (Total 9 months).

223. Pharmacokinetics is?

- a) Study of drug movement in the body
- b) Study of drug effects
- c) Study of drug responses, governed by heredity
- d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Study of drug movement in the body

Pharmakokinetics

- Pharmakokinetics is the quantitative study of drug movement, in through and out of the body.
- That means, it is the study of the *effect of body on the drug*.
- So, it is also known as ADME study as it deals with Absorption, Distribution, Metabolism and Excretion of a drug.

224. Chemically aspirin is

a) Acetyl salicylic acid

b) Para-aminosalicylic acid

c) Para-aminobenzoic acid

d) Acetaminophen

Correct Answer - A

Ans. is 'a' i.e., Acetyl salicylic acid

225. Shortest acting anticholinesterase is ?

a) Edrophonium

b) Pyridostigmine

c) Glycopyrrolate

d) Neostigmine

Correct Answer - A

Ans. is 'a' i.e., Edrophonium

- Edrophonium is the shortest acting anti-ChE.
- When *carbammates* (other than edrophonium) and *organophosphates* react with cholinesterase, they form *covalent bond* at esteratic site, which is considerably resistant to hydrolysis.
- In contrast, *edrophonium* binds *electrostatically and by hydrogen bonds* at anionic site (not at esteratic site) of cholinesterase. The enzyme inhibitor complex does not involve a covalent bond and is correspondingly short lived (2-10 minutes).
- So edrophonium is also called as *noncovalent inhibitor*.

226. All of the following statements about antianginal action of nitrates are true except?

a) Myocardial O₂ consumption

b) Both pre and after load

c) Total coronary flow

d) Cause favourable redistribution of coronary flow

Correct Answer - C

Ans. is 'c' i.e., Total coronary flow

Mechanism of action of nitrates in Prinzmetal's angina is endothelium independent coronary vasodilation. When metabolized, organic nitrates release nitric oxide (NO) that binds to guanylyl cyclase in vascular smooth muscle cells, leading to an increase in cyclic guanosine monophosphate, which causes relaxation of vascular smooth muscle.

"Nitrates benefit patients with variant (also known as Prinzmetal) angina by relaxing the smooth muscle of the epicardial coronary arteries and relieving coronary artery spasm."

Pharmacological actions of nitrates

- The only major action is direct nonspecific smooth muscle relaxation. Preload reduction - *Nitrates dilate veins more than arteries* decreased venous return (*preload*) → decreased end diastolic size and pressure → **decreased O₂ consumption.**
- *The most prominent action is exerted on vascular smooth muscles.*
-
- Afterload reduction - Nitrates also produce some arteriolar dilatation → slightly decreased total peripheral resistance (afterload).
- Redistribution of coronary flow.
- Other smooth muscles - Nitrates cause relaxation of bronchi, biliary tract, esophagus → can be used in biliary colic and esophageal spasm.

227. Hoffmann's elimination is ?

a) Inactivation of drug by metabolizing enzyme

b) Unchanged excretion by kidney

c) Excretion in feces

d) Inactivation by molecular rearrangement

Correct Answer - D

Ans. is 'd' i.e., Inactivation by molecular rearrangement

Hofmann elimination

- This refers to inactivation of the drug in the body fluids by *spontaneous molecular rearrangement* without the agency of any enzyme.
- *Atracurium* is eliminated by this method.

228. Following features are true about lipid insoluble beta blockers except?

a) Do not cross blood brain barrier

b) Have good membrane stabilizing effect

c) Incompletely absorbed orally

d) Are long acting

Correct Answer - B

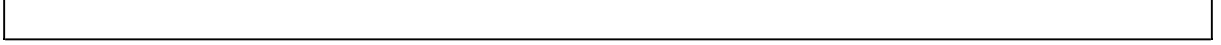
Ans. is 'b' i.e., Have good membrane stabilizing effect

Lipid insoluble drugs have following features ?

- *Do not cross Blood Brain Barrier and therefore produce no CNS effects.*
- *Have good renal excretion*
- *Have no membrane stabilizing activity*
- *Are incompletely absorbed orally*
- *Are long acting*
- *Are effective in narrow dose range*

Lipid insoluble β -blockers

1. Acebutolol
2. Betoxalol
3. Atenolol
4. Carteolol
5. Bisoprolol
6. Celiprolol
7. Esmolol
8. Nodalol
9. Sotalol
10. Labealol
11. Pindolol



229. Dapoxetine is specifically developed for?

a) Depression

b) Psychosis

c) Premature ejaculation

d) Anxiety disorder

Correct Answer - C

Ans. is 'c' i.e., Premature ejaculation

Dapoxetine

- Dapoxetine is the first compound developed specially for the treatment of premature ejaculation (PE) in men 18-64 years old.
- Dapoxetine works by inhibiting the serotonin transporter, increasing serotonin's action at the post synaptic cleft, and as a consequence promoting ejaculatory delay.
- As a member of selective serotonin reuptake inhibitor (SSRI) family, dapoxetine was initially created as an antidepressant.
- However, unlike other SSRIs, dapoxetine is absorbed and eliminated rapidly in the body.
- Its fast-acting property makes it suitable for the treatment of PE but not as an antidepressant.

230. Which of the following is most active against slowly dividing tubercular bacilli ?

a) Isoniazid

b) Rifampicin

c) Streptomycin

d) Ethambutol

Correct Answer - B
Ans. is 'b' i.e., Rifampicin

231. Tetracycline inhibits protein synthesis by?

- a) Inhibiting initiation and causing misreading of mRNA
- b) Binding to 30 S subunit and inhibits binding of aminoacyl tRNA
- c) Inhibiting peptidyltransferase activity
- d) Inhibiting translocation

Correct Answer - B

Ans. is 'b' i.e., Binding to 30 S subunit and inhibits binding of aminoacyl tRNA

- Tetracycline interact with small ribosomal subunits, blocking access of aminoacyl- tRNA to the mRNA-ribosome complex.

232. The drugs which achieve concentration in bile are all except ?

a) Erythromycin

b) Tetracycline

c) Oral contraceptives

d) Alpha methyl dopa

Correct Answer - D

Ans. is 'd' i.e., Alpha methyl dopa

233. All are true regarding Ketorolac, EXCEPT?

a) Respiratory depression is a side effect

b) More potent than Aspirin

c) VA is 5- 6 hrs

d) This is an analgesic

Correct Answer - A

Ans. is 'a' i.e., Respiratory depression is a side effect

Ketorolac

- Ketorolac is a novel NSAID (*Pyrrolo-pyrole derivative*)
- It is a potent analgesic (*equal to morphine, more than aspirin*)
- It is free of the following side effects
 1. *Respiratory depression*
 2. *Hypotension*
 3. *Dependence producing*
 4. *Constipation*
- *Its plasma $t_{1/2}$ of ketorolac is 5-7 hrs. So it is used in short term management of moderate pain.*
- *Ketorolac is best used in postoperative or other acute but short lasting painful conditions with minimal inflammation.*
- *Ketorolac is the only NSA ID that can be used i.v.*

234. Flumazenil, false is?

- a) It is specific antagonist of BZD
- b) It may be used in barbiturate poisoning as it acts on the same receptor i.e. GABAA
- c) Given intravenously
- d) Acts on GABA_A receptor

Correct Answer - B

Ans. is 'b' i.e., It may be used in barbiturate poisoning as it acts on the same receptor i.e. GABAA

Flumazenil is specific antagonist of BZDs, i.e., it acts on BZDs binding site of GABA_A receptors, which is different from Baributurate binding site.

Therefore, flumazenil does not antagonize barbiturates =, not effective in barbiturates poisoning.

235. Which of the following is false about colchicine?

a) Used in acute gout

b) It is not an anti-inflammatory agent

c) It is antimetabolic and causes telophase arrest

d) Can cause diarrhoea

Correct Answer - C

**Ans. is 'c' i.e., It is antimetabolic and causes telophase arrest
Colchicine**

- It is used in acute gout.
 - It is neither analgesic nor anti-inflammatory, but it specifically suppresses the gouty inflammation.
- Mechanisms of action**
- Colchicine inhibits the release of glycoprotein (glycoprotein aggravates inflammation in gout).
 - By binding to fibrillar protein tubulin, it inhibits granulocyte migration into the inflamed joints.
 - Other actions (not related to gout)
 - Antimetabolic Causes *metaphase arrest* by binding to microtubules of mitotic spindle.
 - Increases gut motility through neural mechanisms.
- Toxicity**
- Nausea, vomiting, watery or bloody diarrhea, and abdominal pain are the most common side effects.
 - Accumulation of the drug in intestine and inhibition of mitosis in its rapid turnover mucosa is responsible for the toxicity.
 - In overdose, colchicine produces kidney damage, CNS depression, intestinal bleeding; death is due to muscular paralysis and

respiratory failure.

- Chronic therapy with colchicine is not recommended because it causes aplastic anemia, agranulocytosis myopathy and loss of hair.

236. Hyperkalemia is caused by ?

a) Amphotiricin B

b) Beta agonists

c) Gentamycin

d) Succinylcholine

Correct Answer - D

Ans. is 'd' i.e., Succinylcholine

Drugs causing hypokalemia

- β agonist
- Licorice
- Penicillin derivatives
- Amphotericin B
- Theophylline
- Steroids
- α Blockers
- Toluene abuse
- Gentamicin
- Insulin
- Vitamin B₁₂
- Diuretics
- Carbenoxalone

Important drugs causing hyperkalemia

- ACE inhibitors
- Trimethoprim
- Succinylcholine
- K⁺ sparing diuretic
- Hep.
- NSAIDS

- *Pentamidine*
- *Lithium.*
- *Cyclosporine*

237. The most important adverse effect of sotalol is?

a) Torsades de pointes

b) Heart block

c) Pulmonary fibrosis

d) Vomiting

Correct Answer - A

Ans. is 'a' i.e., Torsades de pointes

Sotalol

- It is a nonselective -blocker.
- It *prolongs the action potential* (class 3 antiarrhythmic).
- Sotalol is well absorbed orally with bioavailability of 100%.
- *It is not metabolized in liver.*
- *Excretion is predominantly by kidney in the unchanged form.*
- *The most significant cardiac adverse effect is dose related torsade de pointes. (Polymorphic ventricular tachycardia).*

238. Drug of choice for choriocarcinoma is?

a) Nitrosourea

b) Gemcitabine

c) Methotrexate

d) Melphalan

Correct Answer - C
Ans. is 'c' i.e., Methotrexate

239. Oligomycin?

a) Blocks oxidative phosphorylation

b) Blocks protein synthesis

c) Blocks ATP uptake

d) Blocks Na uptake

Correct Answer - A

Ans. is 'a' i.e., Blocks oxidative phosphorylation

Oligomycin

- Oligomycin is an antibiotic that blocks oxidative phosphorylation by blocking flow of protons through ATP synthase.
- Oligomycin A is an inhibitor of ATP synthase.
- Oligomycin A inhibits ATP synthase by blocking its proton channel (Fo subunit), which is necessary for oxidative phosphorylation of ADP to ATP (energy production).
- The inhibition of ATP synthesis by oligomycin A will significantly reduce electron flow through the electron transport chain; however, electron flow is not stopped completely due to a process known as proton leak or mitochondrial uncoupling.
- This process is due to the facilitated diffusion of protons into the mitochondrial matrix through an uncoupling protein such as thermogenin, or UCP 1.
- Administering oligomycin to an individual can result in very high levels of lactate accumulating in the blood and urine

240. Which of the following is the drug of choice for Syndrome of Inappropriate Secretion of Antidiuretic Hormone (SIADH)?

a) Demeclocycline

b) Vasopressin

c) Thiazide diuretic

d) Chlorpropamide

Correct Answer - A

Ans. is 'a' i.e., Demeclocycline

- No pharmacologic agent exists that is able to antagonize ADH specifically. Specific ADH antagonists are available only for investigational purpose
- Currently, *Demeclocycline* and *lithium* are the only pharmacological t/t effective for SIADH.
- These are *nonspecific ADH antagonists* which are of limited use in some situations
- *These two agents antagonize the action of ADH in collecting tubules by inhibiting the formation of CAMP.*

241. Clearance -

- a) Refers to the efficacy of elimination of a drug by an organ or whole body
- b) Cannot be greater than blood flow to an organ
- c) Determines the steady of the drug concentration
- d) All the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Clearance of a drug is the theoretical volume of plasma from which the drug is completely removed in unit time.

242. Econazole is useful for the treatment of all except

a) Tinea corporis

b) Histoplasma capsulatum

c) Cutaneous candidiasis

d) Tinea pedis

Correct Answer - B

Ans. is 'b' i.e., Histoplasma capsulatum

Econazole is used only topically for dermatophytosis and candida infection.

- It is not used systemically for deep infections.

243. True about benzodiazepines ?

a) Increased release of GABA

b) Antagonizing release of GABA

c) Lorazepam is shorter acting than temazepam

d) Atropine is its antagonist

Correct Answer - C

Ans. is 'c' i.e., Lorazepam is shorter acting than temazepam

- Lorazepam has VA 10-20 hours, while Temazepam has VA 10-40 hours.
- About other options
- BZDs do not increase or decrease the release of GABA, they bind on GABA_A receptors and increase Cl⁻ conductance → GABA facilitatory action.
- Flumazenil (not atropine) is the antagonist of BZDs.

