

High Sensitivity allergen detection in wine samples

Fining agents such as casein or egg ovalbumin are used for the clarification of wine. They are stirred into the wine samples to form agglomerates with suspended particles, that deposit at the bottom. Even though the sediment

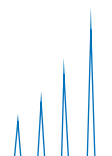
is separated, casein can still be found in trace amounts (<2 ppm). This is problematic as casein as well as egg ovalbumin can act as allergens. Therefore, highly sensitive analysing methods are necessary.



This application note describes the implementation of a highly sensitive method for milk and egg peptides using a YMC-Triart C18 capillary column [1]. A run time of about 5 minutes can be realised with this method (see Figure 1).

Table 1: Chromatographic conditions [1].

Column:	YMC-Triart C18 (3 µm) 50 x 0.5 mm ID
Part No.:	TA12S03-05J0RU
Eluent:	A) Water + 0.1% formic acid B) Acetonitrile + 0.1% formic acid
Gradient:	2%B (0–0.3 min), 2–40%B (0.3–4 min), 40–95%B (4–4.1 min), 95%B (4.1–4.3 min) 2%B (4.4–5.5 min)
Flow rate:	25 µL/min
Temperature:	40 °C
Injection:	10 µL
Sample:	White wines (Sauvignon Blanc, Chenin Blanc, Chardonnay), spiked with 0.5 ppm milk and egg protein
Detection:	AB SCIEX 5500 QTRAP, ESI
System:	Eksigent ekspert microLC 200



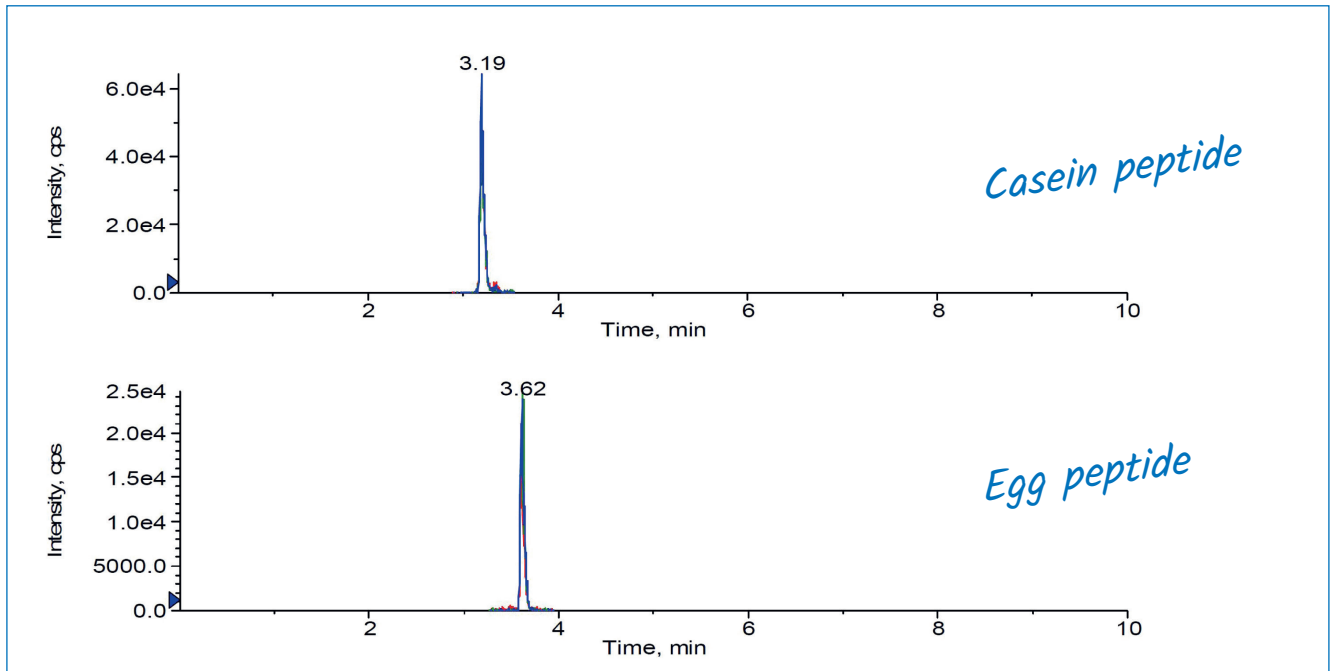
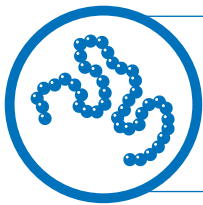


