

By
Rajhali Kaur
Assistant Professor
M.T. (Pharmacy)

B. Pharm IV Sem Midsem Exam^M 2019
Sub: - pathophysiology of common diseases

Q-1 Explain the cell injury, discuss the various causes of cell injury.

Ans: - Damage of cell is called cell injury it may be - extrinsically and intrinsically.

causes of cell injury

- (a) Hypoxia (b) Insufficient nutrient (c) Chemical injury (d) Mechanical injury (e) physical agent like heat & cold.

(2) write short - notes on

- (a) Atrophy: - Decreases in cell size
- (b) Apoptosis - cell is appears as a small fragments after long time injury.
- (c) Dysplasia → Increases the no. of cells in particular area. Abnormal growth of cells and tissues
- (d) Suppurative inflammation → when inflammation is checked by immune system.
- (e) Necrosis: → when cell injury exist long time and it is not repaired on time then cell organelles destroyed.

Q-3 Discuss the basic mechanism involved in process of inflammation. Explain various chemical mediators involved

Ans: - Increase in size of vasculature artery and vein. Migration of endothelial cells. Emigration of neutrophils.

Adhesion of the leucocytes -
Disorder - chemical mediators released during
inflammation which destroy the microvasculature.

(a) Histamine (b) prostaglandin (c) leukotriene

(d) thromboxan

(e) Fibrosis - formation of fibrous tissue

(f) Angiogenesis - Fibrous tissue is increased in pulmonary
fibrosis that occurs when lung tissue is damaged at a certain
this microvessel stirs tissue making it more difficult to work along.

(g) Hypertension - Disrupts the pathophysiology of the secondary disease.

(h) Hypertension (i) Depression

Ang - Hypertension - Blood vessels size become
constricted.

Depression - Due to loss of dopamine and
reduction in dopamine synthesis.

(j) Angiogenesis - Angiogenesis is the physiological
process through which new blood vessels form from
pre-existing vessels.

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process through which new blood vessels form from
pre-existing vessels.

Arachidonic acid metabolites and their role in inflammation

Arachidonic acid → It releases from the
phospholipid membrane in the cell by cytochrome
phospholipase A₂.

Role of arachidonic acid :- It releases

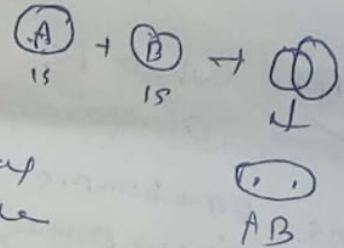
the prostaglandins, prostaglandin
and leukotrienes. Both of these are important
in inflammation.

Sub: → pharmacology - III

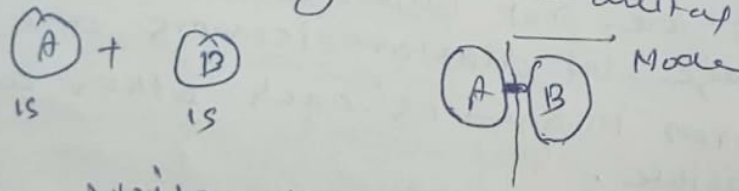
Q-1 What are molecular orbitals? Discuss about the bonding and antibonding orbitals.

Ans. - Molecular orbitals: It is generated by the atomic orbitals. When A & B two atoms combine they give two AB molecules orbitals, one is bonding and other is anti bonding.

Bonding Molecular orbital



Antibonding molecular orbital



Q-2 Write notes on

(a) Polar and nonpolar compounds

Ans. Polar compounds having separation of charges but nonpolar compounds having no charge separation.

Polar compounds ex - H₂O, HCl,

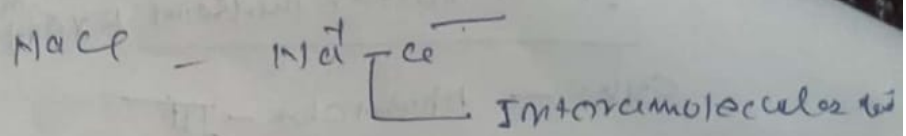
Nonpolar ex - CO₂, CCl₄,

Q-3 What is conjugation? Di

Ans Intermolecular bonds: - Bonds exist between the molecules. ex. H₂O, C₂H₅OH

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Intermolecular bonds: - Bonds exist between within the molecules ex: -



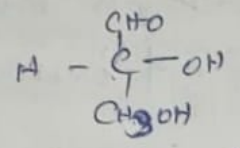
3) What is configuration? Discuss specification of configuration with suitable example.

