

# Cycloserine Capsules IP 250mg CYCLOTEC



## COMPOSITION

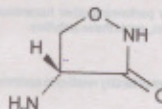
### CYCLOTEC

Each capsule contains:  
Cycloserine IP 250mg

## DESCRIPTION

CYCLOTEC (Cycloserine Capsules, IP), 3-isoxazolidinone, 4-amino-, (R)- is a broad-spectrum antibiotic that is produced by a strain of *Streptomyces orichloroformis* and has also been synthesized. Cycloserine is a white to off-white powder that is soluble in water and stable in alkaline solution. It is rapidly destroyed at a neutral or acid pH.

Cycloserine has a pH between 5.5 and 6.5 in a solution containing 100 mg/mL. The molecular weight of cycloserine is 102.06, and it has an empirical formula of  $C_4H_6N_2O_2$ . The structural formula of cycloserine is as follows:



## CLINICAL PHARMACOLOGY

After oral administration, cycloserine is readily absorbed from the gastrointestinal tract, with peak blood levels occurring in 4 to 8 hours. Blood levels of 25 to 30 µg/mL can generally be maintained with the usual dosage of 250 mg twice a day, although the relationship of plasma levels to dosage is not always consistent. Concentrations in the cerebrospinal fluid, pleural fluid, sputum, and mother's milk approach those found in the serum. Detectable amounts are found in ascitic fluid, bile, sputum, amniotic fluid, and lung and lymph tissues. Approximately 85% of a single dose of cycloserine can be recovered in the urine within 72 hours after oral administration. The remaining 35% is apparently metabolized to unknown substances. The maximum excretion rate occurs 2 to 6 hours after administration, with 60% of the drug eliminated in 12 hours.

## MICROBIOLOGY

Cycloserine inhibits cell-wall synthesis in susceptible strains of gram-positive and gram-negative bacteria and in *Mycobacterium tuberculosis*.

## MECHANISM OF ACTION

Cycloserine, a broad-spectrum antibiotic, may be bactericidal or bacteriostatic, depending on its concentration at the site of infection and the susceptibility of the organism.

Cycloserine is an analog of the amino acid D-alanine. It interferes with an early step in bacterial cell wall synthesis in the cytoplasm by competitive inhibition of 2 enzymes, L-alanine racemase, which forms D-alanine from L-alanine, and D-alanine-D-alanine synthetase, which incorporates D-alanine into the pentapeptide necessary for peptidoglycan formation and bacterial cell wall synthesis.

## INDICATION & USAGE

- Active pulmonary and extra pulmonary Tuberculosis
- Acute Urinary tract infections

## CONTRAINDICATIONS

Administration is contraindicated in patients with any of the following:

- Hypersensitivity to cycloserine
- Epilepsy
- Depression, severe anxiety, or psychosis
- Severe renal insufficiency
- Excessive concurrent use of alcohol

## SIDE EFFECTS / ADVERSE EFFECTS

Drowsiness may occur. If it continues or becomes severe, inform your doctor. Notify your doctor if you experience: dizziness, headache, tremor, slurred speech, tingling of the hands or feet, mental confusion, irritability, anxiety, skin rash.

Most adverse reactions occurring during therapy with Cyclo-tec involve the nervous system or are manifestations of drug hypersensitivity. The following side effects have been observed in patients receiving Cyclo-tec:

**Nervous system symptoms** (which appear to be related to higher dosages of the drug, i.e., more than 500 mg daily)  
Convulsions, Drowsiness and somnolence, Headache, Tremor, Dysarthria, Vertigo, Confusion and disorientation with loss of memory, Psychoses, possibly with suicidal tendencies, Character changes, Hyperirritability, Aggression, Paresis, Hyporeflexia, Paresthesia, Major and minor (localized) tonic seizures, Coma.