244. Advantages of oral controlled release drug delivery are all except?

a) Maintenance of optimum drug concentration

b) Increased duration of therapeutic effect

c) improved efficiency of treatment

d) Lower cost of production

Correct Answer - D

Ans. is 'd' i.e., Lower cost of production

245. Secobarbitone is ?

a) Long acting barbiturate

b) Intermediate acting barbiturate

c) Short acting barbiturate

d) Ultra short acting barbiturate

Correct Answer - C

Ans. is 'c' i.e., Short acting barbiturate

Long acting barbiturates → Phenobarbitone, Mephobarbitone.

Short acting barbiturates → Butobarbitone, *secobarbitone*,
Pentobarbitone.

Ultrashort acting → Thiopentone, Methohexitone, Hexobarbitone.

246. Probenecid interacts with ?

a) Streptomycin

b) Ampicillin

c) Vancomycin

d) Erythromycin

Correct Answer - B

Ans. is 'b' i.e., Ampicillin

Interactions of probenecid

1. Probenecid inhibits urinary excretion of penicillins, cephalosporins, methotrexate, sulfonamides and indomethacin.
2. It inhibits biliary excretion of rifampicin.
3. Salicylates block uricosuric action of probenecid.
4. Probenecid inhibits tubular secretion of nitrofurantoin.
5. Pyrazinamide and ethambutol may interfere with uricosuric action of probenecid.

Note : Ampicillin is a penicillin.

247. Drug of choice in Theophylline poisoning?

a) Cortisone

b) Propranolol

c) Thyroxine

d) Phenobarbitone

Correct Answer - D

Ans. is 'd' i.e., Phenobarbitone

Theophylline poisoning

- Theophylline has a narrow margin of safety.
- Dose dependent toxicity starts from the upper part of therapeutic concentration range.
- Adverse effects are primarily referable to the GIT, CNS and CVS.
- Children are more liable to develop CNS toxicity.
- Treatment
- *Prophylactic administration of diazepam in combination with phenytoin or phenobarbital. - Goodman & Gilman 11th/e - 729*
- Lidocaine may be used for ventricular arrhythmia.
- Seizures refractory to anticonvulsant therapy, sometimes requiring general anaesthesia.

248. Alcohol in substrate inducer for which gene?

a) Pol III gene

b) Myc Oncogene

c) P53

d) NF1

Correct Answer - A

Ans. is 'a' i.e., Pol III gene

Alcohol induces pol III gene (RNA polymerase III-dependent genes) transcription in vivo and in vitro. Brfl specifically regulates pol III gene transcription.

Changes in pol III gene and Brfl expression tightly link to cell transformation and tumor formation. Alcohol induced deregulation of pol III genes may be fundamental to the development of breast cancer.

249. Epalrestat is an ?

a) Aldolasereductase inhibitor

b) Fructose cogener

c) Glucose receptor blocker

d) Glucose reuptake activator

Correct Answer - A

Ans. is 'a' i.e., Aldolasereductase inhibitor

- Aldose reductase, is an enzyme that is normally present in many other parts of the body, and catalyzes one of the steps in the sorbitol(polyol) pathway that is responsible for fructose formation from glucose.
- Aldose reductase activity increases as the glucose concentration rises in diabetes in those tissues that are not insulin sensitive, which include the lenses, peripheral nerves and glomerulus.
- Aldose reductase inhibitors are a class of drugs being studied as a way to prevent eye and nerve damage in people with diabetes.
- **Examples of aldose reductase inhibitors include :-**
 - Tolrestat (withdrawn from market)
 - Epalrestat
 - Ranirestat
 - Fidarestat

250. Drug that causes tachycardia, mydriasis, and urinary retention ?

a) Nicotinic agonist

b) Muscarinic agonist

c) Anticholinergic drug

d) Beta agonist

Correct Answer - C

Ans. is 'c' i.e., Anticholinergic drug

ACTIONS:

- **CNS: In toxic/high doses: Maximal excitatory effect.**
- **Eye:**
 - **Mydriasis** - Paralysis of sphincter pupillae.
 - **Cycloplegia** - Paralysis of accommodation.
 - **Increased intraocular pressure** in people with shallow anterior chamber.
 - It gives comfort & rest to eye by **relieving spasm of iris sphincter & ciliary muscle.**
 - **Prevents synechiae formation** & demolishes already formed synechiae.
 - **Increases blood supply to anterior uvea.**
 - By relieving pressure on anterior ciliary arteries.
- **CVS: Increased A-V conduction.**
- **GIT: Cause relaxation of LES.**
- **Renal: Urinary retention** in older males with **prostatic hypertrophy.**
- **Secretions: Reduces salivary, lacrimal and gastric secretions.**

251. Which drug combination is not rational for acid peptic disease ?

a) Rantidine + Al (OH)₃

b) Rantidine + Sucralfate

c) Rantidine + Carbenoxolone

d) Rantidine + Colloidal bismuth subcitrate

Correct Answer - B

Ans. is 'b' i.e., Rantidine + Sucralfate

- Sucralfate is an *ulcer protective agent*.
- It preferentially and strongly adheres to the ulcer base, especially duodenal, and acts as a physical barrier preventing acid, pepsin and bile from coming in contact with the ulcer base.
- However, this protective action is attributed to sucralfate because of certain properties which are achieved only in acidic medium :
 - Acidic medium gives it a viscous consistency, also polymerizes at pH
 - Vicious and gel like that are responsible for its action.
- When antacids are given concurrently they raise the pH of gastric secretion and this interferes with the very basic mechanism of action of sucralfate (requires pH).

252. Which one does not match ?

a) CYP - 2C9 - Quinidine

b) CYP - 1 A2 - Warfarin

c) CYP - 3A4 -Verapamil

d) CYP - 2C19 - Diazepam

Correct Answer - A

Ans. is 'a' i.e., CYP - 2C9 - Quinidine

253. Which of the following is incorrect about NSAIDs?

a) Used in neuropathic pain

b) Decreases antihypertensive action of diuretics

c) Should be avoided in renal failure

d) Can be used topically

Correct Answer - A

Ans. a. Used in neuropathic pain

- NSAIDs are not used in neuropathic pain.
- NSAIDs reduce renal blood flow and thereby decrease the efficacy of diuretics, and inhibit the elimination of lithium and methotrexate.'
- NSAIDs may aggravate hypertension (high blood pressure) and thereby antagonize the effect of antihypertensives, such as ACE inhibitors and diuretic.
- Globally, topical preparations are available for diclofenac, eltenac, felbinac, ibuprofen, ketoprofen, and piroxicam.'
- Nociceptive pain usually responds to opioids and non-steroidal anti-inflammatory (NSAIDS).

254. Etomidate causes all except ?

a) Coronary insufficiency

b) Decreased steroid

c) Decreases Intracranial tension

d) Nausea and vomiting

Correct Answer - A

Ans. is 'a' i.e., Coronary insufficiency

- **Etomidate produces little cardiovascular and respiratory depression** --> Agent of choice for cardiovascular surgeries (bypass, aneurysms, valve surgery). Etomidate is the most cardiostable inducing agent.
- Etomidate has the highest incidence of nausea and vomiting amongst inducing agents 30%-40%.
- It can produce hiccups and myoclonus.
- **Superficial thrombophlebitis and pain on injection may occur** —
> Pain can be reduced by using larger vein and injecting lidocaine just before etomidate.

255. Sedative with GABA facilitating action but without anticonvulsant and muscle relaxant properties and no effect on sleep ?

a) Diazepam

b) Zolpidem

c) Phenobarbitone

d) Buspirone

Correct Answer - B

Ans. is 'b' i.e., Zolpidem

Among the given options, three are sedative-hypnotic with GABA facilitatory action -

- Diazepam (a benzodiazepine) → But it also has anticonvulsant and muscle relaxant property. it) Phenobarbitone → But it has anticonvulsant property.
- Zolpidem
 - Has no anticonvulsant and muscle relaxant property and have no effect on sleep architecture. Zolpidem
 - Zolpidem is a non-benzodiazepine hypnotic.
 - Minimal suppressive effect on REM sleep architecture is not disturbed.

256. Lithium directly affects which ion ?

a) Sodium

b) Potassium

c) Magnesium

d) Calcium

Correct Answer - A

Ans. is 'a' i.e., Sodium

- Diuretics (particularly thiazides) decrease the renal excretion of lithium and thus may result in toxicity. This is due to increased reabsorption of Na⁺ and lithium ions (as a compensatory response to excessive loss of Na⁺).

Interactions of lithium

1. Diuretics (thiazide, furosemide) by causing Na⁺ loss promote proximal tubular reabsorption of Na⁺ as well as Li⁺ → Plasma level of lithium rises.
2. Tetracyclines, NSAIDs and ACE inhibitors cause lithium retention.
3. Lithium tends to enhance insulin/sulphonylurea induced hypoglycemia (lithium has insulin like action on glucose metabolism).
4. Lithium inhibits the action of ADH on distal tubules → causes nephrogenic DI.
5. Lithium reduce thyroxine synthesis by interfering iodination of tyrosine.

257. Coronary steal phenomenon is caused by?

a) Dipyridamol

b) Verapamil

c) Diltiazem

d) Nicorandil

Correct Answer - A

Ans. is 'a' i.e., Dipyridamol

- Dipyridamole is a powerful coronary dilator; increases total coronary flow by preventing uptake and degradation of adenosine.
- It dilates resistance vessels in nonischemic zone as well
Diverts the already reduced blood flow away from ischemic zone -
Coronary steal phenomenon.
- It has no effect on larger conducting vessels (contrast nitrates which dilate larger conducting vessels and cause redistribution of blood towards ischemic zone).

258. Hormone replacement therapy is contraindicated in

a) Atherosclerosis

b) Thromboembolism

c) Osteoporosis

d) Gall stones

Correct Answer - B

Ans. is 'b' i.e., Thromboembolism

Contraindications of hormone replacement therapy

- Pregnancy and breast feeding.
- Undiagnosed vaginal bleeding.
- Recent angina or MI.
- *Venous thromboembolic disease.*
- Breast cancer.
- Active liver disease.
- Endometrial cancer.
- Uncontrolled hypertension.

259. Powerful vasoconstrictor is?

a) Amphetamines

b) Epinephrine

c) Isoprenaline

d) Dobutamine

Correct Answer - B

Ans. is 'b' i.e., Epinephrine

- Among the given options, only epinephrine has significant action on α -receptor, thus causes vasoconstriction.

Sympathomimetic drugs

- Non selective
- Adrenaline $\rightarrow \alpha_1, \alpha_2, \beta_1, \beta_2$
- Noradrenaline $\rightarrow \alpha_1, \alpha_2, \beta_1$, no β_2
- Isoprenaline $\rightarrow \beta_1, \beta_2$ but no α action
- Mephentramine $\rightarrow \alpha_1$ and β_1

Selective

- α_1 agonists \rightarrow Phenylephrine, methoxamine, naphazoline, oxymetazoline, xylometazoline.
- α_2 agonists \rightarrow Clonidine, methyldopa, brimonidine, apraclonidine, guanfacine, guanabenz
- β_1 agonists \rightarrow Prenalterol, dobutamine
- β_2 agonists \rightarrow Salbutamol, terbutaline, salmeterol, orciprenaline, ritodrine, isotharine, bitolterol, pirbuterol, tenoterol, formoterol.

**260. All have high first pass metabolism
except ?**

a) Lidocaine

b) Propranolol

c) Theophylline

d) Morphine

Correct Answer - C
Ans. is 'c' i.e., Theophylline

261. Drug of choice for bleeding oesophageal varices is?

a) Ethanolamine oleate

b) Octreotide

c) Propranolol

d) Phytonadione

Correct Answer - B

Ans. is 'b' i.e., Octreotide

- Among the given options, only octreotide is used (otherwise vasopressin analogue terlipressin is the DOC).
- Has been explained in previous sessions.

262. Half life of alteplase is ?

a) 5 mins

b) 30 mins

c) 1 hour

d) 2 hour

Correct Answer - A

Ans. is 'a' i.e., 5 mins

- Alteplase has a very short half-life (about 5 minutes) and, therefore, is administered as a total dose equal to 0.9mg/kg.
- Ten percent of the total dose injected intravenously as a bolus and the remaining drug is administered over 60 minutes.

263. Longest acting glucocorticoids is ?

a) Prednisone

b) Prednisolone

c) Cortisone

d) Dexamethasone

Correct Answer - D
Ans. is 'd' i.e., Dexamethasone

264. Which of the following is renin inhibitor ?

a) Losartan

b) Benazepril

c) Remikiren

d) Imidapril

Correct Answer - C

Ans. is 'c' i.e., Remikiren

265. Mechanism of action of buspirone is?

a) 5 HT1A partial agonism.

b) 5 HT1B antagonism.

c) 5 HT1B partial agonism.

d) 5 HT2C antagonism.

Correct Answer - A

Ans. A. HT1A partial agonism

5 HT1A:

- Presynaptic autoreceptor.
- Modulates serotonin release.

Partial 5 HT1A agonists:

- Buspirone, isapirone, gepirone.
- Useful as anti-anxiety drug.

266. Which of the following is orally active direct Xa inhibitor?

a) Rivaroxaban

b) Agravatin

c) Dabigatran

d) Bivalirudin

Correct Answer - A

Ans. a. Rivaroxaban

- Rivaroxaban, apixaban & edoxaban are factor Xa inhibitors.
- Dabigatran etexilate is direct thrombin inhibitor.

