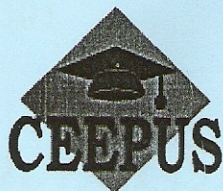


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Application of MALDI-TOF-MS for detection of pigments in wine

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Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) as a new valuable technique with a great impact on wine analysis [1], has been used for qualitative screening of anthocyanins and derived pigments in wine samples from Vranec, Merlot and Cabernet Sauvignon varieties. MALDI-TOF-MS analysis of the wine samples was performed after solid-phase extraction of the pigments using new Zip-Tip® (Millipore) pipette tips filled with C18 stationary phase. After the preconditioning and equilibration of the stationary phase, elution of the pigments was performed with solution of acetonitrile/0.1% trifluoroacetic acid (1:1). 2',4',6'-trihydroxyacetophenone (dissolved in acetonitrile/H₂O = 1/1) was used as a matrix for wine MALDI screening. MALDI-MS results confirmed the presence of glucoside, acetylglucoside and *p*-coumaroylglucoside derivatives of delphinidin, cyanidin, petunidin, peonidin and malvidin in the wine samples. Furthermore, pyranoanthocyanins formed by reactions of anthocyanins with pyruvic acid and acetaldehyde, as well as flavan-3-ol-anthocyanin adducts and ethyl-bridged pigments have been detected in the samples. Identification of the pigment peaks was performed on the basis of the targeted fragmentation of the ions of interest (their M⁺ signals) under positive ion mode.

Keywords: Wine, anthocyanins, pyranoanthocyanins, flavan-3-ol-anthocyanin adducts, ethyl-bridged pigments, MALDI-TOF-MS, 2',4',6'-trihydroxyacetophenone.

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