

Fosfomycin

Fosfomycin is a derivative of phosphonic acid and is the only drug in this class available in the UK.

Mechanism of Action

- Bactericidal
- Actively transported into the bacterial cell then prevents formation of the bacterial cell wall by blocking peptidoglycan synthesis
- Synergistic effect when given in combination with Beta-lactams, fluoroquinolones and Linezolid

Mechanisms of Resistance

- Fosfomycin resistance can be chromosomal, plasmid or transposon mediated
- Chromosomal mediated resistance is caused by alteration of the active transport mechanisms reducing concentration inside the bacterial cell
- Plasmid or transposon mediated resistance via production of an inhibitor molecule preventing binding to target site or production of an enzyme that breaks down Fosfomycin before it can have any effect

Pharmacology and Pharmacodynamics

- Available as oral and intravenous preparations
- Up to 40% oral bioavailability, reduced when taken with food
- Renally excreted as active compound without being metabolised first
- Good penetration into bone, muscle, eyes, lungs and bile (see section – Antibiotics, Table of Antibiotic Tissue Penetration)

Spectrum of Activity of Fosfomycin

Gram-positive	<ul style="list-style-type: none">• <i>Staphylococcus aureus</i> including MRSA• Coagulase negative <i>Staphylococcus</i> spp.• <i>Streptococcus</i> spp.• <i>Enterococcus</i> spp.• Gram-positive anaerobes
Gram-negative	<ul style="list-style-type: none">• Enterobacteriaceae e.g. <i>Escherichia coli</i>, <i>Klebsiella</i> spp. NOT ACTIVE against <i>Morganella</i> spp.• <i>Pseudomonas</i> spp.• Gram-negative anaerobes NOT ACTIVE against <i>Bacteroides</i> spp.

Cautions and Contraindications

- See BNF for full details
- History of previous hypersensitivity reaction
- Renal failure (reduce dose in renal failure)
- Contains high amounts of sodium therefore use with caution in hypernatraemia, cardiac insufficiency, hypertension, pulmonary oedema and hyperaldosteronism
- Pregnancy and breast feeding (avoid unless benefit outweighs risk)
- No drug interactions