267. Which of the following drug is used in SIADH?

a) Tolvapatan

b) Desmopressin

c) Vwb factor

d) Terlipressin

Correct Answer - A

Ans. A. Tolvaptan

Tolvaptan:

- Vasopressin antagonists.
- Orally active nonpeptide selective V2 receptor antagonist.
- Metabolized by CYP3A4 – Not given to patients receiving this isoenzyme inhibitor.
- Given once daily.
- $t_{1/2}$: 6–8 hours.

Actions:

- Increases free water clearance by kidney (aquaretic).
- Corrects lower plasma Na^+ levels.

Uses:

- Useful for hyponatremia treatment.
- Hyponatremia caused by CHF, cirrhosis of liver or syndrome of inappropriate ADH secretion (SIADH).

Side effect:

- Thirst & dry mouth (most frequent).
- Fever, G.I. upset & hyperglycaemia.

268. DOC for smoking cessation?

a) Acamprosate

b) Varenicline

c) Thalidomide

d) Tryptophan

Correct Answer - B

Ans. B. Varenicline (If Bupropion is not an option)

Anti-smoking drugs:

- Bupropion (along with Varenicline & Nicotine replacement therapy) is a USFDA approved first-line agent for pharmacotherapy in smoking cessation.

Varenicline:

- Effective agent for smoking cessation.
- Synthetic drug with partial agonist action at $\alpha 4\beta 2$ nicotinic receptors.
- Has antagonist properties persisting due to long half-life & high receptor affinity.
- Hence, prevents stimulant effect of nicotine at presynaptic $\alpha 4\beta 2$ receptors \rightarrow results in dopamine release.

269. MOA of Teduglutide in short bowel syndrome?

a) GLP-2 inhibitor

b) HT1a inhibitor

c) GLP-1 analogs

d) C-peptide analogs

Correct Answer - A

Ans. A. GLP-2 inhibitor

- Glucagon-like peptide-2 (GLP-2) – Important intestinotrophic growth factor & mediator of intestinal adaptation.
- FDA approved teduglutide (Gattex—NPS) to treat short bowel syndrome in adult patients requiring additional nutrition from I.V. parenteral nutrition.
- Effectively improves fluid absorption.

270. What is the advantage of fixed dose combination of drugs.

a) Increases efficacy of drug

b) Decreases adverse effects

c) Patient compliance improved

d) All of the above

Correct Answer - D

Ans. D. All of the above

Advantages of FDC:

- Safe and effective.
- Reduces “pill burden” → Enhancing overall treatment outcome.
- Increases efficiency.
- Reduce incidence of adverse drug effects.
- Improves patient compliance.
- Offers low cost (compared to individual components of active ingredients).

271. What is the type of inhibition of acetylcholinesterase caused by organophosphates?

a) Competitive and reversible

b) Noncompetitive and irreversible

c) Uncompetitive and reversible

d) Competitive and irreversible

Correct Answer - D

Ans: D. Competitive and irreversible

(Ref Goodman Gillman 12/e p242; Katzung 13/e p115, 12/e p106; KDT 7/e p99)

Inhibition type:

- Of acetyl cholinesterase by organophosphates - Competitive & irreversible.
- Of acetyl cholinesterase by carbamates - Competitive & reversible.

MOA:

- Both bind at esteratic enzyme site à Competitive inhibition.
- Carbamoyl ester - Differs it to reversible & irreversible.

Anticholinesterases

Reversible

Irreversible

Carbamates

Acridine Organophosphate Carbamates

- | | | | |
|--|---|--|--|
| <ul style="list-style-type: none"> • Physostigmine • Neostigmine • Pyridostigmine • Edrophonium • Rivastigmine • Donepezil | <ul style="list-style-type: none"> • Tacrine | <ul style="list-style-type: none"> • Dyflos (DFP) • Echothiophate • Parathion • Malathion • Diazinon (TIK -20) • Tabun | <ul style="list-style-type: none"> • Carbaryl • Propoxur |
|--|---|--|--|

- Galantamine
- Sarin
- Soman

272. Best antihypertensive drug used in pulmonary hypertension is:

a) Digoxin

b) Furosemide

c) Amlodipine

d) Bosentan

Correct Answer - D

Ans: D. Bosentan

(Ref Harrison 19/e p1659, 18/e p2079)

Treatment of Pulmonary Arterial Hypertension

Endothelin-
Receptor
Antagonists

- Bosentan & ambrisentan are approved for the treatments of
- Bosentan is contraindicated in patients who are on cyclosporine or glyburide concurrently.
- Sildenafil and tadalafil are approved for the treatment of PAH

Phosphodiesterase-
5 Inhibitors

- MC side effect is headache
- Neither drug should be given to patients who are taking nitro vasodilators.
- Iloprost is approved via inhalation for PAH°.
- Epoprostenol is approved as a chronic IV treatment of PAH.

Prostacyclins

- Treprostinil, an analogue of poprostenol, is approved for PAH and may be given intravenously, subcutaneously, or via inhalation.
- The intravenous prostacyclins have the greatest efficacy as treatments for PAH and are often

Lung
Transplantation

effective in patients who have failed all other treatments.

- Lung transplantation is considered for patients who, while on an intravenous prostacyclin, continue to manifest right heart failure.

273. Which of the following is a bactericidal drug against Mycobacterium leprae?

a) Erythromycin

b) Ofloxacin

c) Cotrimoxazole

d) Amoxicillin

Correct Answer - B

Answer- B. Ofloxacin

Ofloxacin Over 99.9% bacilli were found to be killed by 22 daily doses of ofloxacin monotherapy

274. A Schizophrenic patient is responding well to haloperidol. But, now he has developed symptoms of parkinsonism. What is the drug of choice to treat this condition -

a) Levodopa

b) Bromocriptine

c) Tolcapene

d) Anticholinergic

Correct Answer - D

Ans: D Anticholinergic

- Extrapiramidal side effects of antipsychotics.
 - Major dose limiting side effects.
 - Maximum with haloperidol.
- Parkinsonism:**
- Appears between 1-4 weeks of therapy.
 - Central anticholinergics like benzhexol are drug of choice for drug induced Parkinsonism.

275. Metyrosin is used in ?

a) Acromegaly

b) Cushing syndrome

c) Addison's disease

d) Pheochromocytoma

Correct Answer - D

Ans: D Pheochromocytoma

Ref: KDT 7/e p. 128, 129; Katzung 11th/e p. 941

- Rate limiting step (tyrosine hydroxylation) in synthesis of epinephrine is inhibited by metyrosine.

276. Which of the following is a serious and characteristic adverse effect of Metformin

a) Lactic acidosis

b) Weight gain

c) Hypoglycemia

d) Dilutional hyponatremia

Correct Answer - A

Ans: A. Lactic acidosis

[Ref: KDT 7h/e p. 453].

- Two important adverse effects of these agents are lactic acidosis (more with phenformin) and vitamin B12 deficiency (more common with metformin).
- More common side effects are abdominal pain, anorexia, metallic taste, mild diarrhea and tiredness.

277. Which of the following decreasing preload -

a) Hydralazine

b) Nifedipine

c) Nitroglycerine [glyceryl trinitrate]

d) Losartan

Correct Answer - C

Ans: C .Nitroglycerine [glyceryl trinitrate]

(Ref: KDT 7/e p. 522)

Preload:

- End-diastolic pressure when the ventricle is filled.
- Depends on venous return) more the venous return, more is the preload.
- Drug which dilate veins will decrease the venous return and there by preload.
- Drugs which decrease the body fluid (diuretics) also decrease venous return and preload.
- Examples are - Nitrates

278. Levodopa is contraindicated in-

a) Hypertension

b) Multiple sclerosis

c) Pheochromocytoma

d) Angle closure glaucoma

Correct Answer - D

Ans: D. Angle closure glaucoma

[Ref: clinical Pharmacology 8th/e p. 715).

Contraindication of Levodopa

1. Narrow angle glaucoma
2. Hemolytic anemia
3. Angina pectoris
4. Transient ischemic attack
5. History of melanoma or undiagnosed skin disease
6. Patients taking MAO inhibitors.

279. Which of the following drug used in gout act by converting uric acid into allantoin ?

a) Colchicine

b) Allopurinol

c) Probenacid

d) Rasburicase

Correct Answer - D

Ans: D. Rasburicase

Drugs increasing metabolism of uric acid:

- Urate oxidase metabolizes insoluble uric acid to soluble allantoin in the birds'.
- This enzyme is absent in humans.
- Rasburicase (a recombinant urate oxidase) is used for this Purpose.
- PEGylateil uricase (pegloticase) is another similar drug.

280. GABA- B receptor is which type of receptor -

a) Inotropic receptor

b) Metabotropic transmembrane receptor

c) Ligand gated ion channel

d) Intrinsic ion channel

Correct Answer - B

Ans: B. Metabotropic transmembrane receptor

(Ref : KDT //e p. 399, 402 6 6h/e p. 395; Katzung 17th/e p' 377-378; IP/e p' 355)

Metabotropic receptors:

- Are G-protein coupled receptors which act through second messenger.
- Examples: GABA-B receptors, Muscarinic (M1 to M5)

281. Side effect of oral carbonic anhydrase inhibitors include ?

a) Weight gain

b) Insomnia

c) Hyperkalemia

d) Paresthesia

Correct Answer - D

Ans: D. Paresthesia

[Ref KDT Vh/e p. 5g7; Clinical pharmacology 8th/e p. 71g)

Adverse effects of systemic/oral carbonic anhydrase inhibitors are:

1. CNS effects: Lethargy, drowsiness, headache, seizures, and Paresthesias
2. GI effects: Nausea, vomiting, diarrhea, altered taste, and anorexia
3. Diuretic effect : Polyuria and increased thirst; fluid and electrolyte disturbances (hypokalemia, metabolic acidosis)
4. Worsening of liver disease : Precipitation of hepatic encephalopathy / hepatic coma and hepatic necrosis
5. Hypersensitivity reaction: In patients sensitive to sulfonamide (CAase inhibitors are sulfonamide derivatives)
6. Hyperuricemia: Precipitation of gout
7. Bone marrow depression: Rare

282. GABA-B receptors are -

a) G-protein coupled receptors

b) Intrinsic ion channel

c) Enzyme linked receptors

d) Ligand gated ion channels

Correct Answer - A

Ans: A. G-protein coupled receptors

(Ref : KDT //e p. 399, 402 6 6h/e p. 395; Katzung 17th/e p' 377-378; IP/e p' 355)

GABA-A receptors:

- Intrinsic Cl⁻ channels and when open cause increase in Cl⁻ conductance and CNS depression.

GABA-B receptors:

- G-protein coupled receptors.
- Baclofen is agonist and saclofen is antagonist on these receptors.

283. New Delhi metallo-Beta-lactamase enzyme confers resistance to which antibiotic?

a) Colistin

b) Amoxicillin

c) Carbapenems

d) Vancomycin

Correct Answer - C

Ans: C. Carbapenems

[Ref: Clinical pharmacology E Book p. 184]

New Delhi metallo-beta-lactamase f (NDM-f):

- An enzyme that makes bacteria resistant to a broad range of beta-lactam antibiotics.
- These include the antibiotics of the carbapenem family, which are a mainstay for the treatment of antibiotic-resistant bacterial infections.
- The gene for NDM- I is one member of a large gene family that encodes beta-lactamase enzymes called carbapenemases.
- Bacteria that produce carbapenemases are often referred to in the news media as "superbugs".
- Because infections caused by them are difficult to treat.
- Such bacteria are usually susceptible only to polymyxins and tigecycline.

284. Pilocarpine in eye causes -

a) Active miosis

b) Active mydriasis

c) Passive miosis

d) Passive mydriasis

Correct Answer - A

Ans: A. Active miosis

(Ref: KDT 7h/e p' 114 & 6th/e p 200)

- Miosis (constriction of PuPil)
- **Parasympathomimetic (muscarinic) drugs:**
- By stimulating the contraction of circular muscles (pupillary sphincter).
- As miosis is due to active contraction of muscle - Called "**Active miosis**".

285. Topical antibiotic of choice for MRSA

a) Mafenide

b) Silver sulfadiazine

c) Mupirocin

d) Butenafine

Correct Answer - C

Ans: C. Mupirocin

Methicillin resistance staphylococcus aureus (MRSA):

- Also be referred to as multi-drug resistant staphylococcus aureus or oxacillin resistant staphylococcus aureus (ORSA).
- Vancomycin is the systemic DOC for MRSA
- Mupirocin is topical antibiotic of choice.
- Other topical effective drug are fusidic acid and retapamulin.

286. Drug used for Urinary incontinence [like Oxybutynin] in Neurogenic Bladder acts on which cholinergic receptors:

a) M1

b) M2

c) M3

d) M4

Correct Answer - C

Ans: C. M3

- Cholinergic system stimulates detrusor and relaxes the trigone) → Increased micturation (M3 receptor).
- Selective M3 blockers:**
- Oxybutynin, Darifenacin, Solifenacin, Tolterodine):
 - Blocks M3 receptors in urinary bladder - Used in urinary incontinence.

