

Fake Meat, Real Data: Investigating Sausage Flavors with PTR-MS

A taste of science: insights into food and flavor research in real-time

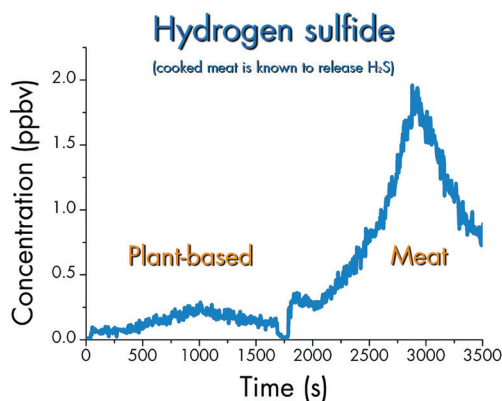
Proton-transfer-reaction – mass spectrometry (PTR-MS) enhances food and flavor analysis by providing real-time chemical profiling. The IONICON applied science team demonstrated the capabilities of PTR-MS by assessing plant- and meat-based sausages. This investigation revealed distinct differences in their aromatic and chemical composition, demonstrating the potential of PTR-MS in food science applications.

The study began with visual, olfactory, and taste assessments of the sausages, followed by real-time chemical profiling during cooking. PTR-MS enabled the detection and quantification of trace compounds with remarkable precision. In plant-based sausages, the cooking process released flavors dominated by acetic acid and artificial smoke aromas intended to mimic meaty characteristics. Key compounds identified included xylanol, guaiacol, methylguaiacol, and

eugenol, which contribute to the smoky flavor. Conversely, meat-based sausages exhibited a distinct profile during cooking, characterized by the release of naturally occurring hydrogen sulfide (H_2S) and other volatile compounds that contribute to their characteristic flavor.

Traditional analytical methods in food science often require extensive sample preparation and laborious workflows. IONICON PTR-TOF instruments offer a transformative alternative with several advantages:

- Direct injection: eliminates the need for sample preparation.
- Real-time quantification: provides immediate results, optimizing workflow efficiency.
- Unmatched sensitivity: detects trace compounds even at very low concentrations.



- High resolution: dissects complex samples with precision, distinguishing isobaric compounds.

This experiment underscores PTR-TOF as an essential tool for modern food and flavor science, capable of quantifying hundreds of compounds with unparalleled accuracy. The ability to analyze and compare the flavor profiles of different food products in real-time opens new avenues for research and development in the food industry.

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