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Antiradicalic must supplementation for preventing the atypical aging of white wines

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The presence of reasonable amount of 2-aminoacetophenone (AAP) in wines is regarded as the main cause of a well distinct sensory deviation, the atypical ageing defect (ATA)[1,2]. The principal precursors of this molecule were identified in indole-3-acetic (IAA) which can be synthesized in plants from tryptophan (TRP). Other IAA precursors can be indole-3-acetonitrile (IAN), indole-3-acetamide (IAM), indole-3-lactic acid (ILA), indole-3-pyruvate (IPA) and tryptamine (TAM)[3]. Moreover, IAA can be released during fermentation from methylated IAA (me-IAA) or IAA conjugated to alanine and aspartic acid.

This study was conceived, first, to develop a method for AAP, IAA and IAA precursor's analysis using HPLC coupled with HRMS. The quantification limits ranged from 1 to 10 µg/L for all analytes, except AAP that had a quantification limit of 0.02 µg/L.

Moreover, 3 different musts (Pinot Gris, Sauvignon Blanc, Müller Thurgau), were added separately of 8 pure compounds (4-ethylcatechol, 4-methylcatechol, ascorbic acid, ellagic acid, gallic acid, gentisic acid, glutathione, hydroxytyrosol; 0.125 g/L each one) and 4 natural extracts (ellagic tannin, quebracho tannin, seed tannin and skin tannin; 0.5 g/L each one), fermented and added forthwith of sulfur dioxide (50 mg/L). Then must samples and wines, before and after a heating treatment (40°C, 96 hours), were analysed to quantify AAP and its precursors.

During fermentation, TRP decreased and increased THR and IAA. The heating induced in wines the formation of APP up to concentration of 0.24 µg/L. The best protection ability against AAP formation were showed by gallic acid, 4-ethylcatechol, 4-methylcatechol (AAP < 0.01 µg/L).

References

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- [3] Pieck M.; Yuan Y.; Godfrey J.; Fischer C.; Zolj S.; Vaughan D.; Thomas N.; Wu C.; Ramos J.; Celeza, J. L., *Genetics*, 2015, **201**, 1185-1190.