287. Analgesic action of paracetamol is due to which receptors

a) NK1

b) BK1

c) TRPV-1

d) C2x3

Correct Answer - C

Ans: C. TRPV-1

(Ref: Oxford textbook of Palliative care for children p. 712)

- Paracetamol was shown to be converted in the brain and spinal cord through a process of deacetylation followed by conjugation with arachidonic acid to form N-arachidonoylphenolamine (AM404).
- AM404 is a known endogenous cannabinoid.
- Functions both as a potent activator of vanilloid subtype 1 receptors (TRPV-1).
- Inhibitor of cellular anandamide uptake.
- Increases other endogenous cannabinoids levels acting directly on cannabinoid-1 receptors (CB1).
- TRPV1 and CB1 receptors are present in pain and thermoregulatory pathways, giving paracetamol its analgesic and antipyretic actions.

288. Which of the following is not true about hydroquinone?

a) It is a weak hypopigmenting agent

b) It inhibits tyrosinase

c) Response is incomplete and pigmentation may recur

d) It should not be used for melasma or chloasma of pregnancy

Correct Answer - D

Ans. is'd'i.e., It should not be used for melasma or chloasma of pregnancy .

Ref: KDT Vhle p. 8921

Hydroquinone:

- It is a weak hypopigmentation agent.
- Inhibits tyrosinase and other melanin forming enzymes, decreases formation of and increases degradation of melanosomes.
- Regular application (as 2-6% lotion or cream) for months is required in melasma, chloasma of pregnancy, etc.

289. Oral rehydration therapy takes advantage of which transporter in GIT ?

a) Na Glucose co transport

b) K glucose co transport

c) Na calcium co transport

d) Na channel

Correct Answer - A

Ans. is'a'i.e., Na Glucose co transport

(Ref; KDT 7/ep.679)

- Oral rehydration is possible if glucose is added with salt.
- It capitalizes on the intactness of glucose coupled Na⁺ absorption (Na glucose co transport), even when other mechanisms have failed or when intestinal secretion is excessive, because the secreted fluid lacks glucose and cannot be reabsorbed.

290. Drugs causing painful salivary glands all except ?

a) Phenybutazone

b) Ambroxol

c) Clozapine

d) Iodides

Correct Answer - B

Ans. is'b'i.e., Ambroxol

[Ref:

<http://www.ijohmr.com/upload/Adverse%20Effects%20of%20Drugs%20o2>

Drugs associated with salivary gland enlargement

- Clozapine may cause transient salivary gland swelling as well as sialorrhea.

291. Potassium channel opener ?

a) Stiripentol

b) Retigabine

c) Lacosamide

d) Modafinil

Correct Answer - B

Ans. is 'b' i.e., Retigabine

[Ref. Epilepsy and brain tumors by Herbert B. Newton, p. 17f]

Potassium channel openers

- A potassium channel opener is a type of drug which facilitates ion transmission through Potassium channels.
- Diazoxide vasodilator used for hypertension, smooth muscle relaxing activity
- .. Minoxidil vasodilator used for hypertension, also used to treat hair loss
- 2. Nicorandil vasodilator used to treat angina
- 3. Pinacidil
- 4. **Retigabine, an anticonvulsant**
- 5. Flupirtine, analgesic with muscle relaxant and anticonvulsant properties

292. Which of the following is an example of idiosyncratic reaction?

a) Captopril - dry cough

b) Isoniazid - hepatitis

c) Haloperidol - extrapyramidal side effects

d) Chloramphenicol - aplastic anemia

Correct Answer - D

Ans. is'd'i.e., Chloramphenicol - aPlastic anemia

(Ref: KDT P/e p. 851)

Idiosyncratic reactions e.g.:

1. Barbiturates cause excitement and mental confusion in some individuals.
2. Quinine/quinidine cause cramps, diarrhoea, purpura, asthma and vascular collapse in some patients.
3. Chloramphenicol produces non dose-related serious aplastic anaemia in rare individuals.

293. Intolerance to a drug occurs at what dose in an individual ?

a) Subtherapeutic dose

b) Therapeutic dose

c) Toxic dose

d) Not related to the dose of drug

Correct Answer - B

Ans. is'b'i.e., Therapeutic dose

[ReIKDT . 851]

Intolerance

- It is the appearance of characteristic toxic effects of drug in an individual at therapeutic doses.
- Converse of tolerance and indicates a low threshold of the individual to the action of a drug.

294. Which of the following acts as 'Gatekeeper' in the GIT ?

a) ATP binding cassette [ABC] transporter

b) P₁glycoprotein transporter

c) OAT 1 & OAT2

d) All of the above

Correct Answer - A

Ans. is'a.i.e., ATP binding cassette (ABC) transporter

(Ref [www, ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov))

- MDRI (ABCB1) MRP2 (ABCC2) and BCRP (ABCG2) are members of the family of ATP binding cassette (ABC) transporters.
- These are plasma membrane transporters that are expressed in various organs.
- The role of MDRI and MRP2 in the hepatobiliary system is well defined
- The role of ABCG2, which is also expressed in the canalicular membrane of hepatocytes
- has not yet been fully characterised.
- All three proteins are also expressed in the apical membrane of enterocytes where they probably control oral availability of many substances.
- This important ``gatekeeper" function of ABC transporters has been recognised recently and is currently under further investigation.

295. Nonoliguric kidney failure occurs with administration of which of the following drug/s?

a) Gentamycin

b) Cisplatin

c) Ifosfamide

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

(Ref: Porth pathophysiology: Concepts of altered health states, by Charlotte Pooler p. 823)

- ARF with urine output > 600 ml/day is defined as non-oliguric renal failure-
- Important drugs causing non-oliguric renal failure are -**
- Aminoglycosides (e.g.gentamicin)
 - Amphotericin B
 - Ifosfomide
 - Radiocontrast agents
 - Cyclosporine

296. Which medication cannot be given in diarrhea in pregnancy ?

a) Oral rehydration therapy

b) Stimulant purgative

c) Loperamide

d) Diphenoxylate-atropine

Correct Answer - B

Ans. is 'b' i.e., Stimulant purgatives

lRef: KDT 7/e p. 6741

Stimulant purgatives:

- They are powerful purgatives: often produce griping. They irritate intestinal mucosa and thus were thought to primarily stimulate motor activity.
- They can reflexly stimulate gravid uterus, therefore are contraindicated during pregnancy.

297. Which of the following phenomenon can be explained with pharmacogenomics ?

- a) More chances of irinotecan induced neutropenia and diarrhea in some patients
- b) Acute intermittent porphyria precipitated by barbiturates
- c) Increased risk of severe bone marrow toxicity with 6 mercaptopurine
- d) Nephrotoxicity by cyclosporine

Correct Answer - A:B:C

Ans. is 'a' i.e., More chances of irinotecan induced neutropenia and diarrhea in some patients; .b, i.e., Acute Intermittent porphyria precipitated by barbiturates; & 'c' i.e., increased risk of severe bone marrow toxicity with 6 mercaptopurine

[Ref: KDT)

Pharmacogenomics

- Pharmacogenomics is the use of genetic information to guide the choice of drug and dose on an individual basis.
- It intends to identify individuals who are either more likely or less likely to respond to a drug, as well as those who require altered dose of certain drugs.

298. What enzyme is inhibited by etoposide ?

a) Topoisomerase I

b) Topoisomerase II

c) Dihydrofolate reductase

d) Dihydro orotate oxidase

Correct Answer - B

Ans. is 'b' i.e., Topoisomerase

(Ref: KDT 7h/e p. 8661)

- Etoposide
- Semisynthetic derivative of podophyllotoxin, a plant glycoside'
- Not a mitotic inhibitor, but arrests cells in the G2 phase and causes DNA breaks by affecting DNA topoisomerase-2 function.

299. Which of the following drugs belong to category X risk category for the use in pregnancy?

a) Penicillin V

b) Thiopentone

c) Aspirin

d) Isotretinoin

Correct Answer - D

Ans. is'd'i.e., Isotretinoin

[Ref KDT //e p. 70)

- Category X drugs have proven fetal abnormalities and are teratogenic.
- **Eg:** Estrogens, isotretinoin, ergometnne thalidomide

300. Tocilizumab acts as an antagonist at which receptor?

a) IL 1

b) IL 2

c) IL 6

d) TNF

Correct Answer - C

Ans. is 'c' i.e., IL 6

(Ref: Harisons 18th/e p. 2750)

Tocilizumab:

- Tocilizumab is a humanized monoclonal antibody directed against the membrane and soluble forms of the IL-6 receptor.

301. Ivabradine is used for management of ?

a) Stable angina

b) Pre renal azotemia

c) Alzheimers disease

d) Anti smoking agent

Correct Answer - A

Ans. is 'a' i.e., Stable angina

(Ref: KDT Vh/e p. 554; Cardiac drug development guide by Micheal Pugsley p. 381)

Ivabradine

- It is an investigational inhibitor of sino-atrial node.
- It is a relatively selective I_f (funny current) Sodium channel blocker of early part of slow diastolic depolarization (phase 4) that reduces heart rate by inhibiting the hyperpolarization-activated sodium channel in SA node.
- Heart rate is a major determinant of angina in coronary disease.
- Therefore, lowering the heart rate is an important therapeutic approach in the treatment of stable angina.

302. Siltuximab is used in treatment of ?

a) Castleman's disease

b) Sezary syndrome

c) Ankylosing spondylitis

d) Non hodgkins lymphoma

Correct Answer - A

Ans. is 'a' i.e., Castleman's disease

lRef: Multiple myeloma, an issue of hematology oncology clinics E
boohKenneth C Anderson p. 9171

Siltuximab (Anti IL-6):

- IL-6 is produced by the stromal cells of the bone marrow, and plays a crucial role in the proliferation and survival of multiple myeloma cells.

303. Mechanism of action trimetazidine is ?

a) Fatty acid synthase inhibitor

b) Na channel inhibitor

c) K channel opener

d) Inhibiting mitochondrial LC3-KAT

Correct Answer - D

Ans. is'd'i.e.,Inhibiting mitochondrial LC3-KAT

(Ref: KDTh/e p. 554)

Trimetazidine:

- This antianginal drug acts by non hemodynamic mechanisms.
- The mechanism of action of trimetazidine is uncertain, but it may improve cellular tolerance to ischaemia by inhibiting mitochondrial long chain 3-ketoacyl-CoA thiolase (LC3-KAT) a key enzyme in fatty acid oxidation- thereby reducing fatty acid metabolism and increasing glucose metabolism in myocardium.

304. Cizotinib is inhibitor of which receptor ?

a) Tyrosine kinase

b) VEGF receptor

c) TNF alpha receptor

d) PDGF receptor

Correct Answer - A

Ans. is 'a'i.e., Tyrosine kinase

RefCardio - oncology: principles, prevention and management, by puja Mehta, p. 10)

Crizotinib

- It is a small molecule multitargeted tyrosine kinase receptor inhibitor targeting ALK, MET, ROS1 kinases.
- By inhibiting ALK tyrosine kinase activity, crizotinib inhibits cell proliferation, induces G1 - S phase cell cycle arrest and apoptosis.
- It is approved for the first line in the management of metastatic non-small cell lung cancer with an ALK mutation.

305. Which antianginal drug can be safely used with drugs used for treatment of erectile dysfunction?

a) Nitrates

b) Calcium channel blockers

c) pFOX inhibitor

d) Potassium channel opener

Correct Answer - C

Ans. is 'c' i.e., pFOX inhibitor

[Ref: KDT Vh/e p. 5541]

- The metabolic modulators (eg, trimetazidine) are known as pFOX inhibitors because they partially inhibit fatty acid oxidation pathway in myocardium.
- Antianginal action of trimetazidine is independent of any blood pressure reduction.
- It can be effectively used as an antianginal drug in the CAD patients with erectile dysfunction in the place of nitrates to allow free use of sildenafil and similar agents.

306. Imipeneme is active against which of the following organism/s?

a) Gram positive cocci

b) *B. fragilis*

c) *Cl. difficile*

d) All the above

Correct Answer - D

Ans. is'd'i.e., All the above

[Ref KDT 7/e p. 731]

Imipenem

- A derivative of thienamycin, imipenem is an extremely potent and broad spectrum bactericidal antibiotic whose range of activity includes gram-positive cocci, Enterobacteriaceae, *Ps. aeruginosa*, *Listeria* as well as anaerobes like *Bact. fragilis* and *Cl. difficile*.

307. Drug used for euvolemic hyponatremia in patient with advanced congestive heart failure is ?

a) Tolvaptan

b) Nesiritide

c) Hydrocortisone

d) Metoprolol

Correct Answer - A

Ans. is'a'i.e., Tolvaptan

[Ref: KDT 7/e p. 5251]

- The most common cause of euvolemic hyponatremia is SIADH (syndrome of inappropriate secretion of antidiuretic hormone).
- Thus the question is asking about the drug for SIADH in patients with cardiac failure.

Tolvaptan

- This is an orally active nonpeptide vasopressin V2 receptor antagonist introduced recently for the correction of water retention and hyponatremia occurring in syndrome of inappropriate ADH secretion (SIADH) as well as in advanced CHF.
- In clinical trials on CHF patients with hyponatremia, tolvaptan has afforded short-term improvement by increasing water excretion, restoring serum Na⁺ and relieving dyspnoea.
- However, no long-term benefits have been noted.

