EuroSciCon

7th Edition of International Conference on

Pharmacognosy and Medicinal Plants

March 11-12, 2019
London, UK

Eleni Stavraki et al., Am J Ethnomed 2019, Volume 6
DOI: 10.21767/2348-9502-C1-008

Chemical composition and biological activities on selected edible mushrooms – (truffles of *Tuber* sps. and *Ganoderma lucidum*) growing wild in Greece

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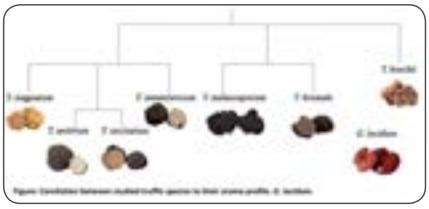
In the framework of our phytochemical studies on edible mushrooms, we report herein, the chemical analyses of selected species of truffles (*Tuber aestivum, T. melanosporum, T. mesentericum, T. magnatum, T. borchii, T. brumale* and *T. uncinatum* and *Ganoderma lucidum*) growing wild in North Greece (all truffles) and Lesvos island respectively. Truffles are the fruiting bodies of mychorrhizal filamentous fungi well-known and valuable as food, since antiquity regarding to their unique taste and peculiar aroma. *G. lucidum* is the most appreciated and widely used medicinal mushroom in Asia, since last 2400 years. The aim of this study was to qualify and quantify their aroma profile by Headspace Solid-Phase Micro extraction (HS-SPME) on fresh, frozen and dried samples, comparing them with five commercial truffle olive oils of the Greek market. Isolation procedures through different extractions and analytical techniques were further evaluated and the isolated metabolites were structurally determined by modern spectral means. All studied samples were compared regarding their total phenolic content by Folin Ciocalteu. Their antioxidant and *in vitro* enzyme inhibitory properties were determined using free radical scavenging (DPPH, ABTS), reducing power (FRAP, CUPRAC), phosphomolybdenum and ferrous ion chelating assays, while they were also evaluated against cholinesterases, α-amylase and α-glucosidase enzymes. Finally, their antimicrobial activity was evaluated against a panel of human pathogenic bacteria and fungi showing an interesting profile.



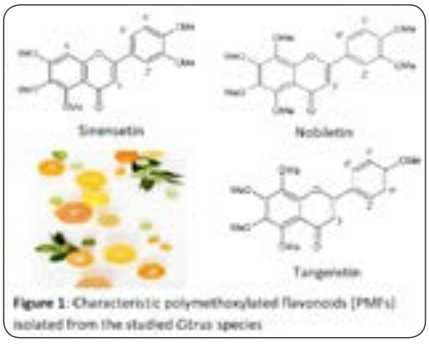


Figure 1: Characteristic polymethoxylated flavonoids (PMFs) isolated from the studied *Citrus* species

Recent Publications

1. Tufa T, Damianakos H, Zengin G, Graikou K and Chinou I (2018) Antioxidant and enzyme inhibitory activities of disodium rabdosiin isolated from *Alkanna sfikasiana* Tan, Vold and Strid. South African Journal of Botany 120:157-162.

2. Marini G, Graikou K, Zengin G, Karikas G A, Gupta M P and Chinou I (2018) Phytochemical analysis and biological evaluation of three selected *Cordia* species from Panama. Industrial Crops and Products 120:84-89.
3. Zengin G (2016) A study on *in vitro* enzyme inhibitory properties of *Asphodeline anatolica:* new sources of natural inhibitors for public health problems. Industrial Crops and Products 83:39-43.
4. Wasser S P (2005) Medicinal mushroom science: history, current status, future trends, and unsolved problems. International Journal of Medicinal Mushrooms 12(1):1-16.
5. Hall I P, Yun W and Amicucci A (2003) Cultivation of edible ectomycorrhizal mushrooms. Trends in Biotechnology 21(10):433-438.

Biography

Eleni Stavraki has graduated from the Faculty of Pharmacy, Comenius University of Bratislava. She has four years of working experience as a Pharmacist influenced her on phytochemistry and the value of herbal medicines. Therefore, she participated in the Master Program of the Division of Pharmacognosy and Chemistry of Natural Products, Dept. of Pharmacy, National and Kapodistrian University of Athens (GR) and devoted her research on medicinal mushrooms. In the framework of this study, she had the opportunity to learn phytochemical methods on the isolation, structural elucidation and further applications of bioactive natural products.