

## STUDENT 7

### DEVELOPMENT OF A STABLE ISOTOPE DILUTION ASSAY FOR TPB, A POTENT WINE ODORANT

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(*E*)-1-(2,3,6-Trimethylphenyl)buta-1,3-diene, (TPB) is a new grape-derived aroma compound we reported recently (*1*). At low concentrations its aroma is described as ‘green’ or ‘cut-grass’, while at higher concentrations less favourable descriptors such as ‘pungent’ or ‘chemical’ are common. With an aroma detection threshold of 40 ngL<sup>-1</sup> in white wine, TPB is among the most potent volatile wine components known. Concentrations of this compound in wine are typically in the nanogram per litre range; consequently an accurate and sensitive method for quantification is required.

A stable isotope dilution assay (SIDA) has been developed for the quantification of TPB in wine using a [<sup>2</sup>H<sub>6</sub>]-analogue. This method employed solid phase micro extraction (SPME) of TPB from the aqueous matrix followed by GC-MS analysis in selected ion monitoring (SIM) mode. Using this method TPB was found in 96 out of 97 white wines, but in none of 12 red wines analysed. Based on the concentration of TPB measured in Chardonnay and Riesling wines over several vintages, TPB appears to be an aged wine component.

TPB is one of the products obtained when glycosidic extracts of both red and white grape varieties are hydrolysed under wine-like conditions. This makes the absence of TPB in red wine particularly interesting; stability studies conducted in both red and wine have provided a reason for this absence. Details of the SIDA quantification method will be presented along with the results of the stability experiments.

[1] Janusz, A.; Capone, D.L; Puglisi, C.J; Perkins, M.V; Elsey, G.M.; Sefton, M.A. *J. Agric. Food Chem.*, **2003**, *51*, 7759-7763.