

DR. B. C. ROY COLLEGE OF PHARMACY & AHS



ASSIGNMENT

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UNIVERSITY ROLL NO – 18901918068

SUBJECT NAME – MEDICINAL CHEMISTRY-2

SUBJECT CODE – 513B

TOPIC – CLASSIFY DIURETICS

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SUBMITTED TO – PUJA MISHRA

SUBMITTED BY – PRIYA RAY



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19/11/22
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MEDICINAL CHEMISTRY-2: ASSIGNMENT.

CLASSIFICATION OF DIURETICS..

Diuretics: →

→ These are drugs that promote the excretion of sodium ion (Na^+) or chloride ion (Cl^-) or bicarbonate (HCO_3^-) ion and water from the body, the net result being an increase in urine flow/output.

→ Diuretics don't affect the absorption of proteins, vitamins, glucose or amino-acids.

Classification of Diuretics: →

[A] on the basis of "SITE OF ACTION":

a. Proximal tubules:

1. Osmotic diuretics - Urea, Mannitol
2. Xanthine - Caffeine
3. Carbonic anhydrase inhibitors - Acetazolamide.
4. Acidifying salts - NH_4Cl .

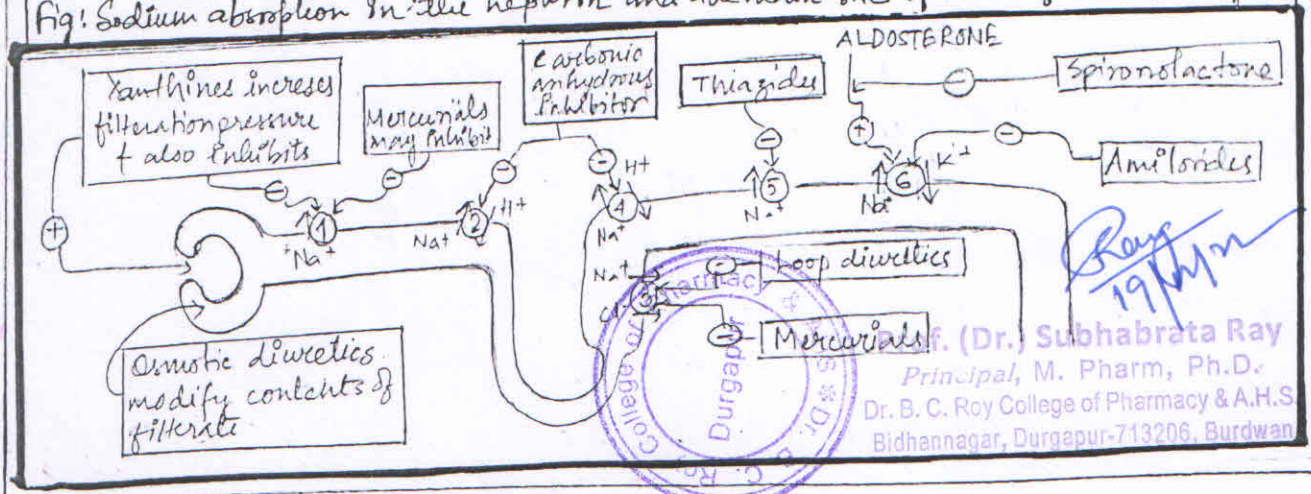
b. Ascending limb of the loop of Henle:

1. high-ceiling (loop diuretics) - Furosemide, Ethacrynic acid.
2. Thiazides - chlorothiazide
3. Mercurial Diuretics - chloromerodrin.

c. Distal tubules:

1. K^+ -sparing diuretics - Amiloride, spironolactone.

Fig: Sodium absorption in the nephron and the main site of action of diuretic drugs.

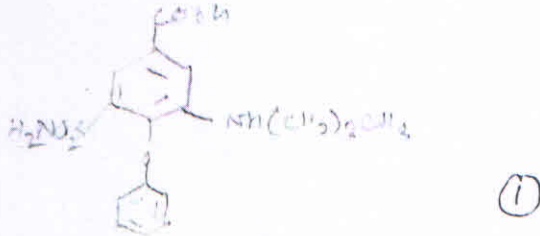


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[B] On the basis of "Intensity" :-

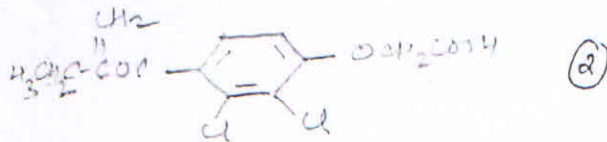
a. High Efficacy diuretics (Inhibitors of $\text{Na}^+/\text{K}^+/\text{2Cl}^-$ co transport) :-

1. Sulphamoyl derivative - Example: Bumetanide.



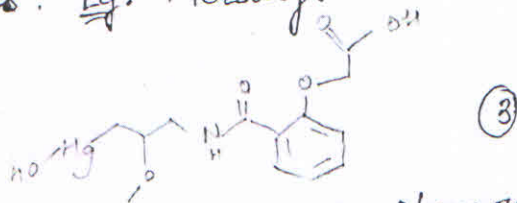
IUPAC Name: 3-Butylamino-4-phenoxy-5-sulphamoylbenzoic acid.

