



Culinary Concept

Introducing Dittany of Crete (*Origanum dictamnus* L.) to gastronomy: A new culinary concept for a traditionally used medicinal plant[☆]

Nikos Krigas^{a,*}, Diamanto Lazari^b, Eleni Maloupa^c, Maria Stikoudi^c

^aDepartment of Botany, School of Biology, Aristotle University of Thessaloniki, GR-54124, Greece

^bDepartment of Pharmacognosy, School of Pharmacy, Aristotle University of Thessaloniki, GR-54124, Greece

^cLaboratory of Conservation and Evaluation of Native and Floricultural Species-Balkan Botanic Garden of Kroussia, Institute of Genetics, Breeding and Phylogenetic Resources, Hellenic Agricultural Organisation Demeter, GR-57001 Themi, Thessaloniki, Greece

Received 16 December 2014; accepted 19 February 2015

Available online 26 February 2015

Abstract

A new culinary concept has been developed to praise ancient and modern uses of exclusive Mediterranean ingredients, focusing the world's attention in a region: Crete, Greece. We reviewed the vernacular names, medicinal properties and traditional uses of the Dittany of Crete (local endemic of the island of Crete, Greece) and we explored the possibility of cooking different dishes. We developed a novel concept which resulted in the culinary use of the infusion, the leaves and/or inflorescences of this perennial herb in modern sweet and savoury dishes of Mediterranean cuisine (five case-studies are described and illustrated). Our study expands the use of a unique and beneficial herb (*Origanum dictamnus*) rendering it as a new spicy ingredient suitable for gastronomic experimentation. The promotion of new uses for this traditionally used medicinal plant (currently cultivated only at small scale on the island of Crete) (i) offers new ingredients to international gastronomy, (ii) may prove to be beneficial for local economies, and (iii) supports sustainable plant exploitation.

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Keywords: Infusion; Mediterranean dishes; Lamiaceae; Endemic; Threatened

Introduction

International gastronomy and food science are in search for appealing ingredients, new food products or new technology and methods for dish preparation. Different algae (blue, green, red algae) and super-foods (Morris, 2012) have entered the international cuisine due to their nutritional value and have found many applications which reflect an expanding market for related products (e.g. moleculargastronomynetwork.com, algacompetition.com). Apart from delivering new original flavours and sensations, this new trend is often triggered by or

associated with ethnobotanical background, health claims and beneficial properties of new ingredients (e.g. Atala, 2012 and Renna and Gonnella, 2012). Furthermore, flavouring of foods using natural herbs and spices is a preferred approach to reduce salt use in dish preparation and to increase consumer acceptability and appreciation (Ghawi et al., 2014).

Dittany of Crete (*Origanum dictamnus* L.) is a unique aromatic cushion-forming perennial plant of Lamiaceae family (Mint family) which is a local endemic to the Island of Crete, Greece (Fig. 1). In the wild it grows exclusively as a rock-dweller in crevices and rocky habitats, generally from 300 m or more commonly from 500 m to 1800 m above sea level (Turland, 1995). Its above ground parts (non-woody parts) have been traditionally used in Greece as a comminuted herbal substance for preparation of an infusion (locally called 'vrastari' in Crete, Greece, from the verb *vrazo*=to boil) or tincture by decoction for cutaneous use; in its native range, it is occasionally chewed crude against gingivitis cough and cold (Skoula and Kamenopoulos, 1997). Concerning its culinary

*Corresponding author. Tel.: +30 2310998316.

E-mail address: nkrigas@bio.auth.gr (N. Krigas).

Peer review under responsibility of AZTI-Tecnalia.



Production and hosting by Elsevier



Fig. 1. Dittany of Crete (*Origanum dictamnus* L.) in the wild, growing exclusively as a rock-dweller in crevices and rocky habitats (Photo: E. Kalpoutzakis).

use, inflorescences and leaves have been added sometimes to sauces, salads and vermouth. Dried leaves and extracts have also been reportedly used in bitters, liqueurs and fish sauces (The Herb Society of America, 2005 and Chishti et al., 2013). However, its culinary use is limited (The Herb Society of America, 2005 and Chishti et al., 2013).

