Five basics mechanisms of Antibiotics against bacterial cells

1. Inhibition of cell Wall Synthesis (most common mechanism)
2. Inhibition of Protein Synthesis (Translation)
3. Alteration of cell membrane
4. Inhibition of nucleic acid synthesis
5. Antimetabolite activity.

Eg1 Beta-lactams, Inhibition of peptidoglycan Synthesis.

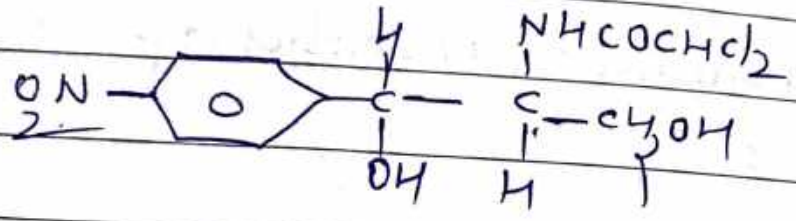
Eg2 chloramphenicol blocks peptide elongation.

Eg3 Quinolones Inhibits nucleic acid Synthesis.

chloramphenicol / chloromycetin

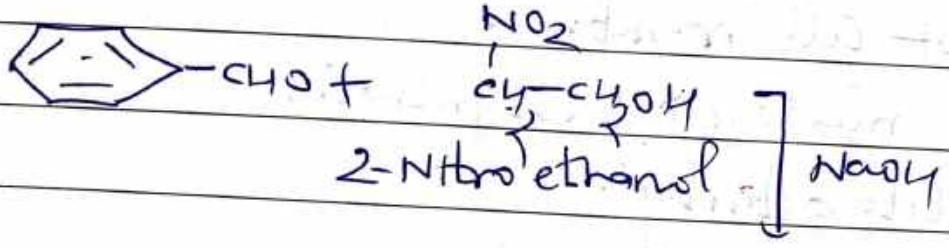
chloramphenicol is the first of the Widely used broad spectrum antibiotics also known as chloromycetin

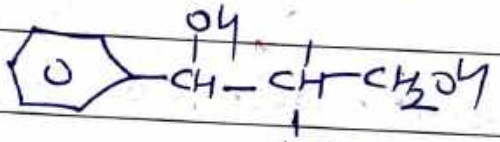
It Was isolated by Ehrlich et al. They obtained it from Streptomyces Venezuelae, an Organism that has been found in Sample of Soil collected in Venezuelae.

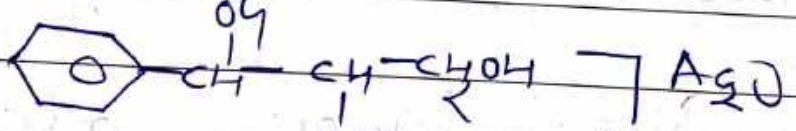


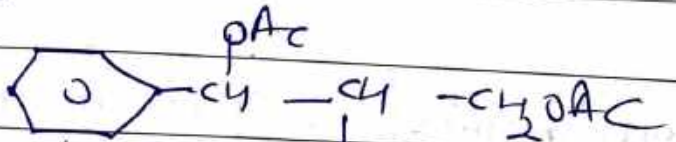
chloramphenicol

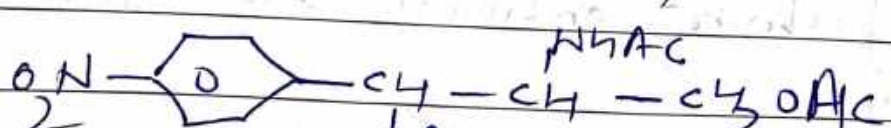
Synthesis

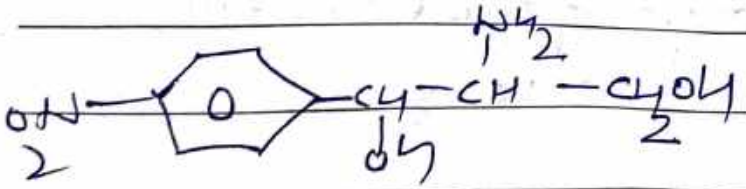


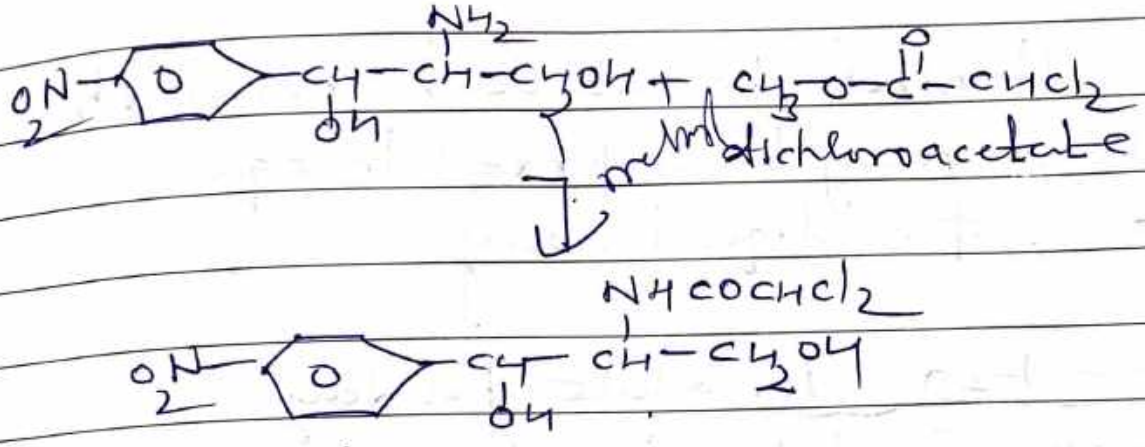












Chloramphenicol Uses & toxic effects

(White crystalline, Soluble in Alcohol, slightly soluble in H_2O.

