



ToxTalks:

A Bulletin for Healthcare Professionals Who Manage Poisoned Patients

Blue Ridge Poison Center

University of Virginia Health

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Hallucinogenic Mushroom Gummies



Photo: Blue Ridge Poison Center

Background

Mushroom-based products sold over the counter have become more popular since 2023; they are found online, at smoke shops, and in convenience stores. Some products contain mushrooms including Reishi, Lion's Mane or Chagas mushrooms which are not hallucinogenic but claim to have various health benefits. Other products claim to contain hallucinogenic mushrooms that are marketed to give the consumer a psychedelic experience.

There are two types of toxin groups found in mushrooms that cause hallucinations: ibotenic acid/muscimol and psilocybin.

Ibotenic acid and muscimol are most commonly associated with the *Amanita muscaria* mushroom while psilocybin is associated with *Psilocybe cubensis*. (Table 1) Because of some unwanted effects associated with *A. muscaria*, such as seizures, psilocybin containing mushrooms are often preferred for a psychedelic experience. However, psilocybin is a Drug Enforcement Administration (DEA) Schedule I substance and is not currently legal though it has been decriminalized in Oregon, Washington State and Washington DC. *A. muscaria* and its toxins are not scheduled substances.

Perhaps because of the legal challenges associated with obtaining psilocybin, several brands of mushroom gummies and chocolates claiming to contain *A. muscaria* have been marketed as psychedelics or "nootropics," which are substances believed to enhance cognitive function.

Symptoms

Symptoms from ingestion of *A. muscaria* containing products vary but may include hallucinations, anxiety, palpitations, chest pain, nausea, vomiting, somnolence, seizures. In the past year, at least five people were treated in the hospital after taking these *A. muscaria* gummies in Virginia but no seizures were reported. Nationally, there have been at least 130 cases reported to poison centers of ingestion of the Diamond Shroomz

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brand gummies and chocolate bars with severe symptoms including seizures, somnolence, nausea, vomiting, hallucinations, and low blood pressure.

Investigations
A recent study analyzed the contents of six bags of psychedelic/nootropic mushroom gummies and found that each contained several substances not listed on the packaging. The formulation varied by package, with psilocybin or its metabolite psilocin found in four of the six bags. Other substances found included caffeine, ephedrine, and kratom (mu opioid agonist). The FDA has tested the Diamond-Shroomz brand chocolate bars and found them to contain acetylpsilocin (synthetic psilocybin), psilocybin, muscimol, pregabalin and kava lactones (an herbal substance linked to liver injury). This brand was subsequently recalled by the FDA, however it may still be available in some stores

Conclusions
The rise of mushroom gummies in smoke shops and online stores poses a significant public health concern. These products, like others that are not FDA approved, are unregulated and highly variable in their actual contents. It is impossible to know for sure what each brand contains. Consumers should be wary of the claims made by sellers and the potential risks associated with ingesting these substances. Even if marketed as natural or safe, the contents are unknown and can lead to serious health effects. *References available upon request.*

Table 1: The toxins of hallucinogenic mushrooms

Toxin	Mechanism of action	Mushroom	Symptoms
Ibotenic acid	NMDA glutamate agonist	<i>Amanita muscaria</i> <i>Amanita pantherina</i> <i>Amanita gemmata</i>	Hallucinations Agitation Dizziness Seizures GI upset
Muscimol	GABA A agonist		CNS depression
Psilocybin	5-HT2 agonist	<i>Psilocybe cubnesis</i> <i>Psilocybe cyanescens</i>	Hallucinations GI upset Ataxia, hyperkinesia Tachycardia, lightheadedness, mydriasis

