

Pharmaceutical Chemistry

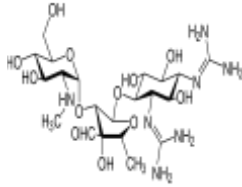
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Project Scientist IIT Delhi (2009-2010)
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(2015 onwards)

Antibiotics

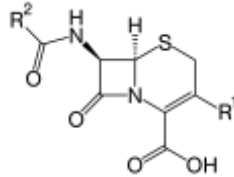


Kills the microbial cells (Germs) by inhibiting its protein synthesis

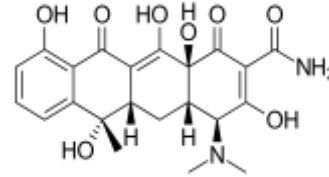
Antibiotics : Classification



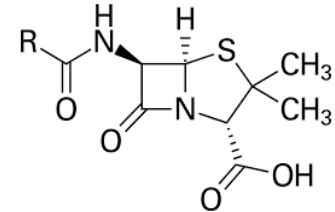
Aminoglycosides



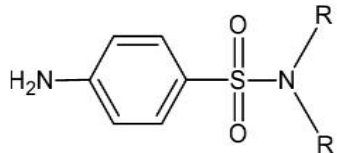
Cephalosporins



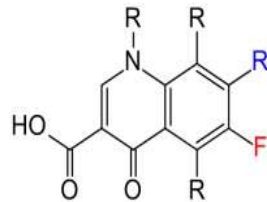
Tetracyclins



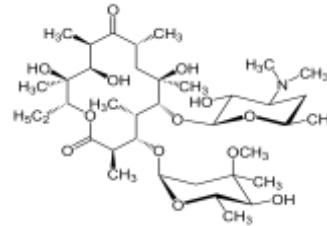
Penicillins



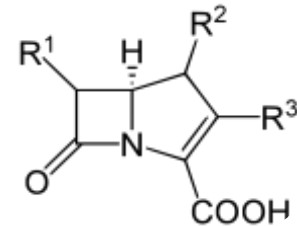
Sulphonamides



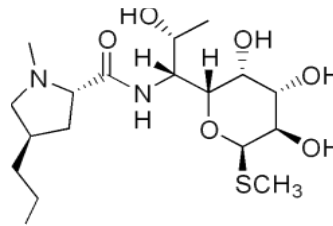
Fluoroquinolones



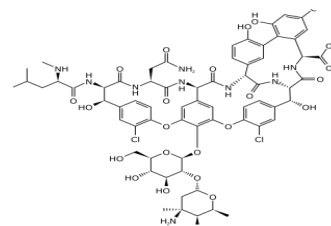
Macrolides



Carbapenems

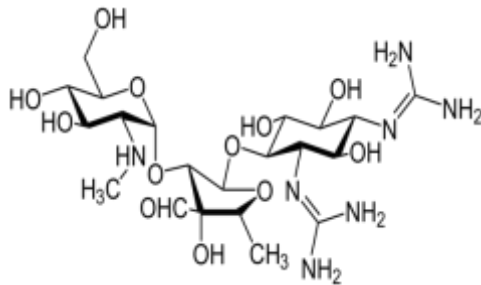


Lincosamides



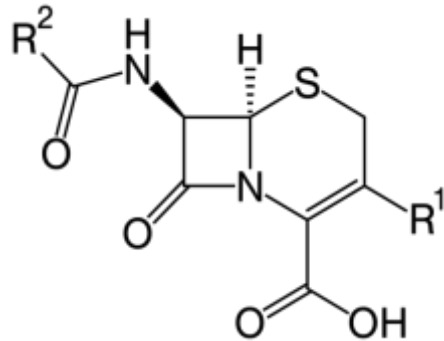
Glycopeptides

Aminoglycosides



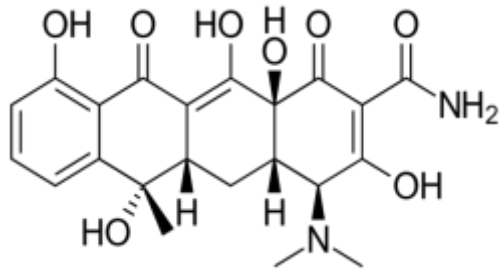
- The name ends with “mycin”: e.g. Streptomycin, Gentamycin.
- Used for infection in blood streams and in severe abdominal infections: bacteremia
- These inhibit the protein synthesis in gram negative bacteria.
- It binds with the 30s subunit of the bacterial ribosome.

Cephalosporins



- The name of drugs starts with “ceph” or “Cef”
- For example: Cefixime
- Attacks both gram positive and gram negative bacteria.
- It inhibits cell wall synthesis of bacteria.
- Used for Skin, Urinary and respiratory infections.