Chloramphenicol is a broad spectrum antibiotic it is effective against a Wide Variety of gram-positive & gram negative bacteria. Chloramphenicol is Very effective in typhoid & paratyphoid fever.

Chloramphenicol is more active than the tetracyclines against H. Influenzae. it is useful in chronic bronchitis.

Late ampicillin Was found equally effective against these Infections & is less dangerous.

Chloramphenicol has got a bitter taste & this is therefore, administered orally either in capsules or as palmitate.

chloramphenicol palmitate is insoluble in water & may be suspended in aqueous bases for liquid dosage.

Dose: 1-2g for adult per day
250mg at interval of 6h
for five days.

Side effects

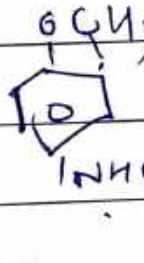
1) Gastrointestinal disturbances
2) Abnormality of the blood cells.
3) Risky for infants

Therapeutic Index

The therapeutic index (TI) / Therapeutic Window or Safety Window or therapeutic ratio

It is a comparision of the amount of a the therapeutic agent that causes the therapeutic effect to the amount that causes toxicity.

Paracetamol



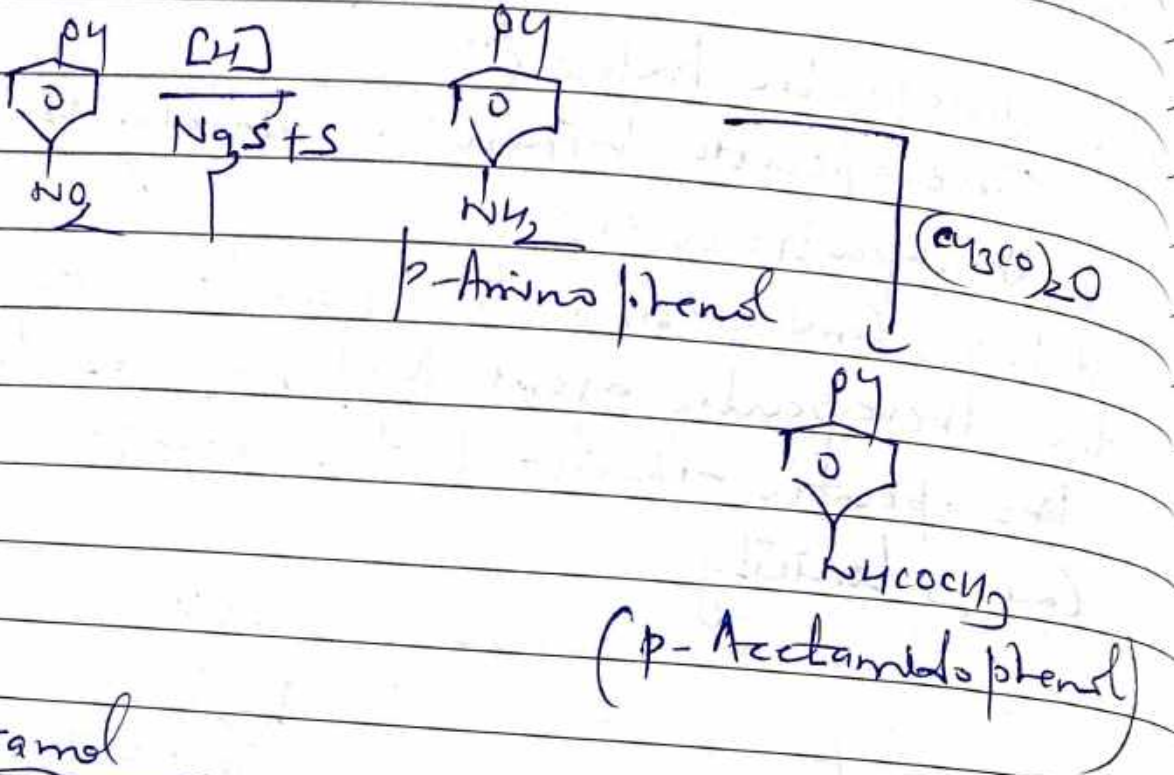
Paracetamol is the metabolite of Phenacetin that provides the analgesic.

It is p-acetamidophenol or p-hydroxy acetanilide

1956, it was realised that paracetamol has analgesic & antipyretic properties.

Trade Name:- Crocin, Metacin, Calpol.

Synthesis



Paracetamol

white odourless, bitter.

slightly soluble in water, soluble in boiling water & alcohol.

Analysic effects Quite broad.

Dose → 1 tablet → 500mg for every 4h

Aspirin