

HISTORY OF MEDICINE ΙΣΤΟΡΙΑ ΤΗΣ ΙΑΤΡΙΚΗΣ

“Mad honey” in medicine from antiquity to the present day

Since antiquity, toxic honey has been deliberately used by man for various purposes, varying from warfare applications to medicinal uses. These uses applied mainly to the “mad” honey of the Pontus region on the southern coast of the Black Sea, in present-day Turkey, which is derived from the nectar of *Rhododendron ponticum* and *Rhododendron luteum*. This is a review of available data concerning its toxicity and its medicinal properties collected from ancient Greek and Latin literature, travelers’ log books, ethnographic archives and researches. A medical literature search was also performed in PubMed using the keywords “mad honey” and “*Rhododendron* honey”. “Mad” honey poisoning, although potentially lethal, is usually not severe. A plethora of “mad” honey medicinal uses have been recorded, some of which are preserved unaltered since antiquity. Consumed in small quantities “mad” honey could be beneficial and its possible medicinal qualities are worthy of further investigation. However, it is generally agreed that at present its medicinal properties are not well understood and its use should be avoided.

Since antiquity, toxic honey has been recognized and deliberately used by man for various purposes. One of these was its use in warfare as a weapon against the unsuspecting enemy, who after having consumed it, lost its ability to fight.^{1,2} Consumed in moderate quantities, however, toxic honey was considered to have several beneficial medicinal properties. These beliefs applied mainly to the “mad” honey of the Pontus region on the southern coast of the Black Sea, in present-day Turkey. Pontus mad honey is the most famous toxic variety, mentioned in several ancient sources. Ancient Greeks called it “maenomenon” while contemporary Greeks, in the Pontic dialect, call it “zanton” or “palalon” and in Turkish it is known as “deli”, all meaning “mad”. It is now known that its effects are due to the grayanotoxin (andromedotoxin, acetylandromedol, rhodotoxin) that is present in the nectar of *Rhododendron ponticum* and *Rhododendron luteum*.^{3,4}

Although severe cases of toxicity may lead to life-threatening cardiac complications, the usual symptoms of mad honey toxicity are dizziness, weakness, excessive perspiration, hypersalivation, nausea, vomiting and paresthesia.^{5,6} The symptoms of moderate poisoning are well known to the local inhabitants of Pontus who do not usually seek medical help in such cases, preferring recovery at home.⁷ It was already well known at the time

that Xenophon (427–355 BC) first described the symptoms of mad honey poisoning⁸ that recovery usually occurs in the first 24 hours.^{9–11} Poisoning from mad honey, when severe, can be fatal if left untreated. No fatal cases have been reported since the medical definition of this form of poisoning in 1983.^{12–14} Two fatal cases, concerning Russian soldiers who consumed large quantities of honey, were documented in the period of World War I¹⁵ while a few other cases were recorded in the regions of Kastamonu and Kocaeli in Turkey in the early 1940s.¹⁶

The first report on the medicinal qualities of the mad honey of Pontus can be found in Pseudo-Aristotle who declares that “at Trapezus in Pontus honey from boxwood has a heavy scent; and they say that healthy men go mad, but that epileptics are cured by it immediately”.¹⁷ The same opinion can be found in Aelian (170–235 BC)¹⁸ and in *Geoponica*, a collection of ancient writings compiled in the 10th century.¹⁹ Even though Pseudo-Aristotle refers to honey from boxwood, the properties mentioned (“men go mad”) and the honey provenance (Trapezus in Pontus), both indicate the mad honey from *Rhododendron ponticum* and *Rhododendron luteum*. Dioscurides (40–90 AD), referring to mad honey produced in Heraclea of Pontus, mentions among other things its medicinal qualities: “rubbed on with *costum* it heals sunburn, and with salt it takes away

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H.V. Harissis,
G. Mavrofridis

Department of Surgery, School of
Medicine, University of Ioannina,
Ioannina, Greece

