

Title: Phenolic profile of fruit industry byproducts determined by LC-DAD-MS/MS

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Abstract: The bioconversion of fruit by-products into new functional and clean label ingredients/additives represents a sustainable approach with great potential of application for the food sector.

The aim of this work was the exhaustive characterization of different extracts yielded from by-products of orange and lemon juice extraction (mix of peel, pomace and seeds) by the identification and quantification of the polyphenols recognized by their antioxidant properties and so their potential health benefits.

Ethanol extracts were characterized by liquid chromatography coupled to mass spectrometry (LC-MS/MS). Separation was performed on a Kinetex® EVO C18 100 Å (150 × 3mm, 5µm) column using water and methanol acidified with 0.1% formic acid as mobile phase. Liquid chromatography with diode array detector (LC-DAD) was used for the quantification of the main polyphenols.

Orange by-product was that with a high number of polyphenols, while lemon extract was that with high concentrations. The main compounds present in orange by-product were Naringenin-7-O-rutinoside, Hesperetin-7-O-rutinoside, Isosakuranetin-7-O-rutinoside. Lemon extract was characterized by the presence of Apigenin-6,8-di-C-glucoside, Eriodyctiol-O-rutinoside, Hesperetin-7-O-rutinoside. The polyphenolic profile of the by-products was similar to those described by other authors for the respective fruit juices, but the concentration could be up to 10-fold higher according to the variety of the fruit [1, 2]. The results highlight that the origin of the extract affects its composition and therefore its chemical characterization is mandatory for food application. These fruits by-products may be a low-cost source of polyphenols that can be used as food ingredients/additives minimizing their environmental impact.

References:

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