

Ingestion of Isopropanol

Isopropanol (also known as isopropyl alcohol) is a common household chemical found in cleaning solutions, disinfectants, and topical preparations. It is most often available in homes as a component of rubbing alcohol at concentrations of 70-99%, with 70% being most common. Due to its low cost and availability, isopropanol is sometimes ingested as a substitute for ethanol. Isopropanol is absorbed rapidly and completely after ingestion and may also be absorbed via inhalation or transdermally, especially in children. It has similar inebriating properties as other alcohols, producing greater CNS depressant effects than ethanol at comparable concentrations.

It is important to differentiate isopropanol ingestion from ingestion of other toxic alcohols, such as ethylene glycol (antifreeze) or methanol (windshield washer fluid), because isopropanol poisoning is treated differently. A distinguishing clinical feature is the presence of a fruity odor on the breath of an isopropanol poisoned patient. This is a result of the production of acetone as the isopropanol is metabolized in the liver. Unlike other toxic alcohols, isopropanol does not cause metabolic acidosis or elevated anion gap, but does cause ketosis. Isopropanol is osmotically active, so an osmolal gap may be observed but should not be used to confirm isopropanol poisoning.

Clinical effects of isopropanol are similar to those of ethanol and include vomiting, abdominal pain, confusion, stupor, hypotension, and hypoglycemia. Most patients recover within 24 hours. Treatment is symptomatic and supportive care (intubation if necessary and IV fluids to correct hypotension). Activated charcoal is not useful for decontamination since alcohols are absorbed rapidly and are not highly bound by charcoal. Isopropyl alcohol is dialyzable, but hemodialysis is rarely required. Inhibition of metabolism with fomepizole is not recommended; isopropanol is more toxic than its metabolite (acetone), and fomepizole extends isopropanol's half-life from about 3 hours to as long as 27 hours. Patients in the emergency department who are known to have ingested isopropanol and are asymptomatic after 2 hours may be discharged, as serum concentrations peak rapidly after ingestion, often before presentation.

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DID YOU KNOW THAT... isopropyl alcohol ingestion can falsely elevate the serum creatinine?

There have been reports of "pseudo"-renal failure in patients who ingest isopropyl alcohol. A false elevation in serum creatinine can occur due to acetone interfering with the creatinine colorimetric assay. Using an enzymatic assay, such as that used in a blood gas analyzer, instead of the colorimetric assay will avoid the acetone interference and give a rapid and accurate measure of the patient's serum creatinine.

