

Detection of Oleocanthal in Freshly Pressed Extra-Virgin Olive Oil

According to a recent report in *Nature*¹, freshly pressed extra-virgin olive oil contains a compound, oleocanthal, that has properties similar to the common anti-inflammatory drug, ibuprofen.

We used DART to rapidly examine cooking oils for the presence of this compound. Freshly pressed extra-virgin olive oil from a specialty food store was compared with a medium-quality grocery-store brand. Sesame oil and a low-quality spray-on cooking oil were also examined. No sample preparation was required. Glass melting point tubes were dipped into the oil samples and then placed in front of the DART source for analysis. The DART source was operated with helium in positive-ion mode at a gas heater temperature of 350°C. A cotton swab dipped in dilute aqueous ammonium hydroxide was placed nearby to permit the formation of $[M+NH_4]^+$ for triglycerides and other oil components. A mass spectrum of neat PEG 600 on a glass rod was acquired and stored in the same data file to provide an external calibrant for exact mass measurements.

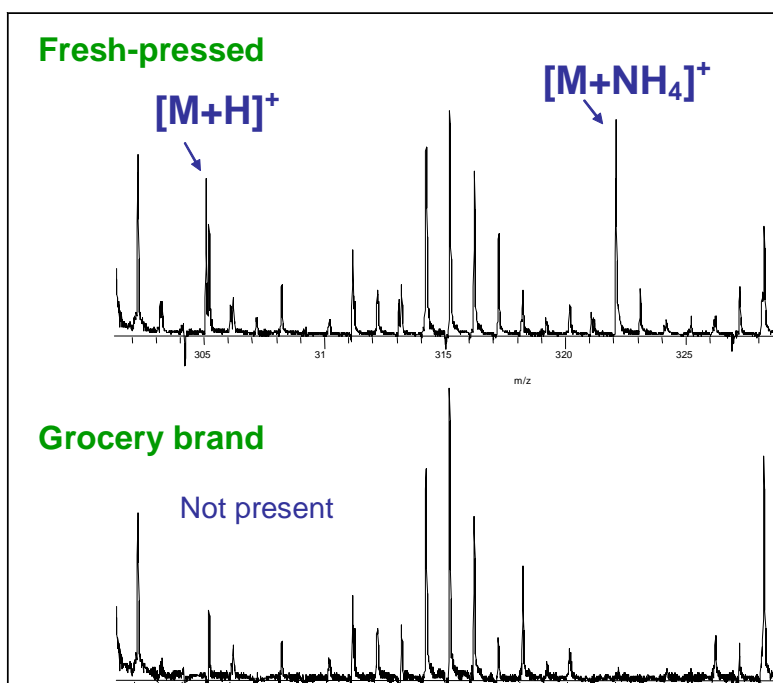
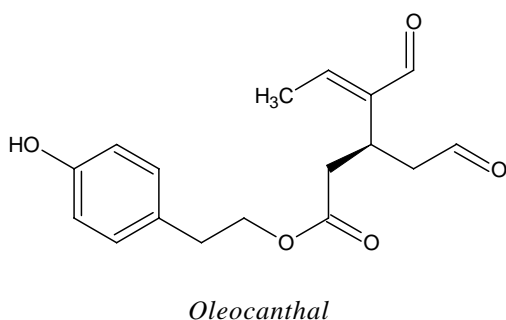


Figure 1. Positive-ion DART mass spectra of two olive oils. Enlarged view of the region where oleocanthal peaks are observed.

The oleocanthal was readily observed in the fresh-pressed oil as $[M+H]^+$ and $[M+NH_4]^+$. The measured masses confirmed the expected composition with excellent mass accuracy.

Conclusion

DART can detect the presence of natural products in cooking oils. Analysis is rapid (within seconds) and no sample preparation is required.

Reference

¹Beauchamp, G.K.; Keast, R. S. J.; Morel, D.; Lin, J.; Pika, J.; Han, Q.; Lee, C.-H.; Smith, A. B.; Breslin, P. A. S. *Nature*, **437**, 45-46 (Sept. 2005). "Phytochemistry: Ibuprofen-like activity in extra-virgin olive oil."

Meas. mass (um)	Diff. (mmu)	Composition	Assignment
305.138977	0.09	C ₁₇ H ₂₁ O ₅	$[M+H]^+$
322.165955	0.50	C ₁₇ H ₂₄ O ₅ N ₁	$[M+NH_4]^+$