2. Phenoxyacetic Acid Derivative - Eg: Ethacrynic acid



IUPAC name: 2,3-Dichloro-4-(2-methylenebutyryl) phenoxy acetic acid

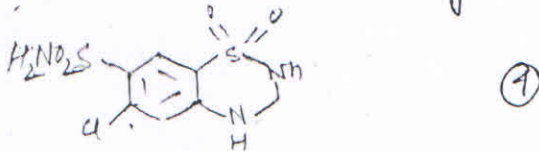
3. Organomercurials - Eg: Mersalyl



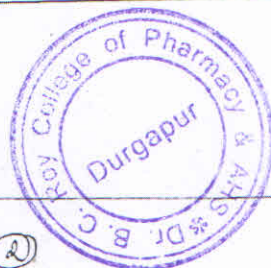
IUPAC name: (3-[2-(Carboxymethoxy)benzoyl]amino-2-methoxypropyl) (hydroxy) mercury.


b. Medium Efficacy diuretics (Inhibitors of Na^+/Cl^- symporter) :-

1. Benzothiadiazines (Thiazides) :- Eg: Hydrochlorothiazide

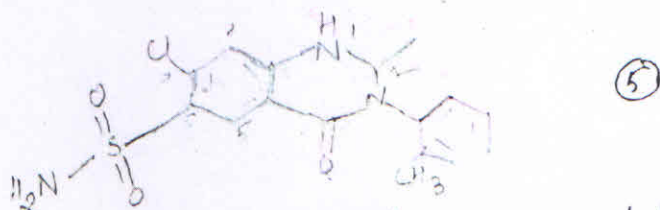


IUPAC name: 6-chloro-3,4-dihydro-1,2,4-benzothiadiazine-7-sulphonamide-1,1-dioxide.




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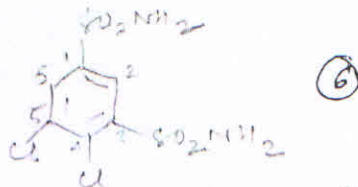
2. Thiazide like Diuretics (Related heterocyclics) : Eg: Metolazone



IUPAC name: 7-chloro-2-methyl-4-(3-oxo-3-phenyl)-1,2,3,4-tetrahydroquinazolin-6-sulfonamide.

Co Weak or Adjunctive Diuretics :

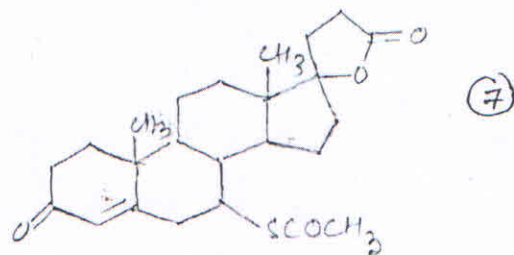
1. Carbonic anhydrase inhibitors - Eg: Diclofenamide



IUPAC name: 4,5-Dichloro-m-benzenedisulfonamide.

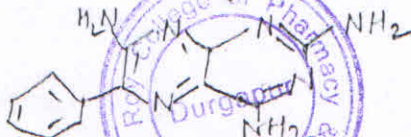
2. Potassium sparing diuretics -

(i) Aldosterone Antagonists : Eg- Spiroinolactone



IUPAC name: 5-[(7R, 8R, 9S, 10R, 13S, 14S, 17R) -10,13-dimethyl-3,5'-dioxospiro [2,6,7,8,9,11,12,14,15,16-decahydro-1H-cyclopenta [a] phenanthrene-17,2'-molanone]-7-yl] ethanethioate.

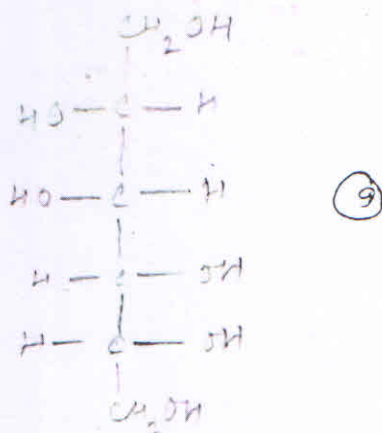
(ii) Directly acting Diuretics : Eg: Triamterene.



IUPAC name: 2,4,7-Triamino-6-phenylpteridine.

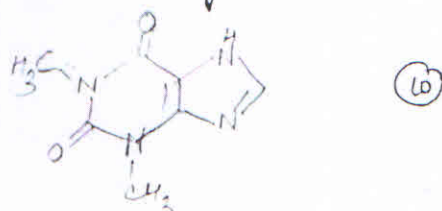
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3. Osmotic Diuretics - Eg: Mannitol




IUPAC name: Hexane-1,2,3,4,5,6-hexaol.

4. Xanthine Derivative - Eg: Theophylline



IUPAC name: 1,3-dimethyl-7H-purine-2,6-dione.




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The End.