

**Toxicity of ibotenic acid and muscimol containing mushrooms reported to a regional poison control center from 2002-2016**

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Background: Amanita muscaria (AM) and Amanita pantherina (AP) contain ibotenic acid and muscimol and may cause both excitatory and sedating symptoms. A "typical" syndrome of accidental ingestion with CNS depression in adults and CNS excitation in children and a paucity of GI symptoms or respiratory depression are based on relatively few reported cases with these mushrooms in North America.

Research Question: What are the clinical effects of ibotenic acid/muscimol containing mushroom toxicity?

Methods: Retrospective review of ingestions of ibotenic acid/muscimol containing mushrooms reported to a regional poison center from 2002-2016. Cases were included if identification was made by a mycologist or if AM was described as a red/orange mushroom with white spots.

Results: Thirty-five cases met inclusion criteria. There were 24 cases of AM, 10 AP, and 1 A. aprica. Reason for ingestion included foraging (12), recreational (5), accidental (12), therapeutic (1), and self-harm (1). Of the accidental pediatric ingestions 4 (25%) were symptomatic. None of the children with a symptomatic ingestion of AM required admission. A 3-year old male who ingested AP developed vomiting, agitation, and lethargy. He was intubated and had a 3-day ICU stay. There were 25 symptomatic patients in total. All but one developed symptoms within 6 hours. Duration of symptoms was: <6 hours (6, 24%), 6-24 hours (15, 60%), >24 hours (1, 4%), and unreported (3, 12%). Ingestions of AP were more symptomatic than AM with regard to the presence of gastrointestinal symptoms (89% vs 60%), CNS depression (78% vs 60%), and CNS excitation (89% vs 40%) respectively. Seven patients were given benzodiazepines. Seventeen received activated charcoal. Five (20% of symptomatic) were intubated. None experienced hypotension, seizures, acute kidney injury, or hepatotoxicity. No deaths were reported.

Discussion: Ingestion of ibotenic acid/muscimol containing mushrooms often produces a syndrome with GI upset, CNS excitation, and CNS depression either alone or in combination. Ingestion of AP was associated with a higher rate of symptoms compared to AM.

Conclusion: In contrast to previous reports, ibotenic acid/muscimol mushroom poisoning was commonly reported with intentional ingestions and associated a high rate of GI symptoms, no seizures, and several intubations.