Tetracyclins



- These drugs ends with the name “cycline” For Example: Doxycycline, Methacycline

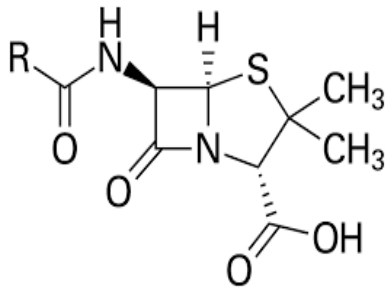
- Attacks both gram negative and gram positive bacteria

- Acts like amino glycosides by inhibiting the protein synthesis of bacterial ribosome

- Used for Lyme Disease, Pulmonary inflammatory diseases and STDs (Sexually Transmitted Diseases)

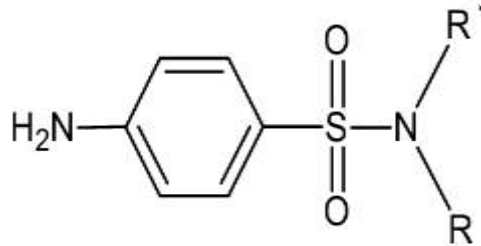
Penicillins

- These ends with the name “ cillins” For example: Amoxycillin, Ampicillin



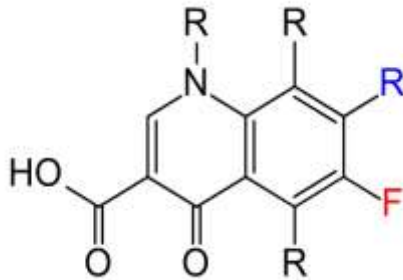
- Attacks both Gram positive and Gram negative bacteria
- Acts like Cephalosporins: inhibits cell wall synthesis of bacterial cell wall
- Used for ENT infections, Urinary Track Infections, Skin infections

Sulphonamides



- Starts with “Sulpho”
- Examples: Sulphomethoxazole
- Covers both gram positive and gram negative bacteria
- Kills bacteria by inhibiting folate synthesis
- Used for Urinary Tract Infection (UTI), Burns and Eye infections

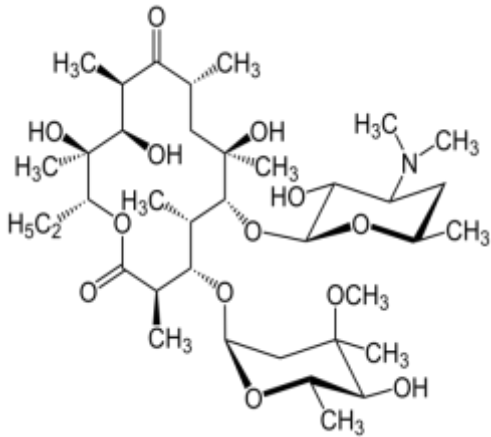
Fluoroquinolones



- Drug name ends with “floxacin”. For example: Ciprofloxacin, Levofloxacin
- Covers both gram positive and gram negative bacteria
- Inhibits bacterial DNA replication.
- Used for respiratory and UTI

Macrolides

- Ends with the name : “thromycin”. For example , Azethromycin, Erythromycin

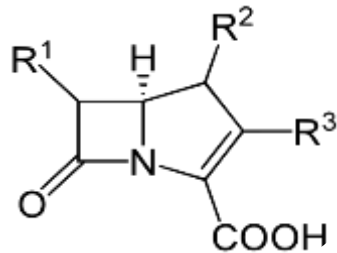


- Attacks only gram positive bacteria

- Inhibits bacterial protein synthesis by binding with 50 s subunit of ribosome.

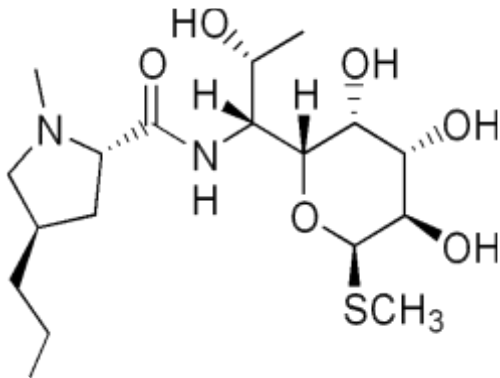
- Used for pneumonia, sinucites, UTI, inner throat infection, STD.

Carbapenems



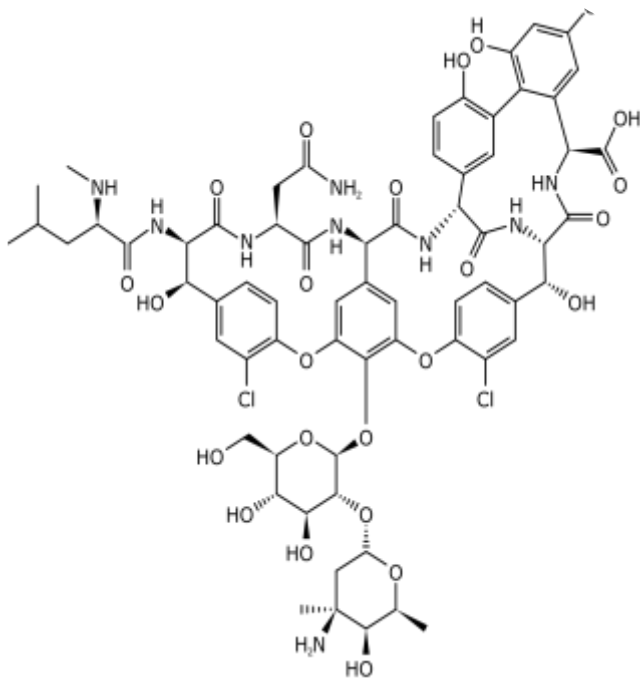
- Name ends with “penems”.
Examples are like Meropenem, Ertapenem
- Covers both gram positive and gram negative bacteria
- Inhibits bacterial cell wall synthesis
- Used for UTI and Abdomen infections

Lincosides



- Ends with mycin
- Only for gram positive bacteria
- Attacks the 50 s subunit of ribosome inhibiting bacterial protein synthesis
- Used for skin, bone and lung infections

Glycopeptides



- This also ends with mycin:
- For example Vancomycin
- Used for only gram positive bacteria
- Inhibits bacterial cell wall synthesis
- Used for skin and cardioinfections