

Muscarine

Mushrooms: *Inocybe* species, *Clitocybe dealbata*, and several relatives, *Omphalotus* species, and certain red-pored *Boletus*.



Inocybe lanuginosa



Clitocybe dealbata



Omphalotus illudens



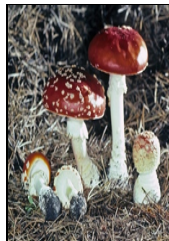
Boletus eastwoodiae

The symptoms usually occur within 15-30 minutes of ingestion, and are focused on the involuntary nervous system. They include excessive salivation, sweating, tears, lactation (in pregnant women), plus severe vomiting and diarrhea. These symptoms may be accompanied by visual disturbances, irregular pulse, decreased blood pressure, and difficulty breathing. Victims normally recover within 24 hours, but severe cases may result in death due to respiratory failure. Atropine is a specific antidote, but must be administered by a physician. Dogs are particularly susceptible to the toxin muscarine.

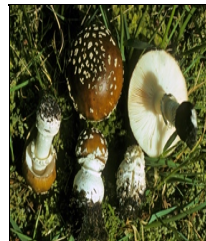
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Isoxazole Derivatives (Muscimol, Ibotenic Acid, and relatives)

Mushrooms: *Amanita muscaria*, *A. pantherina*, *A. gemmata*, *Amanita multisquamosa* (*syn. A. cothurnata*), *A. frostiana*, *A. crenulata*, *A. strobiliformis*, *Tricholoma muscarium*.



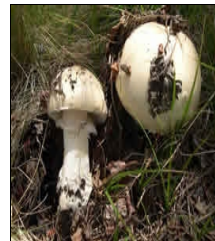
Amanita muscaria



Amanita pantherina



Amanita gemmata



Amanita multisquamosa

There is a great deal of confusion concerning these toxins, and much misinformation about their treatment. Atropine is NOT indicated in cases of poisoning by ibotenic acid or muscimol but is frequently cited as a treatment for *A. muscaria* poisonings in the medical literature, where the toxin is erroneously listed as muscarine! Atropine's effects are close to those of ibotenic acid, and may even exacerbate the symptoms.

Symptoms appear within 30 minute to 2 hours after ingestion, and last for several hours. Nausea and vomiting are quite common, but the principle effects are on the central nervous system: confusion, visual distortion, a feeling of greater strength, delusions and convulsions. Drowsiness is a common symptom, and many who ingest these mushrooms fall asleep and can not be roused. In rare cases the coma-like state can last for more than 24 hours. This facet of the syndrome can be particularly frightening for the attending physician, as most cases involve patients who arrive in this apparently comatose state. The resulting panicked reaction and overtreatment, generally produces no benefit to the patient. In humans, there are no reliably documented cases of death from toxins in these mushrooms in the past 100 years, though there is one case where a camper froze to death while in the comatose state. Dogs and especially cats can die from these isoxazole toxins, though it is important for the vet not to euthanize an animal even though the chances for recovery appear remote — once the animal awakens from the comatose state recovery is normally complete over the course of a week or so.

Treatment of humans and animals is largely supportive. Measures to reduce anxiety can include reassuring the patient that the effects are only temporary. If there has been extensive vomiting