Το «τρελό μέλι» στην Ιατρική από
την αρχαιότητα έως σήμερα

Περίληψη στο τέλος του άρθρου

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bruises."²⁰ Pliny the Elder (23–79 AD) says that mad honey "taken in wine is a remedy for indispositions caused by eating fish"²¹ and "there is nothing better than this honey, mixed with costus, for softening the skin of females, or, combined with aloes, for the treatment of bruises".²²

There is no information about mad honey in Byzantine literature; it is only towards the end of the 17th century that the traveler de Tournefort, having visited Pontus, again airs the subject in his research on its botanical source.²³ Information about mad honey and its properties can be found anew at the end of the 19th century²⁴ and the beginning of the 20th century, when the Greek traveler Papamichalopoulos described how the monks of the Monastery of Soumela used to produce and consume mad honey, which he himself tasted.²⁵ Like the modern apiarists of Pontus, those of the last century knew the plants from which mad honey originated and they traded the specific honey accordingly.^{4,7,15,26–28}

Modern studies concerning the traditional use of mad honey mention its use as a remedy for gastrointestinal disorders such as gastritis, peptic ulcers, abdominal pain and indigestion.^{12,29,30–33} It has also been used for the treatment of hypertension,^{4,10,34,35} a practice that may be derived from the well-known fact that mad honey poisoning causes hypotension. It is believed that it reduces the risk of coronary heart disease.^{13,28,30} Colds and various types of viral infections are also treated with mad honey³⁶ while its use as a pain reliever and medication against arthritis is not rare.^{9,33,37} In general, it is considered to promote good health^{9,33} and to increase life expectancy.²⁸ Another use of mad honey concerns its efficacy in lowering the blood glucose and so it is recommended as a sweetener for patients with diabetes mellitus.^{6,37,38} Mad honey is also consumed by both men and women as a sexual stimulant^{4,12,13,30} and for enhancing sexual performance.^{11,14,37} Men have been reported to consume it for self-treatment of sexual dysfunction.^{11,37} According to a recent investigation of the main reasons for purchasing mad honey, the most frequent motive in all age groups was treatment of gastrointestinal disorders, followed by treatment of sexual disorders for both sexes in the age groups under 60 years, apart from men aged between 41–60 years for whom the most common motive for purchasing mad honey was sexual. For all groups aged over 60 years, blood glucose regulation was the second reason. Other reasons for purchasing mad honey was arthritis, diabetes, hypertension and other.³⁷

A quantity of between one teaspoonful and two table spoonfuls, either neat or diluted in milk²⁹ or in the form of sherbets²⁸ is usually recommended in traditional Pontus

medicine. However, cases of poisoning with a quantity of one teaspoonful (15 g) or even of 5 g are recorded.^{11,29,39,40} The severity of the poisoning depends on the quantity of honey consumed and the concentration of grayanotoxin. There have also been cases where only some family members displayed symptoms of poisoning, even though all family members had consumed equal quantities of mad honey.²⁹ The frequency of men shown in the records of emergencies from mad honey poisoning exceeds by far that of women; middle aged men comprise 61.9–90% of cases of mad honey poisoning, a fact probably due to its frequent use by this group for sexual disorders.^{9,10,11,30,37,40}

In ancient sources, both Dioscurides and Pliny the Elder mentioned the treatment of poisoning from mad honey of Pontus. Dioscurides recommended "eating rue and salt meat and drinking mead, taking these as often as they vomit"²⁰ while Pliny recommended as an antidote "old honied wine is good, mixed with the finest honey and rue; salt meats, also, taken repeatedly in small quantities, and as often brought up again"²² and "honey in which the bees have been stifled".²¹ In traditional medicine, various antidotes were in use; head wetting with warm or cold water^{41,16} or bathing in a river or the sea.¹⁶ In certain regions such as Zonguldak, the patient is showered and a mixture of ash with mud is put on his (her) head. Purgatives and vomiting are recommended, as well as drinking vinegar or warm beverages, and eating garlic, the white of egg or yogurt (salted or unsalted or as ayran).¹⁶ When the inhabitants of Pontus wanted to consume large amounts of mad honey (instead of regular honey), to protect themselves from poisoning they used to boil the honey either alone^{5,16,42} or mixed with hazelnuts, branches of fig trees, onion, sour apples, quinces, or milk.¹⁶ Storing the mad honey for long periods from 6–12 months up to several (3–5) years was another traditional method known to diminish the risk of poisoning.^{16,43} Combined consumption of mad honey with onions was believed to be protective against poisoning.^{43,44} Some apiarists of Pontus used to cut off the flowers of *Rhododendron ponticum* and *Rhododendron luteum* in early spring, in order to reduce the nectar collection from these plants by their bees.⁴⁴

