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IMPACT OF THE PRE-FERMENTATIVE ADDITION OF ENOLOGICAL ADJUVANTS ON THE DEVELOPMENT OF UTA IN WINES

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The presence of reasonable amount of 2-aminoacetophenone (AAP) in wines is regarded as the main cause of untypical ageing defect (UTA) described by aroma descriptors such as "acacia blossom", "furniture polish", "wet wool", "mothball", or "fusel alcohol" [1, 2]. Indole-3-acetic acid (IAA), the main naturally occurring auxin present in plants, was identified as the principal precursor of this molecule. In plant, a significant part of IAA is usual conjugated to amino acids by IAA-amido synthetases [3] or stored as ester conjugates of sugar moieties [4], becoming a reserve of IAA in must. Nevertheless, the final amount of free IAA in wines is also influenced by the metabolism of microorganisms involved in winemaking process, in particular yeasts which absorb and metabolize amino acids. Tryptophan is oxidatively deaminated, via indole-3-pyruvic acid (IPA) to indole-3-lactic acid or, via IPA and indole-3-acetaldehyde, reduced to tryptophol or oxidized to IAA [5].

The present study aimed to evaluate the effectiveness of different enological adjuvants (grape tannin, GrT; ellagic tannin, EgT; gallotannin, GaT; ascorbic acid, ASC; glutathione, GSH) added to musts in pre-fermentation for preventing the development of UTA during a forced aging of wines (6 days at 40 °C, dark). Johannitter, Pinot Blank, Pinot Gris and Riesling musts were separately added of the 5 adjuvants (250 mg/L GrT, EgT and GaT; 100 mg/L of ASC; 20 mg/L of GSH), fermented and finally added of sulfur dioxide (50 mg/L). The wines were then analysed to quantify AAP and its precursors, before and after the aging treatment,. The quantification was performed using a high performance liquid chromatograph equipped with a pre-concentration and purification SPE-online system and coupled with a high-resolution mass spectrometer (UHPLC-HQOMS) using a biphenyl column (3x150 mm, 2.7 µm) with formic acid 2% and acetonitrile as eluents. The quantification limits ranged from 0.25 to 2 µg/L, excepted for AAP that had a quantification limit of 0.02 µg/L.

The heating induced in wines the formation of APP up to concentration of 4 µg/L. The best protection against AAP formation was achieved using ASC (AAP always <0.6 µg/L) and GaT (<1 µg/L).

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