Figure 1: MicroLC-MS/MS analysis of white wine sample spiked with 1 ppm casein peptide (top) and egg peptide (bottom) [1].

Figure 2 demonstrates the linearity and sensitivity of this method. A Sauvignon Blanc sample was spiked with casein peptide at different concentrations of 0.05–2.0 ppm [1].

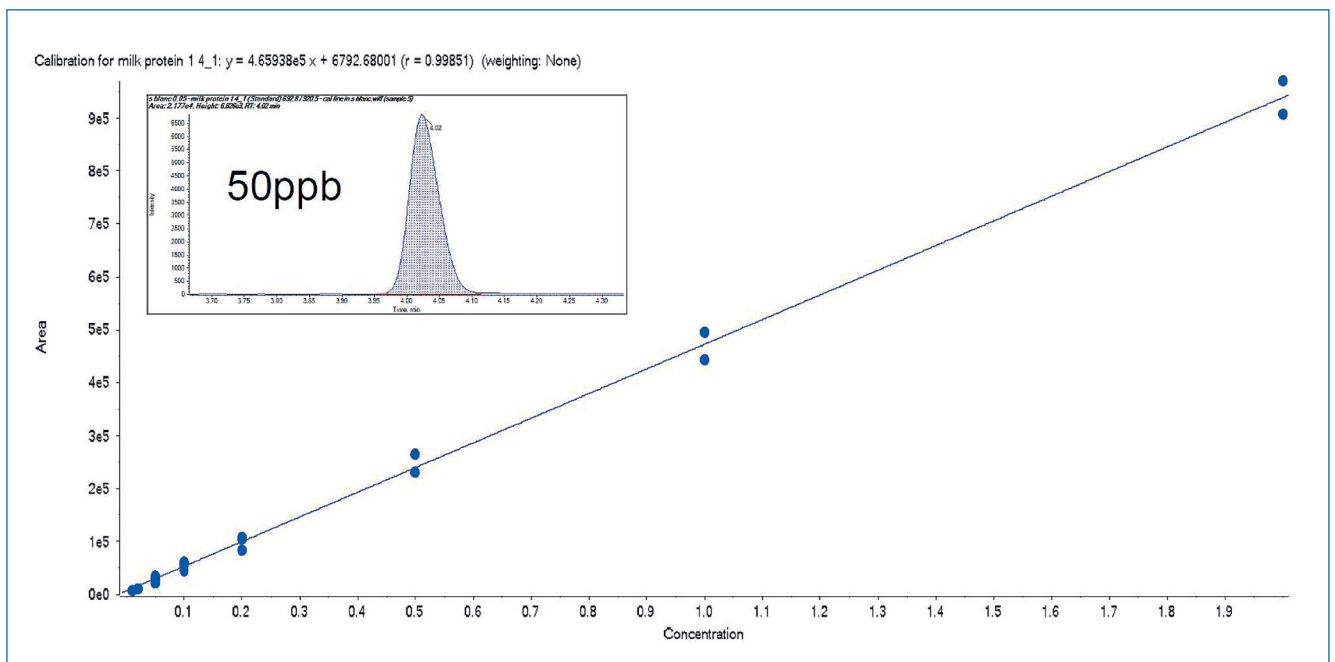
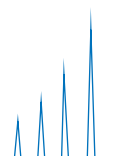
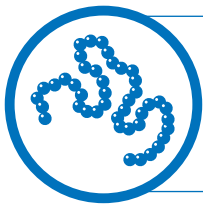


Figure 2: Calibration line from a peptide from casein, spiked into Sauvignon Blanc and chromatogram of 50ppb spiked sample [1].





