ศูนย์พิษวิทยารามาธิบดี
คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล
อาคารสุโขเพลส ถนนสุโขทัย กรุงเทพมหานคร 10300 สายด่วน 1367 โทรสาร 0-2201-1084

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สำหรับเผยแพร่

Avermectin Exposure (Ivermectin, Abamectin, Emamectin)

Consider skin or GI decontamination if indicated

Recommendation	COR
Skin decontamination	
GI decontamination	

Class of Recommendation (COR)	
	Benefit > Risk
	Benefit ≥ Risk
	Benefit ≤ Risk

Consider the high-risk patient if any of the following:
- GCS < 13
- Dyspnea
- Metabolic acidosis at presentation

Yes

Recommendation	COR
Supportive and symptomatic treatment - Intubation if necessary - Correct acidosis - Fluid resuscitation	
Admission for observation	

No

Recommendation	COR
Observation at least 6 h	

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

If clinical worsening

: Consciousness, respiratory depression, hepatitis

Recommendation	COR
Consult RPC	

Ver.1: 29 June 2025

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AVERMECTIN

Mechanism of Toxicity:

- Acts as a GABA receptor agonist, disrupting GABA-mediated neurotransmission in the central nervous system, potentially leading to CNS depression.
- Binds with high affinity to glutamate-gated chloride channels in invertebrates, increasing chloride ion influx, causing cell hyperpolarization, paralysis, and death of parasites.
- In mammals, these channels are not present, but at high doses, avermectins may affect GABA receptors in the CNS.

Substance	Mechanism in Parasites (Glutamate-Gated Cl^- Channel)	Mechanism in Humans (GABA Agonist)
Ivermectin	Strong binding to invertebrate glutamate-gated Cl^- channels → paralysis	Can cross BBB in overdose → CNS depression (GABA agonist)
Abamectin	Similar to ivermectin; affects glutamate-gated Cl^- channels	Higher potential to cross BBB at toxic doses
Emamectin	Similar action; more potent glutamate-gated Cl^- channel binding	Less studied in humans; GABA effects possible

Clinical Manifestations:

- **Gastrointestinal:** Nausea, vomiting, abdominal pain, diarrhea
- **Respiratory:** Cough, dyspnea, throat irritation, aspiration pneumonia (severe cases)
- **Neurological:** Headache, dizziness, somnolence, altered mental status, visual hallucinations, CNS depression, seizures**,** coma (severe overdose)
- **Cardiovascular:** Mild tachycardia (mild to moderate toxicity), tachycardia and hypotension (severe toxicity)
- **Dermatologic:** Rash, urticaria, pruritus, edema
- **Mucosal/Caustic injury:** Laryngeal erosion, oropharyngeal burns, erythematous gastritis (especially with **emamectin benzoate** ingestion)
- **Other (Severe Toxicity): Metabolic acidosis**, **respiratory failure**
- **Animal Studies:** High-dose ivermectin in animals can cause CNS toxicity: tremors, ataxia, weakness, incoordination, recumbency, dehydration, and coma

Reference

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