In our study we review current literature for the Dittany of Crete (*O. dictamnus*) from an ethnobotanical point of view and we explore its potential for culinary use in the Mediterranean cuisine, in an attempt to exploit the traditionally known beneficial effects of this plant (EMA/HMPC, 2013). Our study expands the use of a unique and beneficial herb (*O. dictamnus*) rendering it as a new spicy ingredient suitable for gastronomic experimentation and study.

Material and methods

We explored the vernacular names of the Dittany of Crete in the Greek language in an attempt to document its long-standing traditional use and to explore its long-standing traditional use in respect to safety rules for human consumption as a food.

We conducted extensive searches in the Scopus and Google Scholar bibliographic databases to find previously published studies indicating uses for the Dittany of Crete. We consulted the scientific literature to find the medicinal properties which are attributed to the Dittany of Crete and to document whether consolidated indications exist according to the requirements of the European Medicines Agency (<http://www.ema.europa.eu/ema/>).

We reviewed literature sources (Phitos et al., 1995, 2009 and Bilz et al., 2011) to define whether there is some protection status designated for the exploitation of wild populations and if an extinction risk is assigned to the wild populations of this local endemic plant of Crete (Greece). We also reviewed the history of its commercial cultivation in Greece.

By testing several ingredients, we explored the possibility of cooking different dishes (appetisers, salads, main dishes, desserts) with Dittany of Crete, using fresh or dried material in different quantities and their infusions; this procedure resulted in the culinary concept presented in this study.

To assess initially the quality, odour, taste and the overall sensory properties of the case-studies developed using different quantities of plant material, we formulated a non-official tasting panel. This first round sensory evaluation panel included a local chef, a food-editor, two everyday cooks and two adults with no previous gustative training (in total, 2 men and 4 women). The non-formal assessors were asked to taste freely from the samples presented (as much as or as often as they wanted) and to provide us with their comments during a long discussion with the authors. The first assessment included tasting of crude and chopped plant material, the second round included samples of infused plant material (for 10 persons, 30 g of plant material infused in 1.5 L of hot water for 4–5 min), while the third, fourth and fifth rounds were targeted to the prepared dishes using different quantities of Dittany of Crete during preparation (case-studies developed). All samples (crude plant material, infused plant material and prepared dishes), were presented to the panellists at room temperature under normal lighting conditions and the evaluation session was held in the foyer of the Laboratory of Conservation and Evaluation of Native and Floricultural Species (Thessaloniki, Greece). The case-studies developed were prepared before the session and were served to the panellists in the afternoon of the same day.

Results and discussion

Vernacular names suggesting ancient use

There is strong ancient mythological and historical context about the Dittany of Crete, resulting to several vernacular Greek names which reflect its long-standing traditional use by humans. In total, we detected at least 10 vernacular names related to the Dittany of Crete.

Archaeobotanical evidence (seeds) of *O. dictamnus* were found during excavations in the Knossos palace near Heraklion, Crete; these date back to Minoan times (27th–15th century B.C.), suggesting a really ancient use of this plant (Diapoulis, 1949).

Originally, the plant was dedicated to the ancient Cretan goddess Diktyinna, thus elucidating its ancient common name Dittany (*Dictamos* in Greek). However, *Dictamos* may also derive from *Dicti*, the name of the Cretan mountain where Zeus (Jupiter) was raised up by the goat Amaltheia and the Greek word *thamnos*=shrub (Skrubis, 1979 and Skoula and Kamenopoulos, 1997).

The power of this plant has been praised by numerous writers from antiquity up to the fourth century A.D. (EMA/HMPC, 2013). Hippocrates (5th–4th century B.C.) used it to cure gastric complaints, tuberculosis and in poultices on wounds. Aristotle (*Historia Animalia* 9.16.1), and later Theophrastus (4th–3rd century B.C.) (Thanos, 1994), Dioscorides (1st century A.D.) (Berendes, 1902), Galen and Plutarch (1st–2nd century A.D.) (Lioliou et al., 2010), all state that wild goats of Mount Ida (Crete) when struck by poisoned arrows used to eat shoots of *O. dictamnus* to heal their wounds. This tradition passed to Romans and famous Latin writers such as

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