SCREENING METHOD FOR PETROLEUM-DERIVED AROMATIC HYDROCARBONS IN WINE

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Wine, like other foods and beverages, is susceptible to a certain degree of taint derived from environment, machinery, materials and chemicals used in production, transport and storage. In order to minimise the degree and level of taint, monitoring by means of cost effective and reliable analytical techniques for suspected contaminants ensures wine quality remains at a high standard.

Aromatic hydrocarbons are chiefly associated with taints arising from petroleum-derived products. While the overall frequency of occurrence of this type of contamination remains very low in the wine industry it still represents the second most common type of volatile taint encountered after chloroanisoles (unpublished AWRI internal records). Depending on the source, these aromatic hydrocarbons usually include one or more of the following compounds; toluene, styrene, alkylbenzenes and alkylnaphthalenes.

These aromatic compounds were targeted in the development of a screening method for wine using gas chromatography mass spectrometry (GC-MS) combined with headspace-solid phase microextraction (SPME).

The target compounds were detected by monitoring their characteristic ions (selected ion monitoring) and subsequently quantified using selected deuterated internal standards. The individual compounds were detected at levels as low as 1 μg/L in red or white wine.

The method developed was rapid, simple, solvent-free and sensitive.