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Discovering the Importance of Analytical Methodologies

A. Relva, E. M. Gaspar, M. Gomes da Silva, J. L. Capelo Martinez, R. Otero
REQUIMTE - Departamento de Química, CQFB, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 2829-516 Caparica, Portugal;
(emg@dq.fct.unl.pt)

Nowadays, analytical methodologies are essential in almost scientific research areas. Liquid Chromatography, Gas Chromatography, Mass Spectrometry and Atomic Absorption are used worldwide as important tools for many (research) purposes. In our research line, Analytical and Bioorganic Chemistry, MALDI-TOF-MS is being used to study proteins involved in human health problems, Atomic Absorption Spectrometry in metal environmental control, specially mercury and arsenic, two of the most dangerous pollutants, GC-derived techniques are being used to study the metabolites excreted by cancer cells, potential bio-markers of cancer; also, the hopanoid composition of sediments from miocene lower Tagus basin is being study to access the fate of spilled petroleum. GC-MS is currently being used for pesticide quantification in honeys and HPLC for antibiotics determination in drinking waters and enantio-GC analysis has being used to monitor enzymatic reactions in organic and supercritical media. GC x GC-TOF-MS is being used, in a collaborative program, to study the host tree selection by herbivore insects and creosote volatiles in environmental samples.

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Beefsteak fungus *Fistulina hepatica*: phenolic compounds and organic acids contents and antioxidative properties

Bárbara Ribeiro^a, Patrícia Valentão^a, Paula Baptista^b, Rosa M. Seabra^a, Paula B. Andrade^{a,*}

^aREQUIMTE/ Serviço de Farmacognosia, Faculdade de Farmácia, Universidade do Porto, R. Aníbal Cunha, 164, 4050-047, Portugal ^bCIMO/ESAB, Quinta de Sta Apolónia, Apartado 1172, 5301-855 Bragança, Portugal
pandrade@ff.up.pt

Fistulina hepatica mushroom, commonly known as beefsteak fungus, usually is a saprobic and sometimes a parasitic fungus that lives on the wood of hardwoods (especially oaks and chestnut), during Summer and Autumn. As the common name suggests, beefsteak fungus is remarkably similar in appearance to raw meat. In the past, it was often cooked and eaten as a substitute for meat. It is sold in several markets and can be eaten raw in salad or with a sauce of parsley and garlic.

Because of its weather conditions and flora diversity Trás-os-Montes (northeast of Portugal) is one of the European regions with the biggest mycological patrimony of wild mushrooms of considerable gastronomic relevance. Beyond the gastronomic importance, wild mushrooms also have a great economical value in this region and its harvest constitutes a way of subsistence for the local residents. The high consumption of this edible wild-growing mushroom demands a better knowledge of their chemical composition and biological potential. So, this work was developed in order to identify and quantify the phenolic compounds of the beefsteak fungus (*F. hepatica*) collected in Trás-os-Montes and to evaluate its antioxidant capacity.

The phenolic profile was determined by HPLC/DAD and revealed to be composed by five phenolic compounds: caffeic, *p*-coumaric and ellagic acids, hyperoside and quercetin. The quantification of the identified compounds showed that ellagic acid was the main compound in this species. Beefsteak fungus was also investigated for its capacity to act as a scavenger of DPPH[•] radical and reactive oxygen species (superoxide radical, hydroxyl radical and hypochlorous acid). Good results were obtained against DPPH and superoxide radicals and hypochlorous acid but a prooxidant effect was observed for hydroxyl radical.

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