308. Which of the following is not true about silver sulphadiazine used in burns?

a) Local side effects include burning and itch

b) It is used for treating established infection

c) It is good for preventing infection of chronic ulcers

d) Released silver ion is effective for the antibacterial activity

Correct Answer - B

Ans. is'b'i.e., It is used for treating established infection

[Ref: KDT vh/e p. 7061

Silver sulfadiazine:

- Used topically as 1 % cream, it is active against a large number of bacteria and fungi, even those resistant to other sulfonamides, e.g. Pseudomonas.
- It slowly releases silver ions, which appear to be largely responsible for the antimicrobial action.
- It is considered to be one of the most effective drugs for preventing infection of burnt surfaces and chronic ulcers and is well tolerated.
- However, it is not good for treating established infection.

309. Which of the following drugs can be used for secondary prevention of coronary artery disease?

a) Gemfibrozil

b) Colestipol

c) Temisartan

d) Vitamin E

Correct Answer - A

Ans. is'a'i.e., Gemfibrozil

[Ref: KDT Vh/e p. 639]

Gemfibrozil

- This fibric acid derivative effectively lowers plasma TG level by enhancing breakdown and suppressing hepatic synthesis of TGs.
- Besides high efficacy in type III hyperlipoproteinemia, gemfibrozil has shown action in subjects with raised blood CH in addition.
- In the 'Helsinki Heart Study' men without known CAD treated with gemfibrozil had a 34% reduction in fatal and nonfatal MI, though overall mortality was not affected.
- That these benefits extend to secondary prevention of coronary events in men with existing CAD and low HDL CH, has been demonstrated in another trial.

310. Indication for stopping rifampicin ?

a) Hepatitis

b) Visual loss

c) Thrombocytopenia

d) Peripheral neuropathy

Correct Answer - C

Ans. is 'c' i.e., Thrombocytopenia

lRef: ATT drug guide p. 7391

- Among the given options, hepatitis and thrombocytopenia are adverse effects of rifampicin.
- "If thrombocytopenia purpura or anaemia occurs, rifampin should be stopped and should never be restarted".
- Rifampicin can be restarted under close observation and supervision, once the liver functional normalize.

311. WHO recommended regime for the treatment of Brucella infection is ?

a) Streptomycin with doxycycline

b) Rifampicin with doxycycline

c) Rifampicin with ciprofloxacin

d) Streptomycin with erythromycin

Correct Answer - B

Ans. is 'b' i.e., Rifampin with doxycycline

lRef : Harrison 18n/e p. 1299,1672 & l4/e p. 1268).

- The gold standard for the treatment of brucellosis in adults is IM streptomycin (0.75-1 g daily for 14-21 days) together with doxycycline (100 mg twice daily for 6 weeks).
- In both clinical trials and observational studies, relapse follows such treatment in 5-10 % of cases.
- The usual alternative regimen (and the current World Health Organization recommendation) k rifampin (600-9{n mg/it) plus doxycycline (100 mg twice daily) for 6 weeks.

312. Drug used in treatment of peripheral vascular disease which acts by increasing flexibility of RBC membrane and increasing micro circulation?

a) Cycloandelate

b) Xanhinol nicotinate

c) Pentoxiphylline

d) Cilostazole

Correct Answer - C

Ans. is 'c' i.e., Pentoxifylline

(Ref: KDT Vh/e p. 555)

Pentoxifylline (Oxpentiffline)

- An analogue of theophylline and a weak phosphodiesterase (PDE) inhibitor, it has been shown to increase blood flow in ischaemic areas by reducing whole blood viscosity and by improving flexibility of RBCs.
- Pentoxifylline is mainly used in intermittent claudication (calf pain on walking) due to occlusive vascular disease (Buerger's disease); walking distance is increased.
- Other conditions claimed to be improved are: trophic leg ulcers, transient ischaemic attacks (TIAs), non haemorrhagic stroke, and chronic cerebrovascular insufficiency.
- However, overall benefits are modest and restricted to a fraction of patients

313. Which drug/s is/ are used to control hypertension intra operatively?

a) Nitroglycerine

b) Nitroprusside

c) Beta blockers

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

- [Rel Hypertension primer by Joseph L. Izzo, p. 555J]
- **Intraoperative hypertension**
- Measures commonly used to control intraoperative hypertension include deepening of anesthesia, use of vasodilators such as nitroglycerine or nitroprusside, or a combination of the two.

314. Only drug used in pregnancy with syphilis ?

a) Penicillin

b) Clindamycin

c) Azithromycin

d) Erythromycin

Correct Answer - A

Ans. is'a'i.e., Penicillin

[Ref: Harrison's 18th/e p. 1871]

Management of Syphilis in Pregnancy:

- Penicillin is the only recommended agent for the treatment of syphilis in pregnancy.
- If the patient has a documented penicillin allergy, desensitization and penicillin therapy should be undertaken according to the CDC's 2010 guidelines.

315. Overall action of caffeine on heart rate is ?

a) Increases

b) Decreases

c) No effect

d) First increases then decreases

Correct Answer - B

Ans. is 'b' i.e., Decreases (Ref: KDT Vh/e P. 4881)

Caffeine

- Caffeine out of the three naturally occurring methylxanthines, only caffeine is used as a CNS stimulant.
- Methylxanthines directly stimulate the heart and increase force of myocardial contractions.
- They tend to increase heart rate by cardiac action, but decrease it by causing vagal stimulation- net effect is variable.
- Tachycardia is more common with theophylline, but caffeine generally lowers heart rate.

316. HIV strains resistant to which of the following drugs may show cross resistance to Abacavir?

a) Lamivudine

b) Didanosine

c) Enfuvirtide

d) Raltegravir

Correct Answer - A

Ans. is'a'i.e.Lamivudine

lRef: KDT p.. 8081

- Resistance to abacavir develops slowly, and it exhibits little cross resistance with other NRTIs. Strains of HIV having resistance to zidovudine and lamivudine show cross resistance with abacavir.

317. Which drug abolishes corticomedullary osmotic gradient ?

a) Furosemide

b) Thiazide

c) Spironolactone

d) Triamterene

Correct Answer - A

Ans. is'a'i.e., Furosemide

(Ref. KDT p. 579)

- Furosemide (Frusemide)
- It is a high ceiling (loop) diuretic which inhibits of $\text{Na}^+-\text{K}^+-2\text{Cl}^-$ cotransporter.
- The corticomedullary osmotic gradient is abolished and positive as well as negative free water clearance is blocked.
- K^+ excretion is increased mainly due to high Na^+ load reaching DT.

318. Latest drug used for treatment of MDR TB patients is ?

a) Bedaquiline

b) Amithiozone

c) Capreomycin

d) Linezolid

Correct Answer - A

Ans. is'a'i.e., Bedaquiline

(Ref: Principles and practice of infectious diseases by John E. Bennet, p. 4741

Bedaquiline:

- It is a diaryl quinolone.
- It acts by inhibiting M. tuberculosis adenosine triphosphate synthase.
- FDA has approved bedaquiline for the management of drug resistant tuberculosis with a black box warning, relating to possible cardiac toxicity and sudden death.

319. Thiazides and loop diuretics both have opposite action on which of the following ions ?

a) Sodium

b) Potassium

c) Calcium

d) Chloride

Correct Answer - C

Ans. is'c'i.e., Calcium

(Ref: KDT 7/e p. 5S2I)

- Furosemide action on calcium
- Furosemide increases Ca^{2+} excretion (contrast thiazides which reduce it)

320. Why intravenous quinine, used in the management of complicated and severe malaria, given with 5% dextrose?

- a) To avert risk of hypoglycemia
- b) To avert risk of dehydration
- c) To avert risk of electrolyte imbalance
- d) To maintain renal blood flow

Correct Answer - A

Ans. is'a'i.e., To avert risk of hypoglycemia

Ref: KDT Vh/e p. 8251

- Quinine for the management of complicated and severe malaria including cerebral malaria :
- Intravenous Quinine (i.v.) has been the drug of choice for cerebral malaria (falciparum malaria with impaired consciousness, and other forms of complicated malaria.
- Hypoglycaemia due to hyperinsulinemia is the most important side effect due to intravenous administration of quinine, which can be prevented by infusing quinine in 5% dextrose.

321. Antibiotic gramicidin S is derived from ?

a) Bacillus brevis

b) Cl difficile

c) S epidermidis

d) Streptococcus bovis

Correct Answer - A

Ans. is'a'i.e., Bacillus brevis

[Rel Peptides: chemistry and biology p.84]

- Gramicidin-s is an antibiotic effective against some Gram positive and Gram negative bacteria as well as some fungi.
- It is a derivative of gramicidin, produced by the Gram positive bacterium Bacillus brevis.

322. Opioid available as nasal spray formulation is ?

a) Tramadol

b) Codiene

c) Butorphanol

d) Buprenorphine

Correct Answer - C

Ans. is'c'i.e., Butorphanol

[Ref: KDT 7h/e p. 482)

- Butorphanol - Nasal spray (Stadol)

323. Which of the following belongs to NaSSA group of drugs?

a) Amoxetine

b) Mirtazapine

c) Duloxetine

d) Venlafaxine

Correct Answer - B

Ans. is 'b' i.e., Mirtazapine

(Ref: Depression and Bipolar disorder, Stahl's essential psychopharmacology 3'd/e p. 1111)

Noradrenergic and specific serotonergic antidepressants , (NaSSAs):

- They are a class of psychiatric drugs used primarily as antidepressants'

The NaSSAs include the following agents

- Aptazapine
- Mirtazapine
- Esmirtazapine
- Setiptiline/teciptiline
- Mianserin

324. Mosapride produces its gastrokinetic effects by acting as an agonist at which of the following receptor?

a) 5HT1

b) 5HT2

c) 5HT3

d) 5HT4

Correct Answer - D

Ans. is'd'i.e., 5HT4

[Ref: KDT p. 667)

Mosapride:

- It is a congener of cisapride with similar gastrokinetic and LES tonic action due to 5-HT4 agonistic (major) and 5-HT3 antagonistic (minor) action in the myenteric plexus.

325. Doxylamine used in management of nausea and vomiting is marketed with which vitamin ?

a) Thiamine

b) Riboflavin

c) Niacin

d) Pyridoxine

Correct Answer - D

Ans. is'd'i.e., Pyridoxine

[Ref: KDT 7e p. 663]

Doxylamine

- **Sedative** H1 antihistamine with prominent anticholinergic activity. Marketed in combination with pyridoxine, it is specifically promoted in India for 'morning sickness' (vomiting of early pregnancy), although such use is not made in the UK and many other countries.

326. Most toxic antiepileptic drug is ?

a) Phenytoin

b) Valproate

c) Carbamazepine

d) Lamotrigine

Correct Answer - C

Ans. is 'c' i.e., Carbamazepine

(Ref: www.sciencedirect.com).

- Table in a pubmed indexed journal, regarding toxicity of anticonvulsant drugs shows answer is carbamazepine.
- 40.0 % toxicity.

327. Warfarin embryopathy manifests characteristically as ?

a) Chondrodysplasia punctata

b) Dysplastic hips

c) Auditory sensineuronal hearing loss

d) Gastrointestinal atresias

Correct Answer - A

Ans. is 'a' i.e., Chondrodysplasia punctata

Ref: Nelson 2U/e P. 2397)

- Warfarin embryopathy is characterized by bone and cartilage abnormalities known as chondrodysplasia punctata.
- Affected infants may have nasal hypoplasia and excessive calcifications in the epiphyses and vertebrae.

328. Ziconotide acts by blocking ?

a) Voltage gated Na channel

b) Voltage gated Ca channel

c) Ligand gated Na channel

d) Ligand gated Ca channel

Correct Answer - B

Ans. is'b'i.e., Voltage gated Ca channel

(Ref: Essential of pain medicine by HonorioBenmn p. 4581)

Ziconotide:

- Ziconotide (SNX-111 ; Prialt) is an atypical analgesic agent for the amelioration of severe and chronic pain.
- Acts as a selective N-type voltage-gated calcium channel blocker.

329. Which of the following is used to control bleeding associated with fibrinolytic agents like streptokinase?

a) Epsilon amino-caproic acid

b) Tranexamic acid

c) Factor VIII infusion

d) Blood transfusion

Correct Answer - A:B

Ans. is 'b > a'.i.e., Tranexamic acid; > Epsilon amino-caproic acid

lRef: KDT 7h/e p. 6281

Antifibrinolytic drugs

- These drugs inhibit plasminogen activation and dissolution of clot.
- Examples are Epsilon amino-caproic acid (EACA), Aprotinin and Tranexamic acid.

330. Antithyroid drug contraindicated in pregnancy ?

a) Propylthiouracil

b) I 131

c) Methimazole

d) Carbimazole

Correct Answer - B

Ans. is 'b' i.e., I 131

Ref: KDT 7th/e p. 25

- Antithyroid treatment contraindicated in pregnancy
- Thyroidectomy and I 131 are contraindicated during pregnancy.

331. Neuromuscular blockade produced by rocuronium can be reversed by ?

a) Sugammadex

b) Flumazenil

c) Blood transfusion

d) Plasmapheresis

Correct Answer - A

Ans. is'a'i.e., Sugammadex

(Ref: Miller Eh/e p. 995)

Sugammadex:

- Sugammadex is a modified γ -cyclodextrin that shows a high affinity for the steroidal NMBDs rocuronium and vecuronium.
- Sugammadex is able to form a tight inclusion complex with either of these steroidal NMBDs, thereby inactivating the effects of rocuronium and vecuronium, resulting in rapid reversal of neuromuscular blockade.

