BOOK OF ABSTRACTS International Student Conference KNOWLEDGE, TECHNOLOGY AND SOCIETY

AGH ISC

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Phenolic profile of Morus alba L. (mulberry) barrel staves

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One of the most important practices in the production of some alcoholic beverages is ageing process. During that process, important changes occur, which results in improved sensory characteristics. Traditionally, several woods such as oak and chestnut have been used for manufacturing barrels. Oak is by far the most common wood for ageing alcoholic beverages [1]. However, physical and mechanical properties of wood barrel, like porosity that influence the gas exchange during ageing, can in some cases promote fast polyphenol oxidation. That effect could be minimised using cheaper non-oak wood alternative to barrel products like shavings or staves [2].

The phenolic fraction was considered to be one of the most important parameters for evaluating quality in the choice of good alternative aging wood [3]. So far, mulberry heartwood hasn't been investigated too much in order to characterize polyphenols. However, according to some reports [3], polyphenols characteristic for mulberry wood were oxyresveratrol and its glycosides, as well as coumarin glycosides. Therefore, the aim of this research was to investigate phenolic profile of industrially dried mulberry staves originating from Serbia. Extract was prepared in 60% (v/v) ethanol, reproducing the condition of ageing process, and analysed by liquid chromatography coupled to diode-array detector and mass spectrometry. The results showed that mulberry was abundant in oxyresveratrol, taxifolin, (-)-catechin gallate, and phenolic acids, such as protocatechuic, p-hydroxybenzoic and ellagic acid. Also, fluorescence spectroscopy was used to characterize both wood sample and its extract. Characteristic emission spectrum of the wood sample showed the maximum at 420 nm, being blue shifted comparing with the maxima of most hard- and soft- wood species. This may be addressed to a relatively low content of lignin in mulberry wood. The extract showed a maximum characteristic for the major polyphenols of oxyresveratrol and coumarin type.

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