Ans -> Configuration is the nomenclature method for stereoisomers. It is two types.

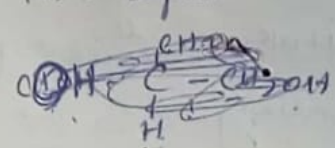
(i) Relative (ii) absolute.

Formic project.

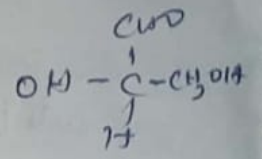
R.S system -



D-glyceraldehyde

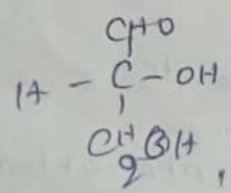


S-glyceraldehyde

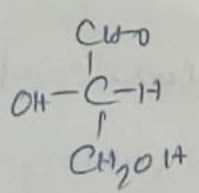


4) What is difference between enantiomers and diastereomers explain with suitable example.

Ans: - Enantiomers are not superimposable with its mirror image but diastereomers are not mirror image of each other and not superimposable.

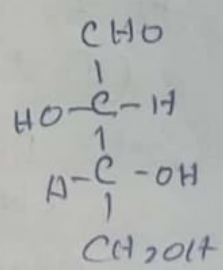
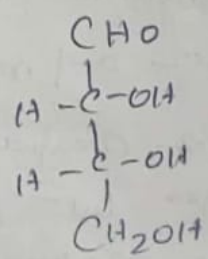


D



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Enantiomers



Diastereomers

Q-5 Write the nomenclature of aldehyde and ketone? Discuss the physical and chemical properties of its with example.

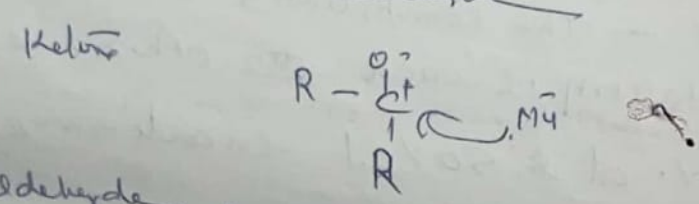
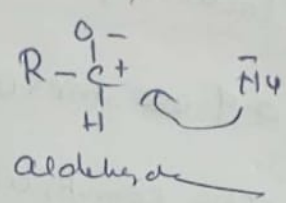
Ans: - Aldehyde is named as alkanal and ketone is alkanone.

Ex. CH_3CHO is ethanal, and $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ is propanone. All the carbons included in chain.

Properties of aldehyde & ketone. page no - 3

Physical properties: - B.P of aldehyde and ketone are higher than those of ether and alkanes. They are liquid at room temperature except formaldehyde.

Chemical properties - Both show nucleophilic addition reaction



Aldehyde reduces the tollens reagent, Fehling solⁿ.

Q-6 - write notes on

(a) Stereoisomers

Ans: - The isomers which molecules formula same but differ in spatial arrangement of atom

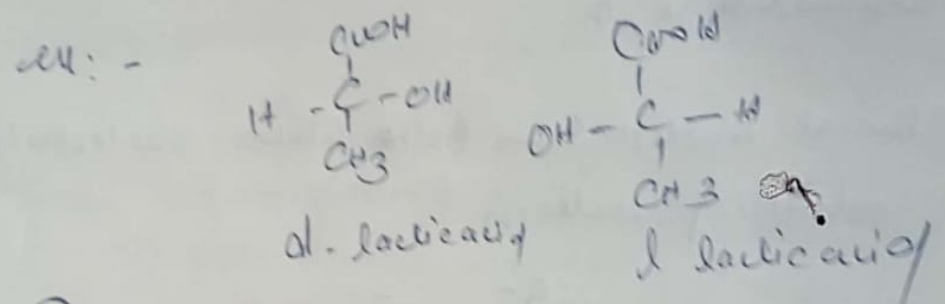
Ex: - Lactic acid $\begin{array}{c} \text{D} \\ \text{L} \end{array}$

(b) E, Z isomers: -

E isomer same ~~molecule~~ atoms are present in opposite side but in Z same atoms are present in same side. If four substituents are different then E is noted as a anticlock direction of the atoms on the basis of ~~priority~~ priority and Z is noted as a clockwise direction.

