

Fosfomicin, Bacitracin, Cycloserine and Daptomycin

SUBTITLE

Describe the mechanism of action of Daptomycin

Describe the mechanism of action of Fosfomycin

Describe the mechanism of action of Bacitracin

Enlist the antibacterial spectrum of Daptomycin

Enlist the antibacterial spectrum of Fosfomycin

Enlist the antibacterial spectrum of Bacitracin

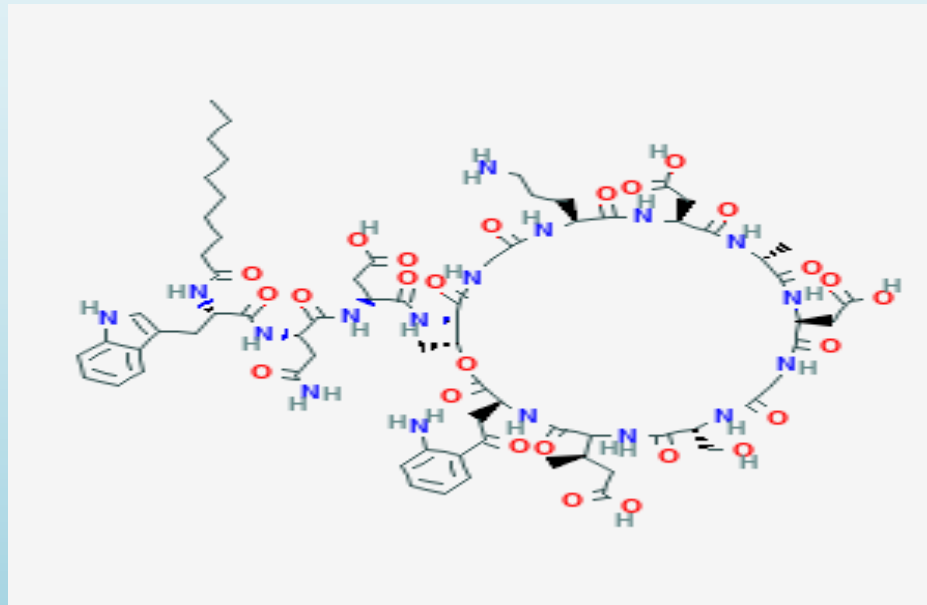
Enlist the side effects of Daptomycin

Enlist the adverse effects and contraindications of Fosfomycin

Enlist the adverse effects of Bacitracin



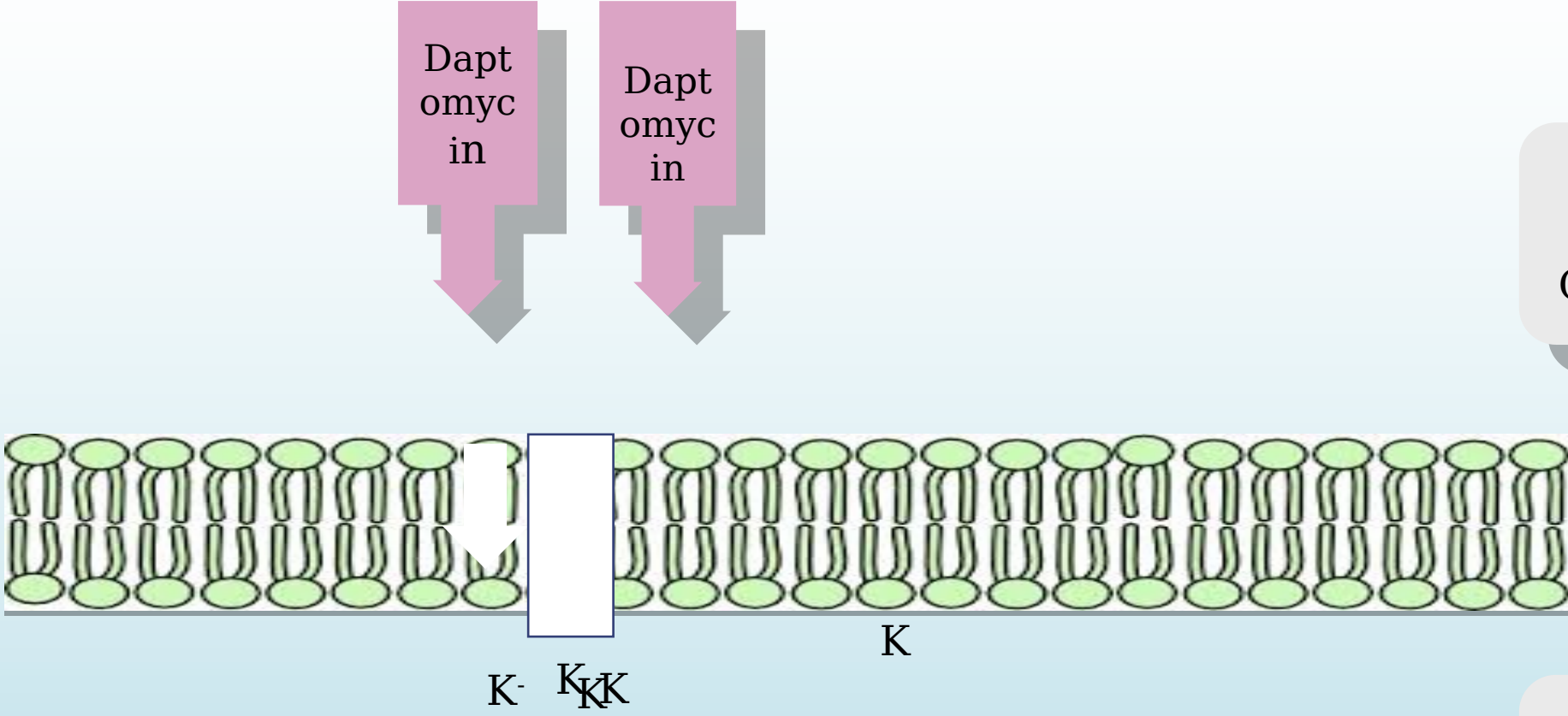
Daptomycin is a cyclic lipopeptide antibiotic



