

Fomepizole (Antizol®)

Ethylene glycol (EG) and methanol are toxic alcohols that are responsible for thousands of human poisonings each year. Both are found in automotive products including antifreeze (EG) and windshield wiper fluid (methanol).

Mechanism/Indications: Fomepizole is FDA approved for the treatment of methanol and EG poisoning. Fomepizole is an alcohol dehydrogenase inhibitor that works as an antidote by preventing formation of the toxic metabolites of EG and methanol. It can be used alone or in combination with hemodialysis. Indications for administering fomepizole are:

- ≥ 0.2 mL/kg of 100% EG or ≥ 0.1 mL/kg of 100% methanol was ingested

OR

- Unknown amount was ingested and one of the following:
 - Serum EG or methanol concentration > 20 mg/dL (200 mcg/mL)
 - Presence of CNS depression
 - Metabolic acidosis with anion gap > 15
 - Osmol gap > 20 (accounting for ethanol and other osmotically active substances)
 - End organ damage (e.g. eyes for methanol and kidneys for EG)

Dosing: The dosing and administration of fomepizole is the same for children and adults.

- Loading dose: 15 mg/kg IV; maximum of 1500 mg
- 12 hours later, give the 1st maintenance dose of 10 mg/kg IV. Repeat every 12 hours x 4 doses.
- Fomepizole induces its own metabolism, so after the fourth 10 mg/kg dose, increase the dose to 15 mg/kg IV every 12 hours.
- Continue treatment until EG or methanol levels are below 20 mg/dL and the patient is asymptomatic with normal osmol gap AND normal pH.

Fomepizole is available in 1.5 ml vials. Dilute each dose in 100 ml of NS or D5W. Infuse over 30 minutes. Use within 24 hours after dilution. Fomepizole is removed by dialysis, so if the decision is made to dialyze the patient, the dosing interval must be decreased. Contact the Maryland Poison Center for assistance in dosing fomepizole during hemodialysis.

Adverse Effects/Contraindications: Fomepizole is well tolerated. The most frequent adverse effects are headache, nausea, dizziness, increased drowsiness and bad taste. Rare allergic reactions include skin rash and eosinophilia. The only contraindication is hypersensitivity to fomepizole or other pyrazoles. Fomepizole is pregnancy category C.

For more on fomepizole:

- Brent J et al. Fomepizole for the treatment of methanol poisoning. *NEJM* 2001; 344:424-429.
- Brent J. Fomepizole for ethylene glycol and methanol poisoning. *NEJM* 2009; 360:2216-2223.
- Rozenfeld R et al. Severe methanol ingestion treated successfully without hemodialysis. *Am J Ther* 2007; 14:502-503.
- Howland MA. Antidotes in Depth: Fomepizole. In: Hoffman RS, Howland MA, Lewin NA, Nelson LS, Goldfrank LR, editors: *Goldfrank's Toxicologic Emergencies*. 10th ed. New York NY, 2015: 1364-1366.