## Cardiovascular

Sudden development of congestive heart failure in patients receiving 1 to 1.5 g of Cyclo-tec daily has been reported

**Allergy** (apparently not related to dosage)

## Skin rash

## Miscellaneous

Elevated serum transaminase, especially in patients with preexisting liver disease

## OVERDOSAGE

### Signs and symptoms

Acute toxicity from cycloserine can occur if more than 1 g is ingested by an adult. Chronic toxicity from cycloserine is dose related and can occur if more than 500 mg is administered daily.

Patients with renal impairment will accumulate cycloserine and may develop toxicity if the dosing regimen is not modified. Patients with severe renal impairment should not receive the drug. The central nervous system is the most common organ system involved

with toxicity. Toxic effects may include headache, vertigo, confusion, drowsiness, hyperirritability, paresthesias, dysarthria, and psychosis. Following larger ingestions, paresis, convulsions, and coma often occur. Ethyl alcohol may increase the risk of seizures in patients receiving cycloserine.

The oral median lethal dose in mice is 5250 mg/kg.

#### **Treatment**

Overdoses of cycloserine have been reported rarely. The following is provided to serve as a guide should such an overdose be encountered.

Protect the patient's airway and support ventilation and perfusion. Meticulously monitor and maintain, within acceptable limits, the patient's vital signs, blood gases, serum electrolytes, etc. Absorption of drugs from the gastrointestinal tract may be decreased by giving activated charcoal, which, in many cases, is more effective than emesis or lavage; consider charcoal instead of or in addition to gastric emptying. Repeated doses of charcoal over time may hasten elimination of some drugs that have been absorbed. Safeguard the patient's airway when employing gastric emptying or charcoal.

In adults, many of the neurotoxic effects of cycloserine can be both treated and prevented with the administration of 200 to 300 mg of pyridoxine daily.

The use of hemodialysis has been shown to remove cycloserine from the bloodstream. This procedure should be reserved for patients with life-threatening toxicity that is unresponsive to less invasive therapy.

#### **PRECAUTIONS & WARNING**

##### **General**

Avoid alcohol while taking cycloserine. Alcohol will increase your risk of having a seizure during treatment with this medication. Also, alcohol will increase dizziness and drowsiness.

Use caution when driving, operating machinery, or performing other hazardous activities. Cycloserine may cause dizziness or drowsiness. If you experience dizziness or drowsiness, avoid these activities.

##### **PREGNANCY CONDITION**

##### **Fertility**

A study in 2 generations of rats showed no impairment of fertility relative to controls for the first mating, but somewhat lower fertility for the second mating.

##### **Fda pregnancy category c.**

Cycloserine is in the FDA pregnancy category C. This means that it is not known whether cycloserine will harm an unborn baby. Do not take this medication without first talking to your doctor if you are pregnant.

##### **Nursing mother**

Cycloserine passes into breast milk, and it is not known whether cycloserine will harm a nursing baby. Do not take this medication without first talking to your doctor if you are breast-feeding a baby.

##### **Pediatric**

Safety & effectiveness in pediatric patients have not been established.

##### **Geriatrics**

No information is available on the relationship of age to the effects of cycloserine in geriatric patients. However, elderly patients are more likely to have an age-related decrease in renal function, which may require an adjustment of dosage in patients receiving cycloserine.

#### **DOSE AND ADMINISTRATION**

##### **Adults**

**Tuberculosis (active pulmonary and extra pulmonary) --**

Max dose: 1g/day

Initial dosage: 250mg twice daily at 12 hrs interval for the first 2 weeks.

Maintenance dosage: 500mg-1g daily in divided doses monitored by blood levels.

**Urinary tract infections (acute) --**

Max dose: 1g/day

Initial dosage: 250mg twice daily at 12 hrs interval for the first 2 weeks.

Maintenance dosage: 500mg-1g daily in divided doses monitored by blood levels.

##### **STORAGE**

Store in cool & dark place, protected from moisture.

##### **PRESENTATION**

CYCLOTEC: 5 Strips of 10 Capsules each in a carton with package insert.

Mfd in India by :

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