332. Cyproterone acetate used in ?

a) Precocious puberty in boys

b) Oral contraceptive

c) Ovulation inducing agent

d) PCOD

Correct Answer - A

Ans. is'a' i.e., Precocious puberty in boys

Ref: KDT Vhle p. 302)

Cyproterone acetate:

- Clinical indications are- precocious puberty in boys, inappropriate sexual behaviour in men, acne and hirsutism in women (usually in combination with an estrogen),

333. Dose of methotrexate for treatment of rheumatoid arthritis is ?

a) 7.5 - 15 mg/ week

b) 2.5 - 5 mg/ week

c) 7.5 - 15 mg/ month

d) 2.5 - 5 mg/ month

Correct Answer - A

Ans. is'a' i.e., 7.5 - 15 mg/ week

[Ref: KDT Vh/e p. 21 1]

Methotrexate (Mtx) for rheumatoid arthritis:

- Induction of oral low-dose (7.5-15 mg) weekly Mk regimen has improved acceptability of this drug in RA.

334. Pulse steroid therapy can be given in ?

a) Pemphigus vulgaris

b) Acute renal allograft rejection

c) Optic neuritis

d) All the above

Correct Answer - D

Ans. is'd'i.e., All the above

Pulse Steroid therapy

- Pulse therapy means the administration of supra pharmacologic doses of drugs in an intermittent manner to enhance the therapeutic effect and reduce the side effects.
- In context of corticosteroids, pulse therapy refers to discontinuous i.v. infusion of high doses of the medication, arbitrarily defined as treatment with more than 250 mg prednisone or its equivalent per day, for one or more days.
- There are no guidelines on the frequency or timing of administration of the i.v. pulses; which therefore includes single boluses, daily boluses given for 3 days in a row, or on alternate days for up to 12 days.
- The agent most commonly used for corticosteroid pulse therapy is methylprednisolone.

335. The major adverse effect of glucocorticoids especially in children is ?

a) Hyperkalemia

b) Hypoglycemia

c) Muscular weakness

d) Posterior subcapsular cataract

Correct Answer - D

Ans. is'd'i.e., Posterior subcapsular cataract

(Ref: KDT p. 293)

Adverse effects glucocorticoids:

- Posterior subcapsular cataract may develop after several years of use, especially in children

336. Pegloticase is used in ?

a) Gout

b) Osteoarthritis

c) Rheumatoid arthritis

d) Reactive arthritis

Correct Answer - A

Ans. is 'a' i.e., Gout

[Rel Gout and other crystal arthropathies by Robert Terkeltaud p. 19]

Pegloticase:

- Pegloticase is a medication for the treatment of severe, treatment of refractory chronic gout.
- It is a third line treatment in those in whom other treatments are not tolerated.

337. Which of the following topical steroid used in ophthalmology has the maximum potential to increase intraocular pressure [IOP] ?

a) Hydrocortisone

b) Prednisolone

c) Dexamethasone

d) Fluoromethalone

Correct Answer - C

Ans. is 'c' i.e., Dexamethasone

[Rel Essential of ophthalmology p.29]

- The IOP -elevating potential of steroids is as follows:
dexamethasone > prednisolone > fluoromethalone > hydrocortisone > tetrahydrotriamcinalone > medrysone (after 6 weeks of dexamethasone therapy).
- 42% have IOP > 20 mmHg and 69% have IOP > 31).
- The steroids with low IOP - elevating potential are fluorometholone (FMI), rimexolone (Vexol), and loteprednol (Latemas, Mrex).

338. Which drug can exacerbate asthma secondary to irreversible nonselective inhibition of cyclooxygenase pathway?

a) Aspirin

b) Ibuprofen

c) Ketorolac

d) Celecoxib

Correct Answer - A

Ans. is'a'i.e., Aspirin

(Ref: KDT Vh/e p. 192, 195).

Aspirin Induced Asthma

- The disorder is thought to be caused by an anomaly in the arachidonic acid metabolizing cascade which leads to increased production of proinflammatory cysteinyl leukotrienes, a series of chemicals involved in the body's inflammatory response.
- When medications like NSAIDs or aspirin block the COX-I enzyme, Production of thromboxane and some anti-inflammatory prostaglandins is decreased, and in patients with aspirin-induced asthma this results in the overproduction Of pro-inflammatory leukotrienes to causes severe exacerbations of asthma and allergy like symptoms.

339. Which of the following is a feature of nonselective Cox inhibitor but not of selective Cox 2 inhibitor?

a) Analgesic effect

b) Antiplatelet aggregatory

c) Renal salt/ water retention

d) Prolongation of labour

Correct Answer - B

Ans. is'b'i.e., Antiplatelet aggregatory

(Ref: KDT 7th /e p. 194)

340. Systemic adverse effects of long term inhaled steroids are evident only at doses more than ?

a) 200 mcg/day

b) 400 mcg/day

c) 600 mcg/day

d) 800 mcg/day

Correct Answer - C

Ans. is 'c' i.e., 600 mcg/day.

(Ref: KDT Vhle p. 230)

- Systemic effects of long-term inhaled glucocorticoids are clinically relevant only at doses > 600 mcg/day.
- The significant ones are-mood changes, osteoporosis, growth retardation in children, bruising, petechiae, hyperglycaemia and pituitary-adrenal suppression; several reports of adrenal crisis have appeared, especially in children, during stress (of an infection, etc).

341. Most commonly used NSAIDs in Rheumatic fever ?

a) Indomethacin

b) Phenylbutazone

c) Aspirin

d) Rofecoxib

Correct Answer - C

Ans. is 'c' i.e., Aspirin

(Ref: Textbook of clinical pediatrics p' 729)

Treatment of Rheumatic fever:

- Drug of choice for treatment of RF is penicillin.
- Erythromycin is the drug of choice in penicillin allergic patient.

Suppressive therapy:

- Corticosteroids or aspirin are given for suppressive therapy. Corticosteroids are indicated in presence of carditis with or without CHF.
- Aspirin is preferred in absence of carditis.
- Duration of therapy is 12 week.

342. Antiinflammatory action of steroid is due to inhibition of

a) Cyclooxygenase

b) Lipoxygenase

c) Phospholipase A2

d) Myeloperoxidase

Correct Answer - C

Ans. is 'c' i.e., Phospholipase A2

(Ref: KDT Vh/e p. 286)

- Glucocorticoids interfere at several steps in the inflammatory response but the most important overall mechanism appears to be limitation of recruitment of inflammatory cells at the local site and production of proinflammatory mediators like PCs, LTs, PAF through inhibition of phospholipase A2

343. Radioiodine is used in treatment of ?

a) Graves disease

b) Hypothyroidism

c) Medullary carcinoma

d) Anaplastic carcinoma

Correct Answer - A

Ans. is 'a' i.e., Graves disease

(Ref: KDT p.255)

- Radioactive iodine is administered as sodium salt of ^{131}I dissolved in water and taken orally.
- The most common indication is hyperthyroidism due to Graves' disease or toxic nodular goiter.
- The average therapeutic dose is 3-6 m curie-calculated on the basis of previous tracer studies and thyroid size.

344. Which of the following is true about Repaglinide?

- a) It belongs to sulfonylurea class of drugs
- b) It is not well absorbed on oral administration
- c) It is used to control sleep time hyperglycemia
- d) It should be avoided in patients with liver diseases

Correct Answer - D

Ans. is 'd' i.e., It should be avoided in patients with liver diseases

Ref: KDT 7/e p. 2731

Repaglinide:

- This meglitinide analogue oral hypoglycaemic is designed to normalise mealtime glucose excursions.
- Though not a sulfonylurea, it acts in an analogous manner by binding to SUR closure of ATP dependent K⁺ channels depolarisation insulin release.
- Repaglinide is indicated only in selected type 2 diabetics who suffer pronounced postprandial hyperglycaemia, or to supplement metformin/long-acting insulin.
- It should be avoided in liver disease,

345. Antidiabetic drug with insulin independent action is ?

a) SGLT2 inhibitor

b) DPP4 inhibitor

c) Meglitinide analogues

d) GLP1 agonist

Correct Answer - A

Ans. is'a'i.e., SGLT 2 inhibitor

(Ref: KDT p.270)

- Sodium-glucose cotransport-2 (SGLT-2) inhibitor: Dapagliflozin - antidiabetic drugs - action independent of insulin

346. True about drug metabolism ?

a) Glucuronidation is phase I reaction

b) Most common enzyme involved is Cyp 3A4/5

c) Reduction is most common reaction

d) Cytochrome p450 is involved phase-II reaction

Correct Answer - B

Ans. is'b'i.e., Most common enzyme involved is Cyp 3A4/5

(Ref: Katzung 11th/e p. 55)

- Cytochrome p450 enzymes are microsomal enzymes that are involved in phase I metabolism of many drugs.
- Most of the drugs are metabolized by Cyp 3A4 isoform.
- Cyp 3 A 4/5 carryout biotransformation of largest number (nearly 50%) of drugs.

347. Benzodiazepine binding site on GABA receptors is on ?

a) γ -subunit

b) α -subunit

c) β -subunit

d) δ -subunit

Correct Answer - B

Ans. is 'b' i.e., α -subunit

[Ref: Goodman (t Gilman 11th/e p. 405, 406; Receptor subunit & complexes p. 168]

- The exact subunit structures of native GABA receptors are still unknown, but it is thought that most GABA receptors are composed of alpha, beta & gamma subunits that coassemble with some uncertain stoichiometry.
- Binding site of GABA is on beta-subunit.
- Benzodiazepine site is located on the α subunit but the stabilization or completion of that site in the assembled structure also requires the γ subunit.

348. Dexmedetomidine acts on which receptor for its analgesic action ?

a) 5HT_{2A}

b) D₂

c) α_{2A}

d) D₅

Correct Answer - C

Ans. is 'c' i.e., α_{2A}

[Ref: KDT 7n/e p. 384]

- Dexmedetomidine is centrally active selective alpha (α₂) agonist that has been introduced for sedating critically ill ventilated patients in intensive care units.

349. Anaphylactic reaction caused by NSAIDs, all are true, except ?

a) Caused by All NSAIDs

b) COX-2 inhibitors are safe

c) Related to hypersensitivity reaction

d) Not related to inhibition of COX

Correct Answer - B

Ans. is 'b' i.e., COX-2 inhibitors are safe

(Ref: Clinical pharmacology 3d/e p.786)

Anaphylactic reaction (anaphylaxis)

- It is due to immediate (type-I) hypersensitivity involving cross linking of drug-specific IgE.
- Regardless of COX selectivity pattern, NSAIDs may function as haptens capable of inducing allergic sensitization.
- Thus, all COX inhibitors (nonselective or selective) can cause this reaction.

350. True about barbiturates ?

a) Have steep dose response curve

b) Have analgesic action

c) Are enzyme inhibitors

d) Acidification of urine is done in poisoning

Correct Answer - A

Ans. is ,a, i.e., Have steep dose response curve

(Ref: Goodman & Gillman 12th ed p. 471)

- Barbiturates depress all areas of CNS, but the reticular activating system is most sensitive.
- Barbiturates have steep dose response curve.
- Except For phenobarbitone in epilepsy and thiopentone in anaesthesia, barbiturates
- are used now. The enzyme inducing property- of phenobarbitone can be utilized to hasten clearance of congenital nonhemolytic jaundice and kernicterus,
- There is no specific antidote for their poisoning

351. Most common organ involved in elimination of drug?

a) Liver

b) Kidney

c) Intestine

d) Spleen

Correct Answer - A:B

Ans. is'a > b'i.e., Liver > Kidney

(Re.f: Clinical Pharmacology 3'd/e p.11)

The elimination of drug is the sum total of -

.. Metabolism) Most drugs are metabolized in liver.

?. Excretion) Most drugs are excreted in urine through kidney.

352. Which of the following is designer drug ?

a) Propofol

b) Ketamine

c) Alcohol

d) Disulfiram

Correct Answer - B

Ans. is'b'i.e., Ketamine | Ref. Internet

- A designer drug is a structural or functional analog of controlled substance that has been designed to mimic the pharmacological effects of parent drug while avoiding detection or classification as illegal.

353. Drug which can act as antagonis of Haloperidole ?

a) Ropinirole

b) Clozapine

c) Imipramine

d) Pimozide

Correct Answer - A

Ans. is'a'i.e., Ropinirole

- Haloperidol is an antipsychotic, acts by > D2 receptor blockage.
- Ropinirole is an antiparkinsonian drug, acts by > D2 receptor agonist.

354. Most potent anti-inflammatory corticosteroid ?

a) Hydrocortisone

b) Prednisolone

c) Triamcinolone

d) Dexamethasone

Correct Answer - D

Ans. is'd'i.e., Dexamethasone

355. Antidepressant which is a Presynaptic α -2 receptor blocker which enhance secretion of both norepinephrine and serotonin ?

a) Trazodone

b) Mirtazapine

c) Mianserine

d) Bupropion

Correct Answer - B

Ans. is'b'i.e., Mirtazapine

- Mirtazapine
- It blocks α -2 auto-receptors (on NA neurons) and heteroreceptors (on 5HT-neurons)

356. Drug used for penile erection -

a) Sildenafil

b) Apomorphine

c) Papaverine

d) All of the above

Correct Answer - D

Ans. is'd'i.e., All of the above

[Ref KDT fl/e p. 303-304 6 &/e p. 296; Katzung LLth/e p. 197)

Drugs used in erectile dysfunction

- .. Phosphodiesterase-S inhibitors (Sildenafil, Tadalafil, Vardenafil)
- ?. Alprostadil (Prostaglandin E1)

357. Drug of choice for restless leg syndrome ?

a) Ropinirole

b) Chlorpromazine

c) Haloperidol

d) Bupripione

Correct Answer - A

Ans. is'a'i.e., Ropinirole [Ref. Clinical Pharmacol Glt 3d/e p. 482]

- Drugs of choice for Restless leg syndrome are dopamine agonists like ropinirole or promipole or rotigotine.
- Levodopa can also be used.

