HPLC method for the quantification of phenolic acids, phenolic aldehydes, coumarins and furanic derivatives in different kinds of toasted wood used for the ageing of brandies

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A simple, rapid and accurate HPLC method allowing the quantification of phenolic acids, phenolic aldehydes, coumarins and furanic derivatives in different kinds of toasted wood used in the ageing of wine brandies was developed and validated. The validated method presents good linearity, low limits of detection and quantification (LOD ranging between 0.03 µg L⁻¹ for umbelliferone and 1.10 mg L⁻¹ for ellagic acid, and LOQ ranging between 0.09 µg L⁻¹ for umbelliferone and 3.66 mg L⁻¹ for ellagic acid), high sensitivity, good repeatability (relative standard deviations ranging between 0.25% and 2.21%) and suitable recovery (mean values higher than 90% for all the concentrations added and compounds, except for vanillic acid). It can therefore be of a great interest for research studies and for quality control in routine analyses requested by the brandy producers, cooperers and technicians, as a tool to know the low molecular weight composition of the toasted wood. The analysis of four different kinds of toasted wood (chestnut, Portuguese oak, Limousin oak and American oak) demonstrates the applicability of the method on the characterization and differentiation of the wood botanical species.

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