



ศูนย์พิษวิทยารามาธิบดี

คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล

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RAMATHIBODI POISON CENTER

Faculty of Medicine Ramathibodi Hospital, Mahidol University

Sukho Place Building, Sukhothai Rd., Bangkok 10300 Hotline 1367

Ethephon exposure

- Skin exposure: Consider skin decontamination
- Oral exposure: GI Decontamination not recommended

Recommendation	COR
Skin decontamination	Green
GI decontamination	Orange

Class of Recommendation (COR)

Green	Benefit > Risk
Yellow	Benefit ≥ Risk
Orange	Benefit ≤ Risk

Consider the high-risk patient

- Suicidal intent
- Older age
- Neurological deficit

Yes

Recommendation	COR
Supportive and symptomatic treatment	Green
Admission for observation	Green
Serial liver enzymes, Cr for 2 days*	Yellow
EGD if corrosive effects are present, based on EXPERT OPINION	Orange

No

Recommendation	COR
Observation at least 6 h	Yellow

If clinically stable and no symptoms, the patient can be discharged.



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Mechanism of toxicities

Ethephon (2-chloroethylphosphonic acid) is a plant growth regulator.

It is as a cholinesterase inhibitor. It interferes with enzymes responsible for neurotransmitter breakdown, particularly acetylcholinesterase (AChE) in red blood cells and butyrylcholinesterase (BuChE) in plasma. This leads to a buildup of the neurotransmitter acetylcholine.

Clinical manifestations

Toxic effects of ethephon reported in human are:

- Gastrointestinal Effects (common): Stomach cramps, diarrhea, nausea, and vomiting.
- Neurological Effects: Dizziness, weakness, and central nervous system depression.
- Tachycardia or bradycardia (uncommon)
- May presented with cholinergic toxidrome (salivation, lacrimation, diarrhea, urgency of bowel movement, stomach cramps, increased urgency, and frequency of urination)
- Corrosive Effects: Ethephon is a corrosive substance and can cause severe irritation to the skin and eyes.
- Organ Damage*: With significant exposure, there is a risk of liver [1,2] and kidney [1] damage (hepatotoxicity and nephrotoxicity).

References

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2. Bhadoria P, Nagar M, Bahrioke V, Bhadoria AS. Effect of ethephon on the liver in albino rats: A histomorphometric study. *Biomed J*. 2015 Sep-Oct;38(5):421-7.
3. Bhadoria P, Nagar M, Bharihoke V, Bhadoria AS. Ethephon, an organophosphorous, a Fruit and Vegetable Ripener: Has potential hepatotoxic effects? *J Family Med Prim Care*. 2018 Jan-Feb;7(1):179-183.
4. Bahr HI, Hamad R, Ismail SA. The impact of *Lactobacillus acidophilus* on hepatic and colonic fibrosis induced by ethephon in a rat model. *Iran J Basic Med Sci*. 2019 Aug;22(8):956-962.