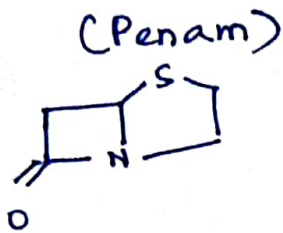
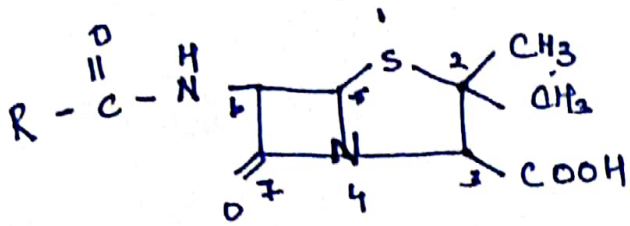


PENICILLINS



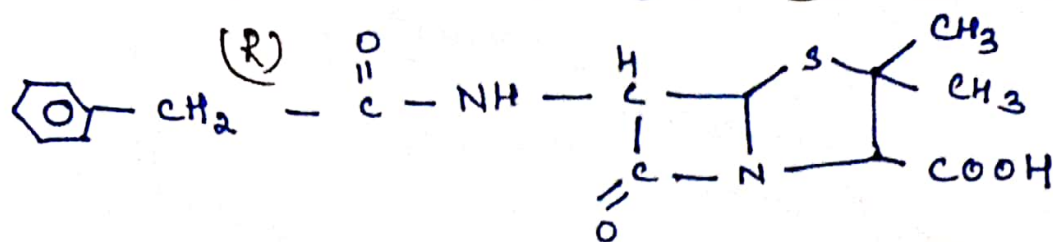
(i) 3 chiral centres (C-3, 5 and 6)
 (ii) Most of the derivatives have the same absolute configuration at C-3, 5 and 6.

(iii) The acyl amino group at 6th position and -COOH group at 3rd position are trans to each other.

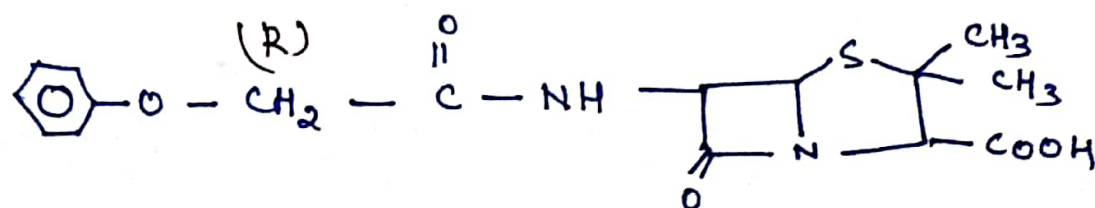
L-cysteine and L-valine are the precursors in the formation of penam ring.

MOA :- Selective Inhibition of bacterial cell wall synthesis. Inhibition of the biosynthesis of dipeptidoglycan that provides rigidity and strength to the cell wall. Acylation of a specific bacterial D-transpeptidase renders it inactive for its role in forming peptide and cross links of two linear peptidoglycan strands by transpeptidation and loss of D-alanine, amino acid.

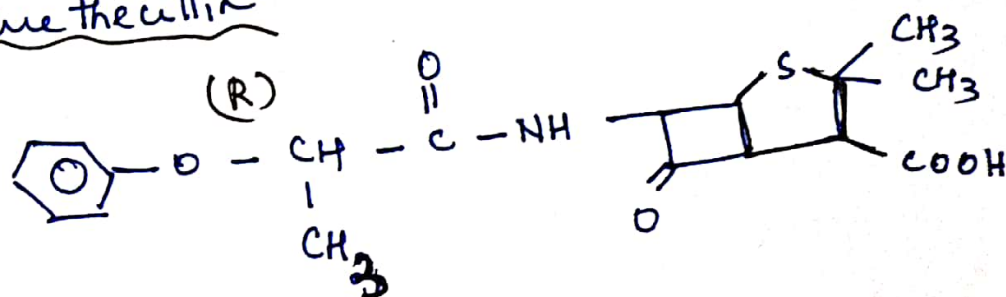
Natural Penicillins - Benzyl Penicillin (Penicillin-G)



