Real Time Analysis of Scent Release Using Volatimeship ~Soy Sauce~

【Keyword】Soy Sauce, Scent, Volatile compounds, Scent release, Volatimeship, DART®

■ Introduction

The Direct Analysis in Real Time (DART®) ionization method is an ionization method which makes it possible to detect volatile compounds in real time under atmospheric pressure. By using the volatile compound introducing device "Volatimeship" together with DART, volatile compounds can efficiently be guided to the mass spectrometer (MS), enabling a highly sensitive measurement.
In this report, the scent of soy sauce was measured with the Volatimeship together with DART®-MS.

■ Samples

Soy sauce, Soy sauce for Sashimi (commercial goods)

■ Methods

The analysis system was composed of a DART® ion source and a mass spectrometer, with a Volatimeship connected in between.
A sample was prepared by placing 10 mL of soy sauce into a 40 mL vial bottle, where it was sealed. Then, an empty vial was set the Volatimeship, and the background data acquisition of the mass spectrometer was started. The vial containing soy sauce was then set, and the volatile compounds of soy sauce were measured.

■ Results

The analysis results of soy sauce and Sashimi soy sauce are shown in Figures 1 and 2 respectively.
The time was set to 0 sec when a vial containing a sample was set to the Volatimeship.
Comparing the Extracted Ion Current grams(EIC) of *m/z* 109, 129, and 175, *m/z* 109 is released the most in soy sauce, but the different volatilization behavior was detected with *m/z* 129 in Sashimi soy sauce (Figure 1 (B), 2 (B)).
In addition, when comparing the behavior of *m/z* 129 of soy sauce and Sashimi soy sauce, Sashimi soy sauce showed a sharp rising behavior. Comparing the mass spectrum immediately after TIC spike-up, Sashimi soy sauce has more kinds of ions detected than those in soy sauce. It is presumed that this comes from the different manufacturing methods.
(Figure 1 (C), 2 (C)).

By combining Volatimeship with DART®-MS, it enables to detect the release behavior (flavor release) of volatile compounds from soy sauce in real time in seconds.

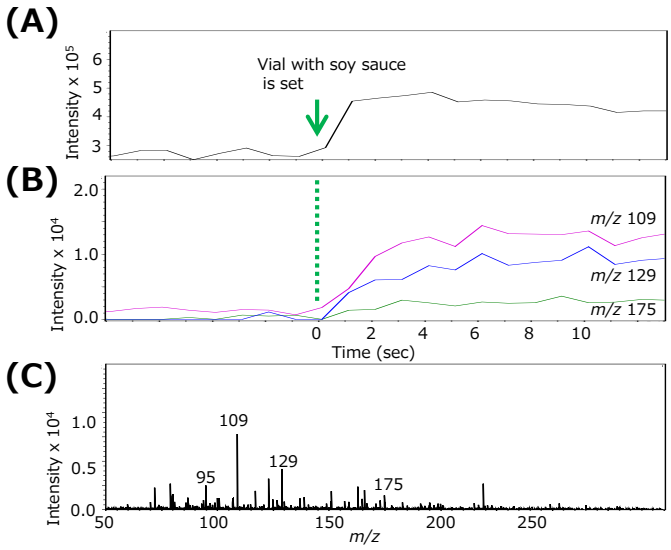

Figure 1. Analysis results of soy sauce scent
(A) TIC (B) EIC (C) Mass spectrum immediately after TIC spike-up

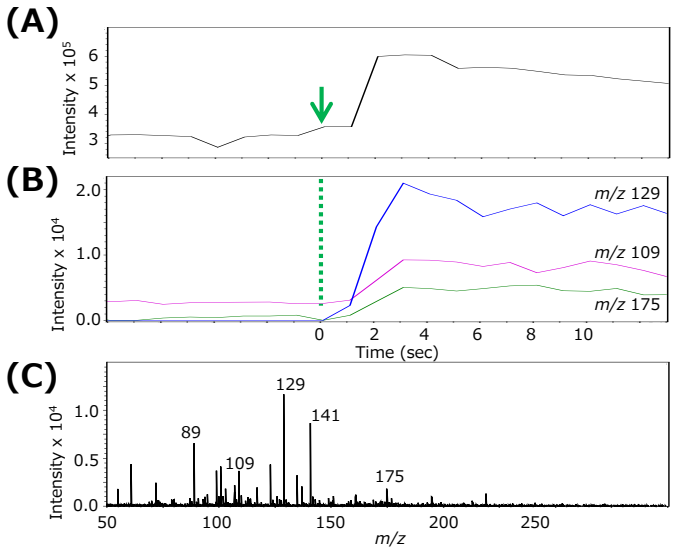

Figure 1. Analysis results of sashimi soy sauce scent
(A) TIC (B) EIC (C) Mass spectrum immediately after TIC spike-up

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