B037 Identification of phenolic compounds in apple wastes

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The phenolic composition of wastes proceeding from the apple juice industry were studied to give a new usage to this residues as a potencial source of natural antioxidants. Phenolic compounds found in this residues have the structural requirements of free radical scavengers and have potential as food antioxidants (1,2).

An apple residue dry extract produced by Euromed S.A. (Mollet del Vallés, Spain) was evaluated. The extract was cleaned by a liquid-liquid extraction followed by a chromatographic process using Sephadex LH-20. The different fractions were monitored by thin layer chromatography performed in a mixture of ethyl acetate / water / acetic acid and visualyzed under UV (254 and 360 nm). The similar fractions were joined to gave nine final fractions. Liquid chromatography coupled to ionspray mass spectrometry in tandem mode (LC-MS/MS) with negative ion detection was used to identify a variety of phenolic compounds. LC was performed with an Agilent series 1100 separation module equipped with a PDA detector. An API 3000 triple quadrupole mass spectrometer (Applied Biosystems) equipped with a Turbolonspray source was used. A C_{18} Luna (Phenomenex) column 50 x 2.1 mm i.d. 3.5 µm particle size was employed in a linear gradient profile with water and acetonitrile both containing 0.1% formic acid. Positive identification of a given compound was performed on the basis of their retention time and mass spectra in product ion scan or MRM (multiple reaction monitoring) mode compared with those of a standard. In this way, caftaric, chlorogenic, *p*-coumaric and ascorbic acid, catechin and their dimers (procyanidins), quercetin, quercetin-3-rutinoside, quercetin-3-arabinoside, quercetin-3-galactoside, quercetin-3-glucoside, quercetin-3-rhamnoside, kaempferol, kaempferol-3-glucoside, kaempferol-3-rhamnoside, mircetin-3-glucoside, phloridzin and phloretin xyloglucoside were present in apple waste.

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B038 The occurences of petasine in the leaves of *Petasites paradoxus*

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The sesquiterpene esters petasine, neopetasine and isopetasine are the active principles of *Petasites hybridus* G., M. et Sch. (butter bur, Asteraceae), petasine chemovariety, and may be used in phytopharmaceutical preparations for their spasmolytic effects on the smooth musculature and pain relieving activity in the case of migraine (1,2). These compounds are present in the rhizomes and in lower concentrations in the leaves (3). Recently efforts have been made to use the leaves instead of the rhizome because they are more easier to produce and harvest when the plants are grown in fields (4).

P. paradoxus (Retz.) Baumg. is a further species of the genus *Petasites* growing in Central Europe. It can be differentiated from *P. hybridus* by the shape of the leaves and the structure of the rhizome. *P. paradoxus* occurs in the lime stone Alps predominately on moist lime stone debris. Plant material of this species has been collected in summer 2000 and 2001 in Upper Austria and Styria respectively. The plant parts (leaves, leaf stalks and rhizomes) were extracted with dichloromethane and the extracts were analysed by GC/MS on a nonpolar column (5).

In the leaf extracts of plants from both origins petasine was the main compound followed by neopetasine and isopetasine. Together they made up more than 50-60 % of the fraction extracted. The leaf stalks or the rhizomes did not contain or were very low in these sesquiterpenes. The rhizomes however contained at least three further, not identified sesquiterpenes.

As the concentrations of the petasines in the leaves of *P. paradoxus* were in the same range as in the leaves of *P. hybridus*, leaves of *P. paradoxus* might be an alternative source for the petasines.

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