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New biophenols in olive mill wastewaters

S.M. Cardoso^{*1,2}, S.I. Falcão², A.M. Peres^{2,3}, M.R.M. Domingues⁴

¹CERNAS - Escola Superior Agrária, Instituto Politécnico de Coimbra, Portugal,

²CIMO - Escola Superior Agrária, Instituto Politécnico de Bragança, Portugal,

³LSRE - Escola Superior Agrária, Instituto Politécnico de Bragança, Portugal,

⁴Centro de Espectrometria de Massa, Departamento de Química, Universidade de Aveiro, Portugal

Olive mill wastewaters (OMW) have been attracting the attention of food and pharmaceutical industries, as it is a potential source of biophenols with a wide range of biological activities. This effluent produced in the olive oil industry contains approximately half of the total phenolic compounds of the olive fruit and it is currently exploited for industrial extraction of hydroxytyrosol [1]. Still, the phenolic composition of OMW is extremely complex, and many compounds are yet unidentified. In this context, the identification of unknown phenolic compounds can encourage the search of new bioactive compounds in OMW and contribute to further valorize this waste.

In the present work, six new phenolic compounds were identified in Portuguese olive mill wastewaters. The phenolic extracts of OMW were obtained by methanol and were fractionated on Sep Pack C18 cartridges, by elution of the cartridges with 50% (v/v) methanol. The analysis of the purified fractions by electrospray mass spectrometry in the negative mode showed high relative abundant $[M-H]^-$ ions at m/z 539 and m/z 523, corresponding respectively to oleuropein and ligstroside isomers that contain the glucose unit linked to its hydroxytyrosol moiety. Glucoside derivatives of these compounds were also found in the two OMW samples. In particular, the fragmentation pathway of the $[M-H]^-$ ion at m/z 863 demonstrated the presence of a diglucoside derivative of the oleuropein isomer, while those of the ions at m/z 685 and m/z 847 were consistent with mono- and a di-glucosides of the ligstroside isomer, respectively. Moreover, the structure of an elenoic derivative of the ion at m/z 685 was also elucidated. Studies regarding the abundance and the biological activities of these compounds are now required to determine their possible industrial exploitation.

[1] Agallias A., Magiatis P., Skaltsounis A.-P., Mikros E., Tzarbopoulos A., Gikas E., Spanos I., Manios T. (2007). *J. Agric. Food Chem.* 55: 2671-2676.

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