

Unusual etiology of gastrointestinal symptoms: the case of jojoba butter

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Background: Jojoba butter is cyanogenic and has gained attention among herbal supplement consumers due to claims that it may aid in weight loss. Jojoba butter is extracted from the seeds of jojoba shrubs found in the Sonoran Desert. The seeds have long been recognized as inedible, however clinical symptoms following ingestion are not well documented.

Case report: This report describes a patient who developed restlessness and gastrointestinal complaints following ingestion of homemade jojoba seed butter. The patient's presentation following ingestion is discussed, as well as effective workup and treatment. In our case, the patient was monitored and received fluid resuscitation, lorazepam, and diphenhydramine for symptomatic therapy.

Conclusion: This case describes the gastrointestinal sequela and effective management following ingestion of jojoba butter.

Keywords: jojoba butter, simmondsin, cyanoglycoside, anorectic

Introduction

The use of herbal and dietary supplements continues to grow in popularity as individuals seek alternative methods to aid in weight loss and dieting. Although there is lack of sufficient research regarding the safety and efficacy of numerous supplements, consumers often believe that these products are harmless because they are “natural”.¹ Jojoba (*Simmondsia chinensis*) has recently gained recognition among herbal supplement consumers due to claims that it may aid in weight loss. Simmondsin, a cyanoglycoside found in the meal extracted from jojoba seeds, has been shown to be toxic in animal studies.² However, a toxidrome following ingestion of jojoba seeds has not been previously described in humans.

Case presentation

A 62-year-old man presented to the emergency department complaining of worsening diarrhea, body aches, restlessness, dry eyes, and thirst that began immediately after consuming homemade jojoba seed butter. The patient had handpicked jojoba seeds from local shrubs and, with a clean grain mill, used them to make butter. He then consumed 5 tablespoons of the freshly made butter in a single sitting at 1700 and denied any coingestion. He claims to have made and used jojoba butter in the past, but never consumed this large a quantity in such a short period of time. He reported

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experiencing symptoms immediately after ingesting the seed butter. His condition gradually worsened over the course of the evening, and he was triaged in our emergency department at 0600, the following morning.

At presentation, he appeared anxious but was alert and oriented. He was tachypneic, breathing 24 respirations per minute; otherwise he was afebrile and all other vitals were within reference range. During interview, he reported being in his usual state of good health until he consumed the jojoba seed butter. He denied any associated pain, emesis, vision changes, auditory or visual hallucinations, suicidal or homicidal ideation, or any symptoms prior to ingestion. The patient denied any past medical problems, and he did not take any prescription medications or over the counter supplements. On examination, the patient was found to be diaphoretic and tremulous with dry mucous membranes. Neurologic, cardiovascular, and abdominal examinations were otherwise non-remarkable.

Laboratory work consisting of a venous blood gas, complete blood count, lactate, creatine kinase, lipase, comprehensive metabolic panel, and thyroid stimulating hormone were all within normal limits. The patient's electrocardiogram showed no evidence of ischemia or arrhythmia. He was treated symptomatically with a bolus of normal saline, lorazepam, and diphenhydramine. He was observed in the emergency department and discharged later that day after his symptoms resolved.

Conclusions

Jojoba seed butter or jojoba meal is produced by extraction of the oil and retention of the seed meal, and it is generally designed for cosmetic purposes.^{3,4} The extracted meal has held limited utility because it has long been recognized to contain anti-nutritional constituents,⁵ including the cyanoglycoside simmondsin which has been shown to be toxic in various animal studies.^{2,5} It has been postulated that the toxic effects of jojoba meal may be related to the formation of cyanide in an unknown digestive process. Although this theory cannot be excluded, the formation of cyanide as a by-product of digestion has yet to be demonstrated in animal studies⁶ and the adverse effects of simmondsin are largely believed to be related to its anorectic effects.⁶⁻⁷

Although the anorectic mechanism of the glycoside action is not fully understood, studies have shown that there appears to be indirect action on cholecystokinin (CCK) receptors.^{6,8,9} CCK has paracrine action on vagal afferent fibers from the gastrointestinal tract leading to gastric acid secretion, pancreatic enzyme stimulation, and decreased gastric motility,

as well as various systemic effects.¹⁰ A previous case report regarding a patient with a CCK-releasing neuroendocrine tumor described a symptomology of diarrhea, severe weight loss, gallstones, and peptic ulcer disease.¹¹ Oral CCK agonists have been studied on human subjects, and reported side effects have included diarrhea, nausea, emesis, and headaches.¹⁰

While jojoba meal has largely been ignored as an edible food, it has recently gained attention because of its appetite suppressing effects. Simmondsin can be found as an active ingredient in a multitude of weight loss supplements that have not received acknowledgment from the US Food and Drug Administration, and simmondsin holds various weight loss patents. Since it is often sold as a supplement, there is very little regulation of the purity or quantity of simmondsin within products claiming to contain the extract. Furthermore, home extraction and preparation of the meal is riddled with imperfections, including discrepancies in simmondsin quantity based on geographic location and extraction methodology.¹² Simmondsin intoxication may have a subtle presentation. A high index of suspicion based on clinical history and a strong understanding of similar toxic syndromes are often the best devices in an emergency medicine physician's toolbox.

Consent

The patient discussed in this case report provided written consent for this report to be published.

Disclosure

The authors report no conflicts of interest in this work.

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