ICFC

International Conference on Food Contaminants

Challenges in chemical mixtures

Program and Abstract Book

ICFC 2015

APRIL

13th and 14th

Lisbon, Portugal

(P54) Poisoning by *Amanita phalloides* mushrooms – regarding three cases

Gonçalo Castanheira

Instituto Nacional de Medicina Legal e Ciências Forenses (INMLCF), Lisboa – Portugal (goncalo.castanheira@dcinml.mj.pt).

Objective: Demonstrate that *Amanita phalloides* is the most toxic species of wild known mushrooms, presenting taste and morphology such as other species. Their toxins, resistant to the culinary operations, are capable of producing non-specific symptoms 6 hours after ingestion, with liver and renal failure before 3 days.

Methodology/Results: The author present three cases of death by unintentional poisoning by Amanita phalloides mushrooms ingestion, whose post mortem where performed in the services of Forensic Pathology of the National Institute of Legal Medicine, IP, with hospitable internment in the first 24 hours, being two of them subjected to liver transplantation.

Conclusions: When liver damage is reversible, the recovery is slow and late, being the rare total cure. In fatal cases, death is the outcome of the liver or kidney, and being the taxes of morbidity-mortality high, hence the need to alert the community to the risk of consumption of wild mushrooms.

(P55) Potential noxious effects of *Mentha aquatica L.* on mitochondrial bioenergetics

F.M. Ferreira[*], O.R. Pereira[†,‡], S.M. Cardoso[‡], P.J. Oliveira[§], A.J.M. Moreno[¶]

[*]*Department of Environment, Agricultural College of Coimbra (ESAC/IPC), Coimbra, Portugal & Centre for Investigation and Agro Environmental and Biological Technologies (CITAB), Vila Real, Portugal*
[†]*DTDT, School of Health Sciences & CIMO, Polytechnic Institute of Bragança, Portugal;* [‡] *Department of Chemistry & QOPNA, University of Aveiro, Aveiro, Portugal;* [§]*Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal;* [¶]*Department of Life Sciences, University of Coimbra & IMAR, Coimbra, Portugal.* * Corresponding author: Department of Environment, Coimbra Higher School of Agriculture (ESAC), Bencanta, 3045-601 Coimbra, Portugal Phone: + 351 239 802 940; Fax: + 351 239 802 979 (fmlferreira@gmail.com).

Mentha aquatica (water mint) extracts are regularly used in food flavoring and pharmacology. In the present study, the possible effects of an ethanolic extract from leaves of *M. aquatica* L. on rat liver mitochondria bioenergetics were evaluated.

The plant extract (up to 25 μg.mg protein^{-1}) but not the vehicle, inhibited the mitochondrial oxidative system, as seen by a depression of respiration (state 3, respiratory control ratio (RCR), FCCP-stimulated respiration) and lower generation of the transmembrane electric potential using glutamate + malate or succinate as respiratory substrates. The depressing effects in oxidative phosphorylation can probably be related with the polyphenolic composition of the extract (mainly eriodictyol-7-*O*-rutinoside, luteolin-7-*O*-rutinoside, naringenin-7-*O*-rutinoside, hesperitin-7-*O*-rutinoside and rosmarinic acid), that can interact with membrane and change the inner mitochondrial membrane lipidic moiety. Despite decreasing the RCR, the presence of *M. aquatica* extract did not affect the mitochondrial phosphorylative capacity, as estimated by the ADP/O ratio. No significant increase in inner mitochondrial membrane permeability was observed and induction of mitochondrial permeability transition pore was not altered in the range of concentrations tested (up to 25 μg.mg protein^{-1}) either. For the

highest concentrations tested (25 µg.mg protein^{-1} or higher) the inhibition observed on the mitochondrial respiratory chain, as reflected by FCCP-stimulated respiration, revealed that *M. aquatica* ethanolic extract is toxic for mitochondrial bioenergetics. In conclusion, the present study suggests that a highly daily consumption of an ethanolic extract of *M. aquatica* leaves should be regarded as hazardous.

(P56) Toxicological evaluation and polyphenols characterization of *Pterospartum tridentatum* leaf extracts

Fernanda M. Ferreira[a, b*], Francisco P. Peixoto[b,c], Olívia R. Pereira[e], Lia T. Dinis[c,f], M. Rosário M. Domingues[g], Carlos M. Palmeira[h], and Susana M. Cardoso[d]

[a] Department of Environment, Coimbra Higher School of Agriculture (ESAC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal; [b] Centre for Investigation and Agro Environmental and Biological Technologies (CITAB) – Vila Real, Portugal; c Chemistry Department, University of Trás-os-Montes & Alto Douro, Vila Real, Portugal; [d] Chemistry Department, University of Aveiro, Portugal; [e] Department of Diagnostic and Therapeutic Technologies, School of Health Sciences & CIMO, Polytechnic Institute of Bragança, Bragança, Portugal; [f] Department of Biologic and Environmental Engineering (DEBA), University of Trás-os-Montes & Alto Douro, Vila Real, Portugal; [g] Department of Chemistry & QOPNA, University of Aveiro, Aveiro, Portugal; h Department of Life Sciences, Center for Neurosciences and Cell Biology of Coimbra, University of Coimbra, Portugal. * Corresponding author: Department of Environment, Coimbra Higher School of Agriculture (ESAC), Bencanta, 3045-601 Coimbra, Portugal. Phone: + 351 239 802 940; Fax: + 351 239 802 979 (fmlferreira@gmail.com).

Pterospartum tridentatum Willk. (prickled broom) is a common autochthonous plant in Portugal. Leaves and stems are normally used in cooking, to flavour rice, roast meat or hunting animals. Leaves are also used as a condiment in fresh salads and, despite of its traditional use, no toxicological evaluation has been performed.

P. tridentatum leaves aqueous extract ESI-MS spectrum revealed the presence of several luteolin and isorhamnetin derived phenolic compounds, which can be associated to the health benefits claimed for this plant species. Still, *P. tridentatum* leaves extract (up to 100 µg plant extract.mg^{-1} protein) stimulated state 4 and FCCP-stimulated liver mitochondria respiratory rates and inhibited the state 3 respiratory rate. Respiratory