④ optical isomer

Ans: - The isomer which rotate the plane polarized in right direction called D isomer and in left called L isomer



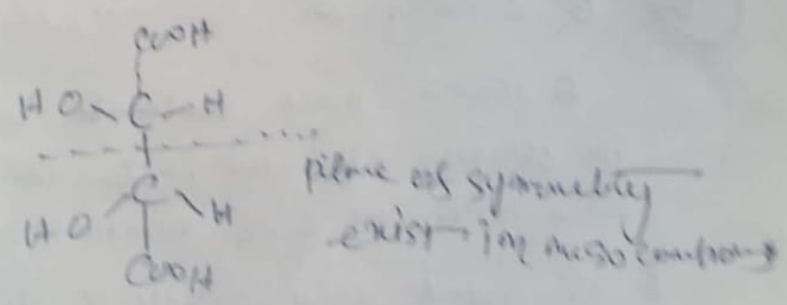
⑤ Racemic and meso compounds

Racemic: - The compounds cancel the optical rotation of each other.

50% of D & 50% of L enantiomers are called racemic mixture.

Meso isomer: - The compounds are not mirror image but superimposable.

Meso: - The compounds which are superimposable of its mirror image, its mirror image is same of each other.



M.J.T MUZAFFAR PUR

B. Pharmacy II Semester Midsem Exam - 2019

Sub: - Pharmacology II

Q-1 Discuss kinetic theory of gases and its postulates

Ans: - Kinetic theory of gases describe a gas as a large number of submicroscopic particles, all of which are in constant rapid motion.

Postulates of kinetic theory of gases

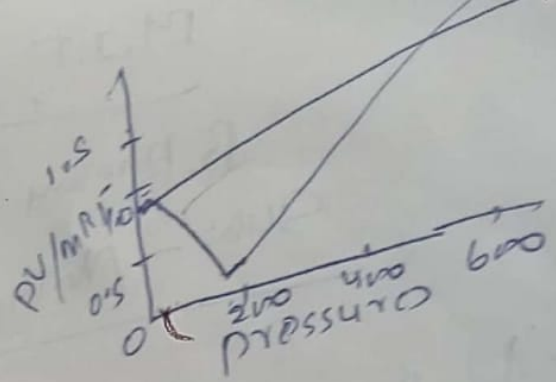
- 1) Every gas consists of a large number of very small particles called molecules. Gases like H_2 , NO , K_2 ,
- 2) There are no forces of attraction between gas molecules
- 3) They exerted pressure on each other and on wall of container
- 4) They possess large molecular distance between each other

Q-2 Derive ideal gas law, Explain the deviation of real gases from ideal gases

Ans: - The gas which obey the Boyle's law is called ideal gas and which does not obey the Boyle's law is called non-ideal gas.

Deviation of real gases: - There is an attraction between the gases at very low temperature and low pressure. So at low temperature and low pressure a real gas behaves like an ideal gas.

Q



Q-3 - Derive colligative properties of the solution. Discuss different types of colligative properties

Ans: - The properties of the solution depends on the no of particles of the solute is called colligative properties

- ex: -
- Elevation of boiling points
 - Depression in freezing points
 - Lowering of vapour pressure
 - Osmotic pressure

Q-4 Discuss ideal and real solution, Give Debye Huckel theory.

Ans. - The solution which follow the Raoult's law is called an ideal solⁿ and the solution which does not obey the Raoult's law is called real solution.

Debye Huckel theory: - Real solution deviate from the ideal solution so some factor is searched to calculate the concⁿ of real solution.

N.P of solution & partial pressure of solute

$$P \propto P_{solute} \text{ or } P = K P^0$$

where $K = 1$ then $P = P^0$

Q-5 - Define thermodynamics and explain different laws of thermodynamics,

Ans: - The motion of the heat is called thermodynamics,

I law: - Energy is not created nor destroyed. It is transformed from one form to another form,

~~II law: - At absolute zero entropy of the substances will be zero~~

III law: - If an object reaches the absolute zero of temperature ($0\text{K} = -273.15^\circ\text{C}$) atoms will stop moving

IV law: - Heat transfer takes place from hot body to cold body till equilibrium is established.

Q-6 - What are the extensive and intensive properties. Discuss phase rule.

Extensive properties
Ans: - The properties of the substances depend on mass is called extensive properties,

ex: - Volume, Pressure

Intensive properties: - The properties which do not depend on the mass of the substances

ex: - Temperature, Heat capacity & Density

Phase rule: - At phase equilibrium some rule is given for degree of freedom calculation is called phase rule. It is

$$F = C - P + 2 \quad \text{For water, ice system.}$$

Here $C = \text{Compound} \rightarrow F = 1 - 2 + 2 = 1$

$P = \text{Phase (Solid, liquid, gas)}$

As $F = 1$ then only T or P can be changed

when like a real gas

Q-1 Discuss in detail about phase I & II of drug metabolism.

