

VIEWPOINT

Hallucinogenic Himalayan honey: the next poison?

*Miel alucinógena del Himalaya: ¿la próxima intoxicación?*Antonio Dueñas-Laita¹, José L. Pérez-Castrillón², Antonio Dueñas-Ruiz³

The Spanish Agency for Food Safety and Nutrition published a note in 2019 informing about the commercialization in Spain via Internet of rhododendron honey from the Himalayas (sacred honey from Nepal)¹. Approximately the price in origin (Nepal) is 15 dollars for half a liter while 1 ml of an oral single-dose packaged in Spain costs 302.50 euros. In other places of the internet, its price varies between 75 and 125 euros for a package of 100 to 250 g, when it is of Turkish origin. The Agency's note referred to its grayanotoxin (GTX) content and that it was advertised as a product with psychoactive properties. This issue was discussed in the Standing Committee of the European Commission in March 2019 and it was agreed that the European Food Safety Authority should carry out an assessment of the toxicological risks associated with oral consumption, recalling that Nepal was not authorised to export it to Europe¹. At the time of writing, no such report has been published, but there are more than 90 publications referring to acute overdose toxicity from consumption for recreational, therapeutic or even autolytic purposes².

The honey from the Himalayas, better known as mad honey (English) or deli bal (Turkish), is produced by giant bees that obtain nectar from the rhododendron flower, specifically *Rhododendron ponticum* and *luteum*. It thrives in Turkey (east of the Black Sea), Nepal (Himalayas) and many other parts of the world. The toxic active ingredient is GTX, formerly called andromedotoxin, and 25 different isoforms have been isolated, with GTX-I, GTX-II and GTX-III being the most toxic. Of these, the one found in the highest concentration in *Rhododendron ponticum* and *luteum* is GTX-III^{3,4}. Some forms of GTX can be quantified in blood in some laboratories³. The amount of GTX in the plant varies dramatically depending on multiple factors, and honey of Turkish and Nepalese origin may be the richest in this substance. This honey is sought after for recreational purposes because of its hallucinogenic and aphrodisiac effect, although it is also said to have beneficial effects on diabetes or hypertension, among others^{3,4}.

GTX acts on Na⁺ channels, affecting heart muscle

and electrical conduction and it also has an effect on M2⁵ muscle receptors. Its acute toxicity is well described; there is even a systematic review of 1199 cases⁶. Once they are taken orally in overdose, between 0.5 and 3 hours later, the triad of marked hypotension and sinus bradycardia appears in 95% of cases, as well as arrhythmias, and the picture can last up to two days⁵⁻⁷. Table 1 shows the main clinical manifestations of GTX-rich honey overdose. The main clinical manifestations of GTX-rich honey overdose are shown in Table 1. Exceptionally, acute coronary syndrome⁸, Kuonis syndrome, hypothermia and acute hepatitis have also been described^{5,6}.

This treatment is symptomatic and includes the monitoring and observation, volume contribution and, if necessary, inotropes for hypotension. Bradycardia is managed with atropine or temporary pacemaker. Since these are conditions that limit themselves in time, the prognosis is good, with some exceptions⁵.

This first series published in an indexed magazine appeared in 1991⁹, but the intoxication had been previously described, among others, by the historian and military man Xenophon during an expedition of ten

Table 1. Clinical manifestations of Grayanotoxin-rich honey overdose^{5-8,9}

Nausea and vomiting
Sweating
Dizziness
Altered consciousness
Syncope
Blurred vision or diplopia
Severe hypotension
Intense Bradycardia
Arrhythmias
– Bradycardias
– Nodal rhythm
– Wolff-Parkinson-White Syndrome
– 2nd degree atrioventricular block
– Complete atrioventricular block
– Ventricular Tachycardia
– Asystole

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thousand Greek soldiers, led by Cyrus the Younger, in the Black Sea area in 401 C¹⁰. As of today, there are no documented cases in Spain, although it is very difficult to know if there really have been any, as relating a case of severe hypotension and bradycardia to previous consumption of honey is complicated. The spread of this tempting product and the ease of acquiring it through websites in various countries will however mean that European emergency physicians will begin to diagnose cases sooner rather than later, as has already happened in Germany¹¹.

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