Three different white wine samples spiked with 0.5 ppm milk and egg peptides were analysed. It is shown that several milk and egg peptides can be detected and identified in one run.

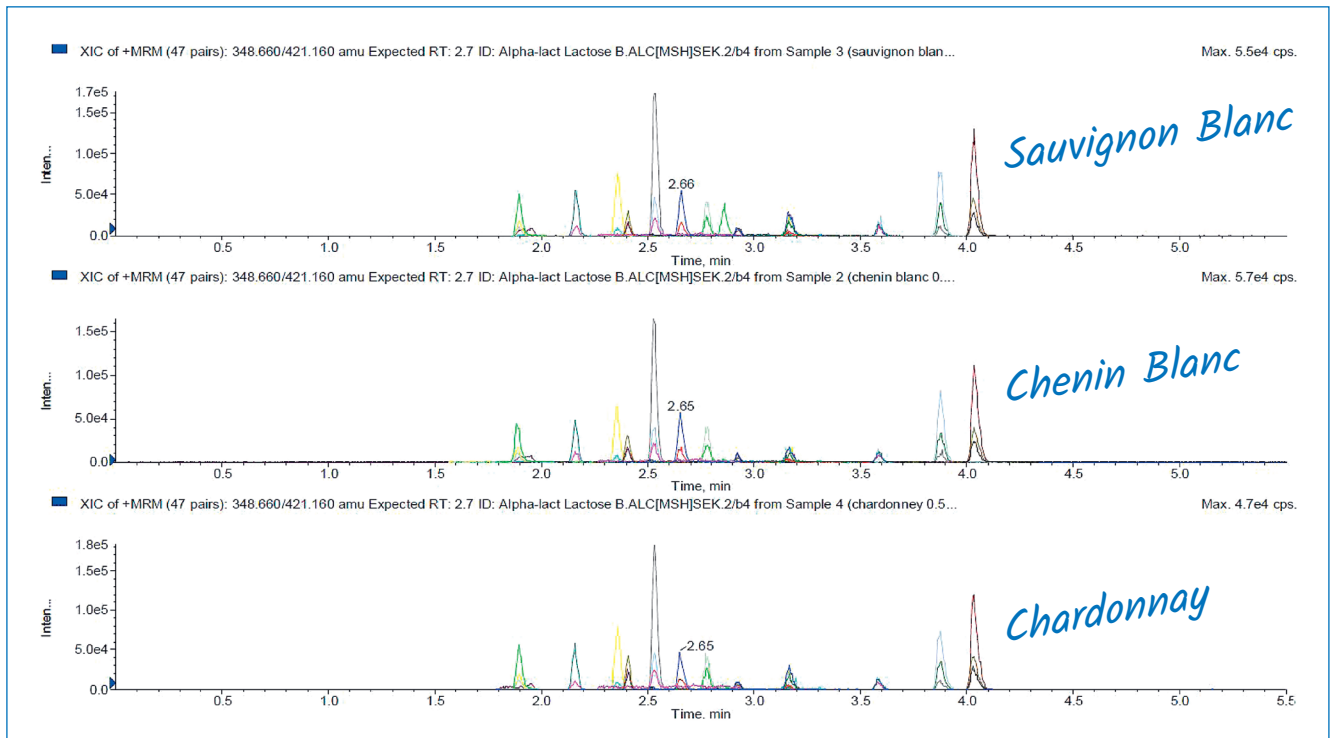


Figure 3: MicroLC-MS/MS analysis of 3 different white wines spiked with 0.5 ppm samples of milk and egg peptides [1].

This application represents a fast and highly sensitive method for the quality control of white wines, thus ensures the health of allergy sufferers.

Literature:

- [1] Lock S, Allergen detection in wine by LC/MS/MS, Poster presented at the 127th AOAC International 2013 Annual Meeting & Exposition in Chicago, August 25 – August 28, 2013.

*Application data by courtesy of: Stephen Lock, SCIEX, Warrington (UK)