Ans: - phase I metabolism is done by microsomal drug metabolising enzymes. These enzymes are associated with the endoplasmic reticulum. These include

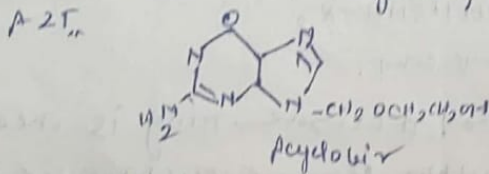
- ① mixed function oxidases
- ② Reductases
- ③ Esterases

Phase II metabolism also called conjugation reaction. It product of the phase I reaction conjugated by different reagents like glucuronic acid conjugation which increases the polarity of the drug and its excretion.

Q-2 Define and classify anti-viral agents with chemical structures.

Ans: - The drug which kill the viruses by inhibiting viral replication is called antiviral drug or antiviral agent. There are various antiviral drugs.

- ① compounds interfering with the nucleic acid synthesis
ex. Idonuridine, Acyclovir, Ribavirin, Triclovir etc

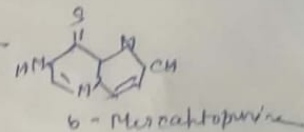


- ② Inhibitor of attachment-penetration
ex - Amantadine, Zanamivir.
- ③ Inhibitor of reverse transcriptase
ex - Lamivudine.

Q-3 Define and classify anticancer agents with structure - example for each class

Ans: - Anticancer agents are drugs which kill the cancer cells. These are classified in different groups

- ① Alkylating agents - ex. Nitrogen mustard - Mechlorethamine, cyclophosphamide.
- ② Antimetabolites: - ex. methotrexate



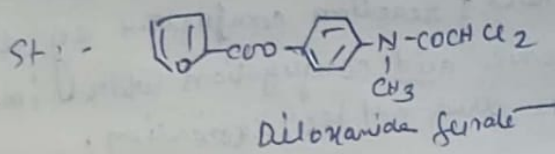
By Rajesh Kumar
Assistant Professor (M. Pharm)

20/11/2019

- ③ Radioactive isotopes - ^{131}I (Sodium I).
- ④ cytotoxic Antibiotics - Rubidomycin, Belomycin
- ⑤ Miscellaneous agents - L-Asparaginase

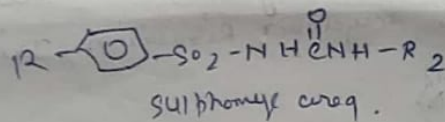
④ What are ~~antiamoebic~~ ^{antiamoebic} agents? Discuss the mechanism of action

Ans: - Antiamoebic agent are drugs which check amoebiasis the disease caused by the protozoan, *Entamoeba histolytica*. They are classified as, mechanism of action: -



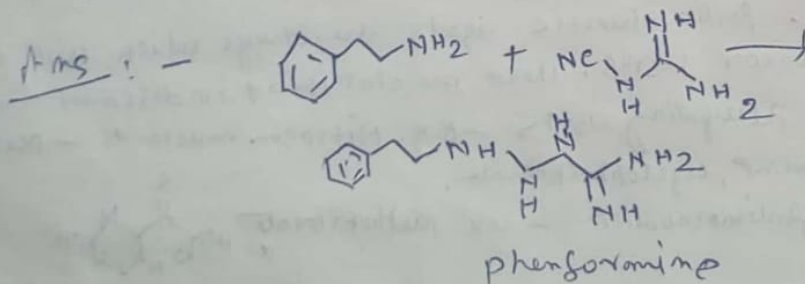
⑤ Define the oral hypotensive agents. Discuss the SAR of sulphonyl ureas as oral hypotensive agents.

Ans: - The drugs which reduces the blood sugar level is called hypotensive agents, They are taken orally.



SAR: - Substituted benzene ring is needed for activity. ~~Sulpho~~ Benzene Sulphonyl group is important for activity.

⑥ Write down synthesis of following drugs: -
 (a) chlorpheniramine (b) ~~Bustan~~ Bupropion (c) phenformine (d) Triamterene



V semester midsem Examination - 2019
Sub: - Pharmaceutical Chemistry VI

Q - 1 classify H₁ receptor antihistamines with example and structure.

