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Insights into olive mill wastewaters phenolics

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Olive mill wastewaters (OMW) have high contents of phenolic compounds, which possess a wide range of biological activities. Therefore, OMW are regarded as a potent source of biophenols for food and pharmaceutical industries. Important biophenols occurring in OMW include tyrosol, oleuropein and hydroxytyrosol, with the latter being commercially exploited as a novel ingredient with a broad use in dietary supplements, functional foods and natural cosmetics [1,2]. Nevertheless, the phenolic profile of OMW is extremely complex and many compounds remain unknown. The elucidation of new phenolic compounds in this matrix is an important task to encourage the search of more bioactive compounds. Indeed, hydroxytyrosyl acyclodihydroelenolate and p-coumaroyl-6'- secologanoside were recently identified in OMW and proved to have greater antioxidant scavenging activity than hydroxytyrosol and oleuropein [3].

The present study evaluates the recovery of some biophenols from three Portuguese OMW. For that an ethyl acetate liquid-liquid extraction procedure, which has been previously optimized for hydroxytyrosol extraction [4], has been used. On the other hand, this work also contributes to the knowledge of OMW phenolic composition, through the elucidation of major phenolic constituents in purified methanol (PME) or aqueous acetone extracts (PAAE).

Data showed that the ethyl acetate extracts mostly contained hydroxytyrosl, although its content was much variable for the three OMW samples (0.25 – 1.91 g L^{-1}). Oleuropein, tyrosol and luteolin-7-*O*-glucoside were found in the range of 0.02 – 0.23 g L^{-1}, 0.08 – 0.35 g L^{-1} and 0.3 – 0.75 g L^{-1}, respectively. New phenolic compounds identified in PME comprised oleuropein and ligstroside isomers which contain the glucose unit linked to the aromatic moiety, as well as some di-glucoside derivatives of those two compounds. In addition, polymeric compounds derived from ligstroside glucoside isomer or composed of oleuropein monomers were identified as major components of the PAAE. Future studies focusing the abundance of these new phenolic compounds in OMW, as well as their bioactivities, are now needed for determining their possible industrial exploitation.

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