

Cycloserine

Antibiotic Class:

Analog of D-alanine

Antimicrobial Spectrum:

Broad spectrum, *Staphylococcus aureus* and some gram-negative bacilli, such as *Escherichia coli*, although no longer used for these pathogens. Primary use is against *M. tuberculosis*.

Mechanism of Action:

Cycloserine disrupts D-alanine incorporation into peptidoglycan during bacterial cell wall synthesis.

Pharmacodynamics:

Cycloserine is generally bacteriostatic, and based on its mechanism of action being 2 steps upstream from penicillin's, cycloserine likely is time-dependent.

Pharmacokinetics:

Cmax: 20-35 mg/L; Tmax: 1-2 hours; Bioavailability: not known, but likely is high; Protein binding: not known, but likely is very low

Adverse Effects:

Central nervous system disturbances, including lethargy, difficulty concentrating, and altered behavior

Dosage:

PO: 250 mg capsules

Usual dose: 250-500 mg once or twice daily, rarely exceeding 1000 mg

Disease state based dosing:

Hepatic failures: No specific recommendations

Renal failures: Adjustment required. Depending upon the degree of impairment, usual doses given once daily or every other day should initially be employed.

Contraindications/Warnings/Precautions:

Precautions: Renal impairment

Drug Interactions:

No known interactions based on clearance. May exacerbate other agents that have CNS effects.

Pregnancy:

Category C: Risk unknown. Human studies inadequate

Monitoring Requirements:

Toxic: baseline serum creatinine

Brand names/Manufacturer: Seromycin (Lilly/Dura)