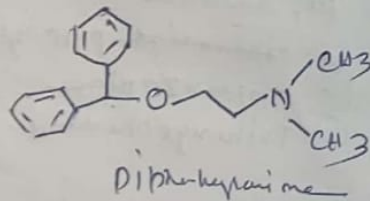
Ans: - on the basis of the structure H₁ receptor antihistamines are classified into following groups

- (i) First generation (Nonselective)
- (ii) Second generation (Selective)

(i) First generation antihistamine are classified into the following groups

- (a) Aminoalkyl ether - En - Diphenhydramine -
- (b) Ethylene diamine derivatives - En - Mepyramine
- (c) propyl amine derivatives - En -
- (d) phenylthiazine derivatives - En -
- (e) piperazine derivatives - En -

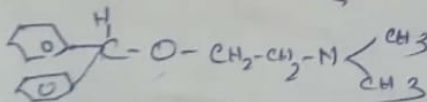
structure of diphenhydramine



(ii) Second generation H₁ - antihistamines
En: - cetirizine, Fexofenadine, Loratadine

Q - 2 Discuss the SAR of aminoalkyl ether with example.

En: - Diphenhydramine



SAR

(i) Ether functional group present in the ring is necessary for the activity

(ii) Aryl group is essential for binding with M_1 receptor.

(iii) p-Halide substituted aryl group is more lipophilic than parent compound, hence maximum potent.

Ex: - p-Bromodibenzamine.

(3) classify different anticholinergic drugs

Ans: - Anticholinergic drugs are inhibit the action of acetylcholine. They are classifying into following groups

(i) Nonselective muscarinic receptor antagonist
ex - Atropine, scopolamine (ii) Homatropine

(ii) Selective muscarinic (cholinergic) receptor antagonists

ex: - M_1 antagonist

(a) Pirenzepine pirenzepine

(b) Telenzepine

(c) Trimegeptidine

M_2 antagonist :- Et-Methoctranine

M_3 " — 4-PAMP

M_4 " — Himbacine

Q. Write short notes on
(a) Oxytocin

(b) SAR of Aspirin

(c) Bioisosteres (d) QSAR

Ans: Oxytocin: - They are uterine stimulants.
Ex: - Pitocin, Uterin - treatment of labor

(1) SAR of Aspirin: - ^{induction of labor} occurs ^{kind in} substitution on carbonyl groups affect the potency and toxicity.

(ii) Reducing the acidity of the -COOH, reducing the anionic nature of salicylic acid, but it is devoid of the anti-inflammatory properties

(iii) substitution of carboxylic groups at the β position of salicylic acid increased anti-inflammatory activity.

(2) Bioisosteres: - Bioisosteres are substituents or groups that have similar physical or chemical properties and hence similar biological activity patterns. They are classified as

- (i) Classical
 - (ii) Non-classical
- Univalent - Cl, F, I
 Bivalent - OH, R, NH₂
 Trivalent - -NH-, -NH₂
 Tetravalent - -C-, -C(=O)-
 Ether - -O-
 Carbonyl - $\begin{matrix} \text{O} \\ \parallel \\ \text{C} \end{matrix}$

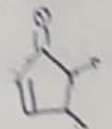
QSAR: - It is used for the prediction of the potency of the drugs. It is computer based software for determining drug-receptor interaction.

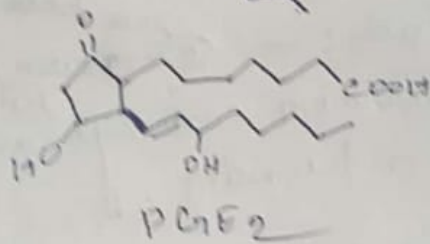
Q) classifying prostaglandins and leukotrienes

Ans: - prostaglandins and leukotrienes are eicosanoids because having 20 carbon containing compounds

Classification of prostaglandins

PG₁A, PG₁B, PG₁C, PG₁D, PG₁E, PG₁F₂

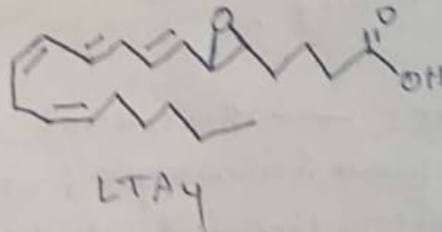
PG₁A - 



Leukotrienes - classification:

They are classified as

① LTA₄ ② LTB₄ ③ LTC₄ ④ LTD₄



By Rajmukund
Assistant Professor
M.D.T. (Pharmacy)

Q) write the synthesis of

- ① Diphenhydramine ② Adrenaline ③ Dopamine
④ Tolbutamide

Ans: - synthesis of diphenhydramine