Phenoxy methyl Penicillin (Penicillin-V)



Phenethicillin



Chemistry of Penicillin:-

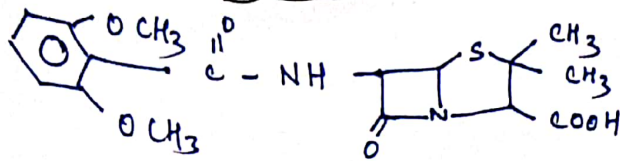
It is composed of fused 4-member β -lactams ring, thiazolidine nucleus and a side chain

3 chiral carbon atoms C_3 , C_5 and C_6 --

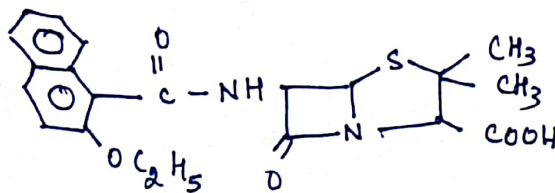
6 Amino penicillanic acid is the basic skeleton of all penicillins.

Semisynthetic Penicillins :

Penicillinase resistant Penicillins :

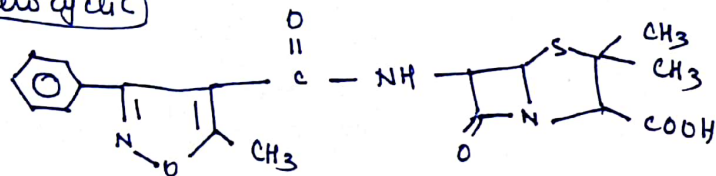


2,6 dimethoxy phenyl Penicillin (Methicillin)

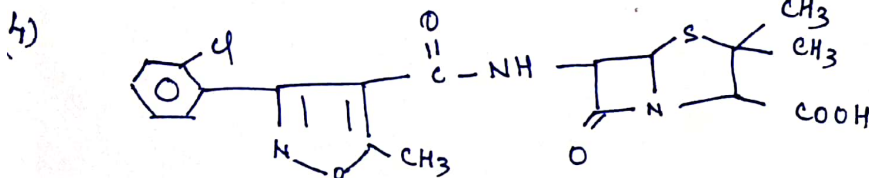


(2 Ethoxy 1-naphthyl Penicillin) - (Nafcillin)

Heterocyclic



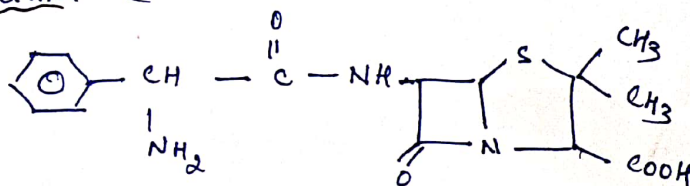
(3 Phenyl 5-methyl 4-isoxazolyl penicillin) - (Ox.)



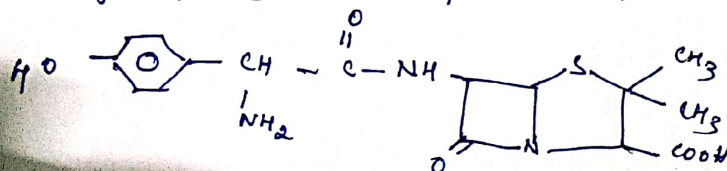
(Cloxacillin) [5-methyl-3-(2-chlorophenyl) 4-isoxazolyl penicillin]

Aminopenicillins

(1) Ampicillin (D α amino benzyl Penicillin)



(2) Amoxycillin (D α amino p-OH benzyl Penicillin)



1) Natural :- Benzyl penicillin (Pen-G) 2. p-terteryl
Penicillin (Penicillin-F) 3. p-terteryl penicillin
n. p-teryl penicillin (Penicillin-K)
p-OH benzyl penicillin (Penicillin-X)
Phenoxy methyl penicillin (Penicillin-V)
Zero allergy Penicillin (Penicillin-O)

Semi synthetic Penicillins :-

Ampicillin, Amoxycillin, Methicillin,
Nafcillin, Oxacillin, Dicloxacillin

Carbenicillin, Ticarcillin, Piperacillin
Merlocillin and Cycloacillin.