358. Most salt retaining Glucocorticosteroid ?

a) Hydrocortisone

b) Prednisolone

c) Betamethasone

d) Dexamethasone

Correct Answer - A

Ans. is 'a' i.e., Hydrocortisone [Ref: KDT 7th/e p. 289]

- Among glucocorticoids, hydrocortisone (cortisol) has maximum aldosterone activity, i.e. salt retaining capacity.
- Glucocorticoid with max. mineralocorticoid activity 4 Hydrocortisone (cortisol)
- Glucocorticoid with min. glucocorticoid activity - Hydrocortisone
- Glucocorticoid with no mineralocorticoid activity 4 Betamethasone, Paramethasone, Dexamethasone, Triamcinolone.
- Mineralocorticoid with no glucocorticoid activity 4 DOCA
- Maximum mineralocorticoid activity 3 Aldosterone.
- Maximum glucocorticoid activity 4 dexamethasone, Betamethasone.

359. Bromocriptine is agonist of ?

a) Dopamine

b) Serotonine

c) Acetylcholine

d) Epinephrine

Correct Answer - A

Ans. is'a'i.e., Dopamine

Ref: KDT 7/e p.2391

- Synthetic ergot derivative.
- It is a potent dopamine agonist.
- It has greater action on D2 receptors, while at certain dopamine sites in brain it acts as a partial agonist or antagonist of D1 receptor.

360. A PTT is required for monitoring of ?

a) Streptokinase

b) Warfarin

c) Heparin

d) Tranexamic acid

Correct Answer - C

Ans. is'c'i.e., Heparin

(Ref KDT &/e p. 598, 599; Katzung Inle p. 592)

361. Darbopoetin is most useful in treatment of anemia caused by ?

a) Chronic renal failure

b) Iron deficiency

c) Chemotherapy induced

d) Aplastic anemia

Correct Answer - A

Ans. is 'a' i.e., Chronic renal failure

[Ref: Clinical pharmacology 3'd/e p.482]

- Darbopoetin is hyperglycosylated modified erythropoietin for the treatment of anemia of chronic renal failure which is due to low levels of erythropoietin (kidney is the major source of erythropoietin).

362. Statins are given at night because ?

a) HMG-CoA reductase activity is maximum in midnight

b) Statins are maximally absorbed in night

c) Statins have more potency in night

d) Convenient for patient to remember

Correct Answer - A

Ans. is 'a' i.e., HMG-CoA reductase activity is maximum in midnight

(Ref: KDT 7/e p.637; Clinical pharmacology 3d/ep.939)

- Because HMG-CoA reductase activity is maximum at midnight, all statins are administered at bed time to obtain maximum effectiveness.
- However, this is not necessary for atorvastatin and rosuvastatin, which have long plasma $t_{1/2}$.

363. Thioacetazone has cross resistance with ?

a) INH

b) Rifampicin

c) Ethionamide

d) Ethambutol

Correct Answer - C

Ans. is'c'i.e., Ethionamide

(Ref; Essentials in tuberculosis P. 468)

- Thioacetazone has cross-resistance with ethionamide/prothionamide.
- "A cross resistance between ethionamide and thiacetazone is reported.
- Perchlozone also shows cross resistance with thiacetazone.

364. Immunosuppressive drugs are less effective in which type of graft rejection ?

a) Acute cellular rejection

b) Acute humoral rejection

c) Chronic rejection

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Acute humoral rejection

- Because most clinically available immunosuppressive drugs target T-cells, they are ineffective in antibody mediated rejection".

365. Concentration of adrenaline in CPR is ?

a) 1: 10 lakhs

b) 1 : 1 lakhs

c) 1 : 10,000

d) 1 : 1000

Correct Answer - D

Ans. is 'd' i.e., 1:1000 [*Ref Fundamentals of anesthesia 5th Ve*
p. 663-665]

- Epinephrine (1 : 1000 concentration) is the drug of choice in CPR.

366. Drug used for cessation of smoking ?

a) Theophylline

b) Biclutamide

c) Salmeterol

d) Varenicline

Correct Answer - D

Ans. is 'd' i.e., Varenicline [Ref Harrison 17Ve ch. 390]

- Varenicline is a direct acting nicotine agonist with selective action on $\alpha_4 P_2$ isoform of N. receptors. It is an antismoking drug.

367. Drug with no dependence or addiction ?

a) Morphine

b) Amphetamines

c) Benzodiazepines

d) LSD

Correct Answer - D

Ans. is 'd' i.e., LSD

[R4 Niraj Ahuja &/e p. 37)

368. Most common phase-2 reaction

a) Glucuronide conjugation

b) Acetylation

c) Methylation

d) Sulfate conjugation

Correct Answer - A

Ans. is'a'i.e., Glucuronide conjugation

Ref: KDT Vh/e p. 24

- Most important metabolizing reaction, overall

369. Muscarinic receptors on blood vessel endothelium cause

a) Vasodilatation through acetylcholine

b) Vasodilatation through NO

c) Vasoconstriction through acetylcholine

d) Vasoconstriction through endothelium

Correct Answer - B

Ans. is 'b' i.e., Vasodilatation through NO

[Ref; KDT 7/e p. 103]

- No direct cholinergic supply is present in blood vessels.
- But cholinergic receptor (M, types) are present on blood vessels endothelium.
- Stimulation of these receptors causes release of EDRF (NO) from endothelium resulting in vasodilatation.

370. Which of the following is beta-blocker antagonist

a) Glucagon

b) Neostigmine

c) Amibenonium

d) All of the above

Correct Answer - A

Ans. is 'a' i.e., Glucagon

- Glucagon is used in beta-blocker poisoning to combat bradycardia produced by b-blockers. Glucagon acts by increasing C-GMP in myocardium, in effect bypassing p-receptors)
- Action is independent of beta receptors.

371. Which drug directly stimulates contraction of cardiac muscle

a) Digitalis

b) ACE inhibitors

c) Nesiritide

d) Losartan

Correct Answer - A

Ans. is'a'i.e., Digitalis

[Ref: KDT 7/e p. 512]

- Cardiac glycosides (digitalis) act directly on the heart to increase the force of contraction.

372. Which of the following diuretics acts on nephron through interstitium

a) Thiazide

b) Furosemide

c) Acetazolamide

d) Spironolactone

Correct Answer - D

Ans. is 'd' i.e., Spironolactone

(Ref: KDT Vh/e p. 587)

- Spironolactone is mineralocorticoid (aldosterone) antagonist. It opposes the action of Aldosterone without requiring access to the tubular lumen.
- Spironolactone (as well as aldosterone) act from the interstitial side.

373. Mexiletine is an oral active congener of

a) Dopamine

b) Lidocaine

c) Dobutamine

d) levodopa

Correct Answer - B

Ans. is'b'i.e., Lidocaine

Ref: Clinical pharmacology 3'd/e p. 501; KDT Vhle p. 531

- Mexiletine is an orally active congener of lidocaine.
- It is a local anaesthetic and an orally active antiarrhythmic; chemically and pharmacologically similar to lidocaine.

374. Drug effective in Tardive dyskinesia

a) Central anticholinergic

b) Dantroline

c) Succinylcholine

d) Terabenazine

Correct Answer - D

Ans. is 'd' i.e., Tetrabenazine

[Ref: Clinical Pharmacology Ip. 108; www.ncbi.nlm.nih.gov]

- There is currently no satisfactory treatment for tardive dyskinesia other than discontinuation of drug.
- Tetrabenazine (TBZ) is currently considered as a first line and most effective medication for treatment of persistent and disabling tardive dyskinesia.
- Reserpine is an alternative to tetrabenazine.

375. Droperidol is used as

a) Antipsychotic

b) Antiemetic

c) Neurolept analgesia

d) All of the above

Correct Answer - D

Ans. is'd'i.e., All of the above

[Ref Clinical Pharmacology 3'd/ep. 633]

- Droperidol is D2 antagonist which is used as : -
- Typical antipsychotic (neuroleptic)
- Antiemetic
- Neuroleptanalgesia (along with fentanyl)

376. Vigabatrine is drug of choice for

a) Febrile seizures

b) Myoclonic epilepsy

c) Infantile spasm

d) Partial seizures

Correct Answer - C

Ans. is'c'i.e., Infantile spasm

Ref: Harrison 18n/e p. 3262, 3266

- Vigabatrin is DOC for infantile spasm.

377. Terlipressin is preferred over vasopressine for esophageal varices because of

a) Faster acting

b) Not metabolized

c) Less side effects

d) More potent

Correct Answer - C

Ans. is 'c' i.e., less side effects

[Ref: KDT 7h/e p. 597]

Terlipresin is preferred over vasopressin because : -

- Fewer adverse effects
- Greater convenience in use

378. Lactation is suppressed by

a) Metaclopramide

b) Opioids

c) Apomorphine

d) Haloperidol

Correct Answer - C

Ans. is 'c' i.e., Apomorphine

Ref : Clinical Pharmacology 3'd/e p. 799

Important drugs inhibiting lactation are : -

- Dopamine
- Bromocriptine
- Cabergoline
- Apomorphine

379. Drug used for bleeding GI varices

a) Demeclocycline

b) Desmopressin

c) Terlipressin

d) Leuprolide

Correct Answer - C

Ans. is'c'i.e., Terlipressin

- Terlipressin (analogue vasopressin) is considered the vasoactive agent of choice for acute variceal bleeding.
- Other drugs used are somatostatin and its analogue octreotide.

380. Which hypolipidemic drug acts primarily by decreasing VLDL -

a) Fibrates

b) Nicotinic acid

c) Statins

d) Cholestyramine

Correct Answer - A

Ans. is'a'i.e., Fibrates

Ref: KDT 6h/e p. 614; Harrison 18th/e ch. 356

- Fibrates (e.g. clofibrate) activate lipoprotein lipase, therefore, enhance lipolysis of triglycerides in VLDL.
- Statins and nicotinic acid also decrease VLDL but it is not their main mechanism of action.

381. True about iron administration

a) Iron-sorbitol-citric acid is given IV

b) Iron-dextran binds to transferrin

c) Iron-dextran is not excreted

d) Iron-dextran has low molecular weight

Correct Answer - C

Ans. is 'c' i.e., Iron-dextran is not excreted.

Ref: KDT 11th/e p. 572

382. PPIs are use used in

a) ZE syndrome

b) NSAIDs induced peptic ulcer

c) Gastroesophageal reflux

d) All of the above

Correct Answer - D

Ans. is'd'i.e., All of the above

[Ry' KDT Vh/e p. 652]

- PPI are the DOC for peptic ulcer (gastric or duodenal), GERD, ZE syndrome, prevention of aspiration pneumonia and NSAID induced gastric / duodenal ulcers. Note - PGEI analogue (Misoprostol) is specific drug for prevention and treatment of NSAID induced ulcer, but DOC is PPI.

383. Use of anticoagulant is

a) Venous thrombosis

b) Arterial thrombosis

c) Vitamin K toxicity

d) Heart failure

Correct Answer - A

Ans. is'a'i.e., Venous thrombosis

Ref : Katzung /e p. 599; I\$hle p. 554

Prophylaxis for venous thrombus:

- Heparin (unfractionated, LMW, or fondaparinux) and oral anticoagulants (warfarin).

384. True about proton-pump inhibitor omeprazole is

a) CYP 2C19 predicts efficacy

b) Not bind to plasma protein

c) Oral bioavailability is 80%

d) All of the above

Correct Answer - A

Ans. is'a'i.e., CYP 2C19 predict efficacy

lRef: Pharmacogenomics in Therapeutics p. 206

- CYP 2C19 is the principal enzyme that metabolizes omeprazole to inactive metabolite.
- The efficacy of drug is influenced by the CYP 2C19 genotype.

385. Time dependent killing is shown by

a) Aminoglycosides

b) Fluoroquinolones

c) Linezolid

d) All of the above

Correct Answer - C

Ans. 'c'i.e., Linezolid.

Some, antimicrobial drugs have time dependent effect while others have concentration dependent effects :

- Time dependent affect - Action depends on length of time concentration remains above MIC, linezolid, tetracycline, and streptogramin.
- Concentration dependent effect e.g. for macrolides beta-Lactam, clindamycin,

386. Anti-fungal drug Nikkomycin acts by

a) Inhibit ergosterole synthesis

b) Inhibit cell wall synthesis

c) Inhibit nucleic acid synthesis

d) Interferes with mitosis

Correct Answer - B

Ans.e.B., Inhibit cell wall synthesis

Antifungal drugs act by -

- Altering membrane permeability > polyenes, Azoles, Allylamines.
- Interferes with mitosis (disrupts microtubules) > Griseofulvin.
- Inhibit cell wall synthesis > Caspofungin, Nikkomycin.
- Inhibit nucleic acid synthesis (inhibit thymidylate synthase) > Flucytosine (5_FC).