Mode Of Action

Daptomycin induces rapid depolarization of the membrane, thus disrupting multiple aspects of membrane function and inhibiting intracellular synthesis of DNA, RNA, and protein.

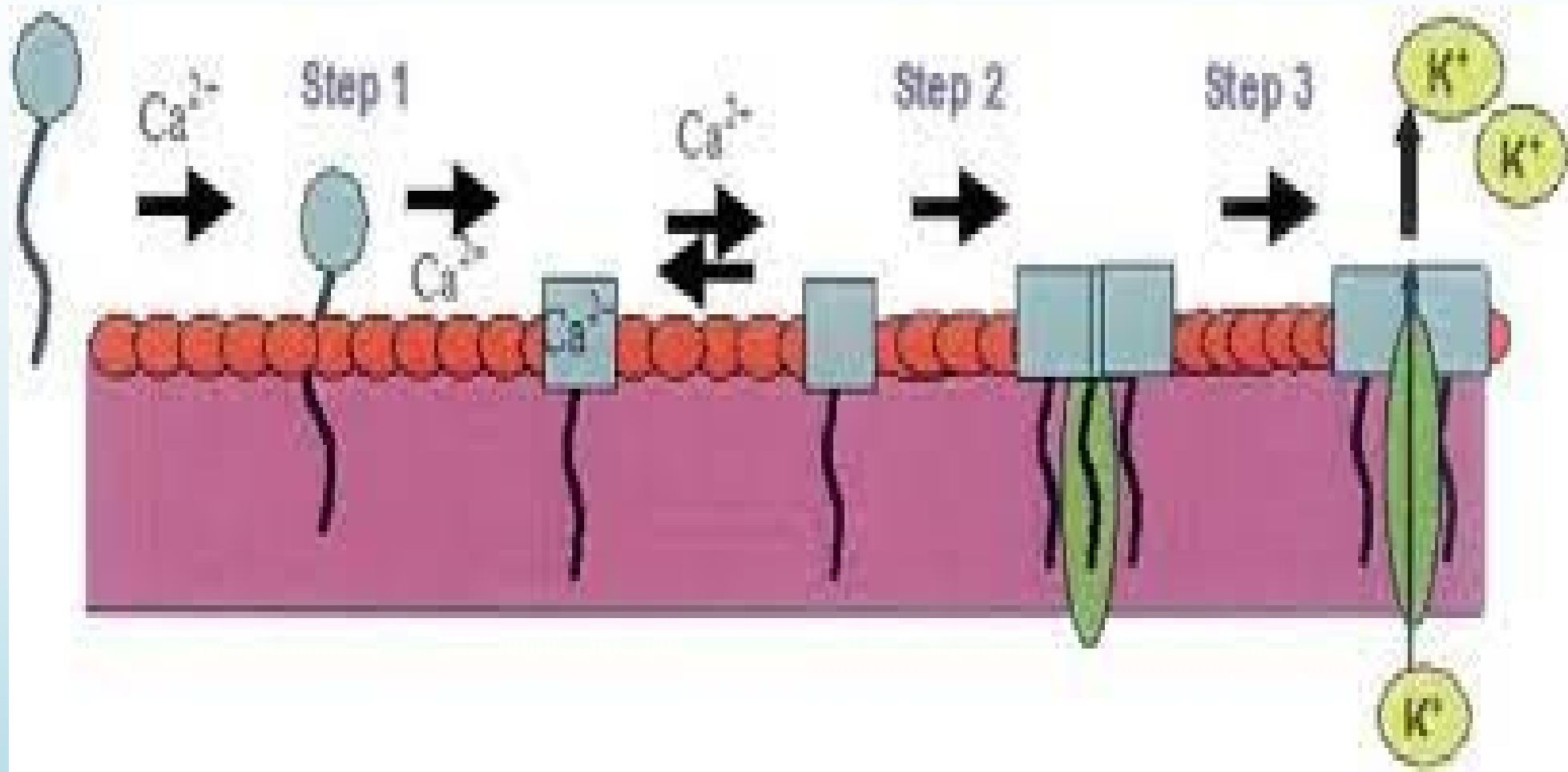
Daptomycin is bactericidal, and bacterial killing is concentration dependent.



