Cycloheximide

CAS: 66-81-9

MF: $C_{15}H_{23}NO_4$
FW: 281.35
Solubility in water 2.1 g/100 ml, at 2ºC; in amyl acetate 7 g/100 ml; soluble in chloroform, ether, methanol, and ethanol.

Major uses

Cycloheximide is an antibiotic compound produced by bacteria *Streptomyces griseus*. It was earlier applied clinically in the treatment of disseminated candidiasis (fungal infection), as well as in the treatment of cryptococcal infections (*Cryptococcus neoformans*, causing meningitis). Moreover, cycloheximide was used, in combination with other agents, for treatment of various types of cancer [1]. At present, clinical use of cycloheximide is restricted due to its significant toxicity in humans.

Cycloheximide is used in agriculture, for the treatment of fungal infections in plants.

Cycloheximide is also used in biomedical research to inhibit protein synthesis in eukaryotic cells studied *in vitro*.

Human toxicity

Cycloheximide is extremely toxic. *Lethal symptoms:* renal injury, adrenal cortex damage.

There is insufficient information in the literature to accurately assess the range of toxicity of cycloheximide in humans. Humans with fungal disease have tolerated up to 180 mg/day. The probable oral lethal doses in humans are in the range of 5 to 50 mg/kg [2].

No values of human lethal blood concentrations are available in the literature.

Kinetic data

No information available.

Metabolism and excretion

No information available.

Toxicological mechanisms

Cycloheximide is a potent inhibitor of protein biosynthesis in eukaryotic organisms. It exerts its effect by interfering with peptidyl transferase activity of the 60S ribosomes, thus blocking translational elongation. It is also the DNA damaging agent [2].

Target organs: kidney, adrenal glands.

References

1. The Swedish Poison Information Centre, Stockholm, Sweden (2005).
2. Poisindex, Thomson Micromedex (2005).

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