387. Drug used for kala-azar

a) Diloxanide furoate

b) Metronidazole

c) Paromomycin

d) Spiramycin

Correct Answer - C

Ans. is 'c' i.e., Paromomycin [Ref Harrison 18thVe ch. 212]

- Drugs used for kala-azar
- Parenteral : Amphotericin-B (iv), Paromomycin (im), sodium stibogluconate (iv or im).
- Oral : Miltefosine

388. Paclitaxal acts on which phase of cell cycle

a) G1

b) S

c) G2

d) M

Correct Answer - D

Ans. is'd'i.e., M

- Paclitaxel is M phase specific inhibition.

389. Which of the following anti-cancer drug is not anti-inflammatory or immunosuppressive

a) Methotrexate

b) Azathioprine

c) L-Asparaginase

d) Cyclophosphamide

Correct Answer - C

Ans. is 'c' i.e., L-Asparaginase

[Ry' Medical pharmacology at Glance p. 96]

- Three anticancer drugs have bone-marrow sparing effect, i.e., they do not cause bone marrow suppression: - Vincristine, Bleomycin & L-asparaginase.

390. Alemtuzumab is antibody against

a) CD-20

b) VEGF

c) EGFR

d) CD-52

Correct Answer - D
Ans. is'd'i.e., CD-52

391. The drug which releases NO

a) Hydralazine

b) Aminophylline

c) Amrinone

d) Sildenafil

Correct Answer - A

Ans.is'a'i.e.,Hydralazine

Ref:GoodmanGilmanITthlep'863, 249, 825

- NO donors, which release NO are used to elicit smooth muscle relaxation.
- Eg: Organic nitrates (nitroglycerine), Organic nitrites (Isoamylnitrite), Sodium nitroprusside, Nebivolol & Hydralazine

392. Drug used for trabeculectomy

a) Mitomycin-C

b) Azathioprine

c) Cituximab

d) Ketoralac

Correct Answer - A

Ans. is'a'i.e., Mitomycin-C

Ref : Clinical Ophthalmology H/e p. J33.

- The main reason of failure of trabeculectomy surgery is scarring and closure of drainage site.
- Antimetabolites prevent scarring and can be used to increase the success rate of trabeculectomy.
- The most commonly used antimetabolites are mitomycin-C and S-fluorouracil.

393. Drug of choice for central diabetes insipidus

a) Vasopressin

b) Desmopressin

c) Lypressin

d) Presselin

Correct Answer - B

Ans. is'b'i.e., Desmopressin

[Rel: KDT Vh/e p. 596 & 6h/e p. 576, 577; Katzung l|th/e p. 658]

- Desmopressin (intranasal) is the DbC for central DI.

394. Fifth generation cephalosporin ?

a) Cefepime

b) Ceftaroline

c) Cefpirome

d) Cefprozil

Correct Answer - B

Ans. is'b'i.e., Ceftaroline

395. Side effect of nasal decongestants is ?

a) Anosmia

b) Dryness of nasal mucosa

c) Decreased vision

d) Hyperosmia

Correct Answer - A

Ans. is'a'i.e., Anosmia

[Ref: clinically oriented pharmacology Dr.I. G. Buch p. 87]

- Nasal decongestants
- Nasal Decongestants: Ephedrine, Pseudoephedrine, Phenylpropanolamine, Phenylephrine, Xylometazoline, Oxymetazoline, Naphazoline.
- Adverse drug reactions include local irritation, tolerance, after congestion, damage to mucosal cilia, atrophic rhinitis, anosmia.

396. Which of the following is a Ketolide antibiotic?

a) Erythromycin

b) Azithromycin

c) Telithromycine

d) Calathromycin

Correct Answer - C

Ans. is'c'i.e. Telithromycin

[Rel Katzung 12th/e p. 814, 815)

- Ketolide are new generation macrolides, which are semisynthetic 14-membered-ring macrolides.
- Telithromycin is the first ketolide antibiotic to enter clinical use.

**397. PGE2 cervical gel for cervical ripening
maximum dose in 24 hrs is ?**

a) 2 mg

b) 1 mg

c) 1-5 mg

d) 4 mg

Correct Answer - C

Ans. is'c'i.e., 1.5 mg

[Ref: www.drugs.com]

- PGE2 (dinoprost) is used for cervical ripening.
- Cervical gel 0.5 mg is used, which may be repeated 6 hours later, if necessary.
- Maximum dose which can be given in 24 hours is 1.5 mg.

398. Which antitubercular drug inhibits mycolic acid synthesis ?

a) INH

b) Streptomycin

c) Rifampicin

d) Ethambutol

Correct Answer - A

Ans. is'a'i.e., INH

[Rd KDT &/e p. 741; Katzung L|th/e p. 826]

- INH + Inhibits synthesis of mycolic acid which is a component of mycobacterial cell wall.
- Pyrazinamide -+ Inhibits synthesis of mycolic acid.

399. Shortest half life is of ?

a) Metacholine

b) Acetyl choline

c) Carbachol

d) Bethanechol

Correct Answer - B

Ans. is'b'i.e., Acetylcholine

[Ref. Katzung I|hle p. 130]

- Acetylcholine is very rapidly hydrolyzed; large amounts must be infused intravenously to achieve concentrations sufficient to produce detectable effects.
- Methacholine is more resistant to hydrolysis, and the carbamic acid esters carbachol and bethanechol are still more resistant to hydrolysis by cholinesterase and have correspondingly longer duration of action.

400. Which of the following fluoroquinolone has broadest spectrum activity against bacteria ?

a) Ciprofloxacin

b) Norfloxacin

c) Trovafloxacin

d) Nalidixic acid

Correct Answer - C

Ans. is'c'i.e., Trovafloxacin

- Fourth generation quinolones/fluoroquinolones have broadest spectrum.
- These are trovafloxacin, fleroxacin, gemifloxacin, prulifloxacin, sitafloxacin and clinafloxacin.

401. Nonoxynol 9 ?

a) Is a chemical detergent

b) Is a barrier contraceptive

c) Can be used repeatedly in a day

d) Can be used to prevent STIs

Correct Answer - A

Ans. is'a'i.e., Is a chemical detergent

[Ref: [hnp://en.wikipedia.org/wiki/Nonoxynol-9](http://en.wikipedia.org/wiki/Nonoxynol-9)]

- Nonoxynol - 9
- Chemical detergent that damages the sperm cell membranes, killing the cells.
- It is a safe, effective contraceptive option for women at low risk of HIV/ STIs

402. Neuropathy caused by INH increases in all except?

a) Uremia

b) Hyperthyroidism

c) Diabetes mellitus

d) Poor nutrition

Correct Answer - B

Ans. is'b'i.e., Hyperthyroidism

[Ref Katzung 11'h/e p. 1069]

isoniazid induced peripheral neuropathy:

- Peripheral neuropathy is observed in 10 to 20% of patients given doses greater than 5 mg/kg/d, but it is infrequently seen with the standard 300-mg adult dose.
- Peripheral neuropathy is more likely to occur in slow acetylators and patients with predisposing conditions such as malnutrition, alcoholism, diabetes, AIDS, and uremia.

403. Loading dose of diazepam for alcohol withdrawal?

a) 20-30 mg

b) 25-85 mg

c) 60-150 mg

d) 200-300 mg

Correct Answer - C

Ans. is 'c' i.e., 60-f 50 mg

[Ref: Evidence based medicine P. 1274]

- The mean total dose of diazepam needed for loading 80-120 mg(4-5 doses over 8-10 hours).
- A dose below 180 mg sufficient in more than 90% of patients.
- If necessary, the sedative effect of diazepam can be boosted by giving 5 mg of haloperidol orally.

404. Synergism blockage with neuromuscular blockage is?

a) Vancomycin

b) Tobramycin

c) Erythromycin

d) Amoxycillin

Correct Answer - B

Ans. is'b'i.e., Tobramycin

- Some antibiotics potentiate neuromuscular block caused by competitive (non-depolarizing) blockers.

Eg:

- Aminoglycosides (e.g. tobramycin)
- Tetracyclines
- Polypeptide antibiotics
- Clindamycin
- Lincomycin

405. Relcovaptan is ?

a) Angiotensin antagonist

b) Renin inhibitor

c) Vasopressin antagonist

d) ACE inhibitor

Correct Answer - C

Ans. is'c'i.e., Vasopressin antagonist

[Ref: Katzung LLth/e p. 659]

- Vasopressin receptor antagonists (Vaptans)
- At V1A receptor - Relcovaptan
- At V1B receptor - Nelivaptan
- At V2 receptor - Lixivaptan, sotavapton, tolvaptan, mozavaptan
- Non-selective - Conivapton

406. Most common side effect of miltefosine is ?

a) Vomiting and diarrhea

b) Dermatitis

c) Hepatotoxicity

d) Nephrotoxicity

Correct Answer - A

Ans. is'a'i.e., Vomiting and diarrhea

Ref. Hanbon's Ch. 212

- Miltefosine is an antileishmanial drug used orally for kala-azar.
- Vomiting and diarrhea are the most common adverse effect with miltefosine.
- Other common side effects are decreased appetite, dizziness, motion sickness, headache and weakness.

407. In comparison to digoxin, digitoxin has ?

a) Less plasma protein binding

b) More plasma half life

c) Less oral absorption

d) More daily elimination

Correct Answer - B

Ans. is. b'i.e., More plasma half life

[Ref: KDT &/e p. 497, 498; Katzung ||n/e p. 219]

- In comparison to digoxin,
- Digitoxin: More ; Oral absorption; plasma protein binding, onset & duration; plasma t_{1/2}, plasma concentration. Less: Daily elimination; daily maintenance dose.

408. Dextromethorphan should not be given with drug?

a) SSRIs

b) MAO inhibitors

c) Atropine

d) Paracetamol

Correct Answer - B

Ans. is'b'i.e., MAO inhibitors

[RI Katzung L2nle p. 559, KDT #/e p. 213,215)

- The antitussive dextromethorphan should also be avoided by patients taking one of the monoamine oxidase B inhibitors; indeed, it is wise to advise patients to avoid all over-the-counter cold preparations.

409. Which drug is specific MAO - B inhibitor?

a) Selegiline

b) Phenelzine

c) Tranylcypromine

d) Haloperidol

Correct Answer - A

Ans. is. a'i.e., Selegiline

[Ref: KDT #/e p. 440 & 5n/e p. 405; Katzung 71h/e p. 515 MAO inhibitors]

- Nonselective = Tranylcypromine, phenelzine, isocarboxazid.
- Selective MAO-A = Moclobemide, clorgyline (used in depression).
- Selective MAO-B = Selegiline (used in parkinsonism).

410. Leucovorin is used for side effect reduction in which anticancer drug?

a) Methotrexate

b) 5-FU

c) Adriamycin

d) Cisplatin

Correct Answer - A

Ans. is'a'i.e., Methotrexate

Ref: KDT 6n/e p. 387, 590, 591

- Folinic acid (leucovorin) rescue
- Where it is desired to maximise the effect of methotrexate a potentially fatal dose is given and is followed 24 h later by a dose of folinic acid to terminate its action.
- High concentrations of methotrexate are obtained and bone marrow cells recover better than the tumor cells and some degree of useful selectivity is achieved.

411. Cisapride was withdrawn from market due to ?

a) QT Prolongation

b) Increased PR interval

c) Teratogenicity

d) Myocardial damage

Correct Answer - A

Ans. is'a'i.e., QT prolongation

412. Rationale of not using ACE inhibitor with spironolactone is?

a) Hyperkalemia

b) Hypokalemia

c) Increases cough

d) Hypomagnesimia

Correct Answer - A

Ans. is'a'i.e.,Hyperkalemia Katzung I*le p. 5711

- ACE inhibitor and diuretics
- ACE inhibitors cause hyperkalemia, therefore they can be combined with furosemide or thiazide diuretics which cause hypokalemia and nullify the hyperkalemic effect of ACE inhibitors.
- On the other hand potassium sparing diuretics (spironolactone, eplerenone, amiloride, triamterene) are contraindicated as they cause hyperkalemia and aggravate the hyperkalemia caused by ACE inhibitors.

413. Fibrinolytic that is antigenic?

a) Streptokinase

b) Urokinase

c) Alteplase

d) Tenecteplase

Correct Answer - A

Ans. is 'a' i.e., Streptokinase

[Ref: KDT &/e p. 606]

- Streptokinase is obtained from group 'c' beta-hemolytic streptococci. It activates both circulating and fibrin bound plasminogen.
- It is antigenic, can cause allergic reactions.

414. Antiobesity drug withdrawn from Indian market due to cardiac side effects is ?

a) Orlistat

b) Sibutramine

c) Rimonabant

d) Clofibrate

Correct Answer - B

Ans. is'b'i.e., Sibutramine

[Ref: Hanison 18h/e p. 634]

- Sibutramine was the only available anorexiant approved by the FDA for long-term use until it was voluntarily withdrawn from the US market by the manufacturer in October 2010, due to an increased risk of nonfatal MI and nonfatal stroke among individuals with pre-existing cardiovascular disease.

415. Diuretic causing impaired glucose tolerance is ?

a) Triamterene

b) Acetazolamide

c) Amiloride

d) Thiazide

Correct Answer - D

Ans. is'd'i.e., Thiazide

Ref KDT &/e p. 567; Katung If le p. 261

- Diuretics causing hyperglycemia are loop diuretics (furosemide) and thiazide diuretics.