Extra-Cellular-Compartment

Intra-Cellular-Compartment

Mechanism of Action Daptomycin



Mechanism of Action Daptomycin

Anti-Bacterial Spectrum

Activity limited to gram-positive organisms, which includes

MSSA

MRSA

Streptococcus pyogenes

Streptococcus pneumoniae

Corynebacterium jeikium

Enterococcus Faecalis

Enterococcus Feacuim

Including (VRE)

Pharmacokinetics

Daptomycin is inactivated by
pulmonary surfactants
90-95 % bound to plasma proteins
Minimal metabolism by the liver
Mainly removed through kidneys

Therapeutic Uses

Daptomycin is indicated for the treatment of complicated skin and skin structure infections.

Right sided bacterial endocarditis

Used As An Alternative To Linzolid And Streptogramins

Adverse effects

Elevation of hepatic transaminase
And creatine phosphokinase

Headache, insomnia, myalgias
Constipation, nausea

contraindications

Pulmonary infection

Renal compromised

Drug interaction

When under use then statins should
be avoided as it may lead to
additional muscle toxicity

Fosfomicin

An analogue of
phosphoenolpyruvate

Fosfomycin

Mode of action

It inhibits the cytoplasmic enzyme enolpyruvate transferase
Blocks addition phosphoenolpyruvate to UDP-N
Acetylglucosamine . Inhibiting the first step in formation of UDP-
NAM and UDP—NAG in the bacterial cell wall.

Fosfomycin

Anti-bacterial Spectrum

gram +ive
gram-ive

Therapeutic
Use

Un-complicated UTI

Cycloserine

It is an antibiotic produced by *streptomyces orchidaceous*.

It is a structural analogue of D-alanine

Active against gram +ive and gram –ive bacteria

Resistant strains of *Myco Bacterium*

Tuberculosis.

Cycloserine

Mechanism of action

It inhibits the incorporation of d-ala into the pentapeptide chain by inhibiting the enzyme **alanine recemase**.

Thus inhibiting the synthesis of precursor peptide chain .

Cycloserine

Therapeutic Uses

Second line drug for the treatment of resistant strains of *Mycobacterium Tuberculosis*

Bacitracin

It is a cyclic peptide mixture obtained from *Bacillus subtilis*.

Bacitracin

Mechanism Of Action

It inhibits the dephosphorylation in cycling of lipid carrier molecule (Bactoprenol phosphate) that normally transfer the NAM-NAG unit outside the cytoplasm into the growing cell wall.

Bacitracin

Therapeutic Applications

- Bacitracin Often In Combination With Polymixin Or Neomycin Is Indicated For Mixed Bacterial Infection Of
 - Skin
 - Wounds
 - Mucous Membranes
 - Always applied topically

Bacitracin

Adverse Effects

Highly Nephrotoxic