It is of interesting that the efficacy of some of the traditional and ancient uses of mad honey has been confirmed by recent studies, and specifically its antiepileptic property mentioned by Pseudo-Aristotle,⁴⁵ its antihypertensive effect and its capacity to reduce blood glucose.³⁸ One recent study suggested that the antioxidant, antiradical and antimicrobial activity of *Rhododendron* honeys may contribute to the treatment of various different illnesses such as cancer, coronary disease and inflammatory disorders, and also coun-

teract aging and other conditions.⁴⁶ It is generally agreed, however, that the medicinal properties of grayanotoxin are

not well understood and, for now, the use of grayanotoxin in complementary medicine should be avoided.⁴⁷

ΠΕΡΙΛΗΨΗ

Το «τρελό μέλι» στην Ιατρική από την αρχαιότητα έως σήμερα

Χ.Β. ΧΑΡΙΣΗΣ, Γ. ΜΑΥΡΟΦΡΥΔΗΣ

Χειρουργική Κλινική, Ιατρική Σχολή, Πανεπιστήμιο Ιωαννίνων, Ιωάννινα

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Από την αρχαιότητα, το τοξικό μέλι χρησιμοποιείται από τον άνθρωπο για διάφορους σκοπούς που κυμαίνονται από πολεμικούς έως θεραπευτικούς. Οι χρήσεις αυτές αφορούν κυρίως στο «τρελό» μέλι του Πόντου, που προέρχεται από το νέκταρ των φυτών *Rhododendron ponticum* και *Rhododendron luteum*. Με στόχο την εξέταση όλων των διαθέσιμων στοιχείων σχετικά με την τοξικότητα και τις θεραπευτικές του ιδιότητες, οι πληροφορίες αναφορικά με το «τρελό» μέλι συλλέχθηκαν από την αρχαία ελληνική και λατινική λογοτεχνία, τις ταξιδιωτικές διηγήσεις περιηγητών των προηγούμενων αιώνων, καθώς και από λαογραφικά αρχεία και μελέτες. Επί πλέον, έγινε ανασκόπηση της σύγχρονης ιατρικής βιβλιογραφίας χρησιμοποιώντας στο PubMed τις λέξεις-κλειδιά “mad honey” και “*Rhododendron honey*”. Η δηλητηρίαση από «τρελό» μέλι («τρελόμελο»), αν και δυνητικά θανατηφόρα, συνήθως δεν είναι σοβαρή. Υπάρχει μια πληθώρα παραδοσιακών θεραπευτικών χρήσεων του «τρελόμελου», μερικές από τις οποίες διατηρήθηκαν από την αρχαιότητα. Όταν το «τρελόμελο» καταναλώνεται σε μικρές ποσότητες, θα μπορούσε να είναι επωφελές και οι θεραπευτικές του ιδιότητες αξίζουν περαιτέρω έρευνας. Ωστόσο, η χρήση του για την ώρα θα πρέπει να αποφεύγεται.

Λέξεις ευρητηρίου: Δηλητηρίαση, Ροδόδενδρο, «Τρελό μέλι»

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Corresponding author:

H.V. Harissis, 64 Marikas Kotopouli street, GR-454 45 Ioannina, Greece
e-mail: harissis.h@gmail.com