Fast evaluation of degradation degree of fats and oils in foods by ionRocket-DART®-MS

EI-017

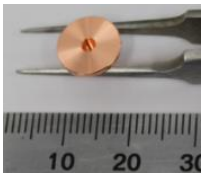
【Keyword】 Foods, Fats, Oils, Oxidation, Thermal degradation, Mass Spectrometry, ionRocket, DART®

■ Abstract

Sunlight and heat can accelerate oxidation and decomposition of fats and oils in foods, thus harming the flavor and causing harmful substances. To determine food quality it is important to evaluate the degree of deterioration . Generally the deterioration of fats and oils are measured as the acid value and peroxide value, which can take considerable time and effort when measuring many samples. Alternatively, ionRocket DART®-MS analysis can detect glycerols and their degradation compounds in foods without titration or pretreatment.

■ Samples

Fried Giant Corn (commercial products)
1) Untreated; 2) 80℃ x 24 hours heated



■ Method

The Fried Giant Corn kernels were cut into 1mm particles and then placed in the ionRocket copper sample pot.
A temperature gradient of 100 ℃/min. from room temperature to 600 ℃ was applied. Total run time was 7 min.

■ Result

TIC and MS spectra measured at 300℃ to 400℃ and 400℃ to 500℃ are shown in Figure 1. and Figure 2.
In the MS spectrum of at 300℃ to 400℃, glycerols were observed in the both samples. Otherwise, in the MS spectrum of at 400℃ to 500℃ of the 80℃ x 24hours heated sample, glycerols were not observed and thermal degradation compounds were observed.
ionRocket DART®-MS can evaluate the degradation degree of fats and oils in foods directly. So, this analysis method was useful for stability evaluation and quality control of mixture materials such as foods.

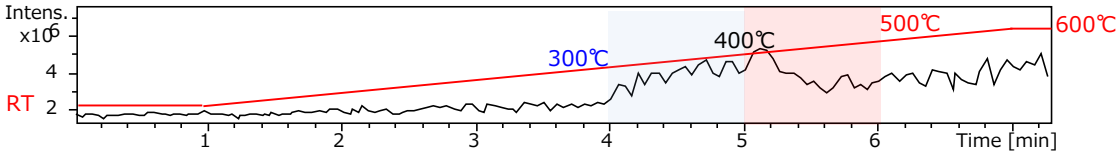


Figure 1. TIC of untreated sample

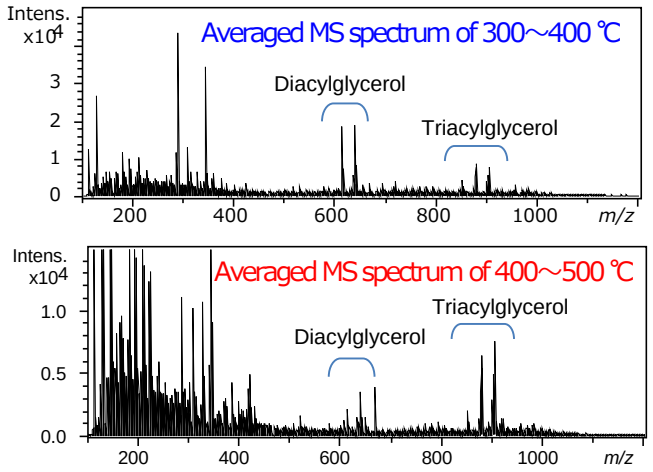


Figure 2. MS spectra of untreated sample

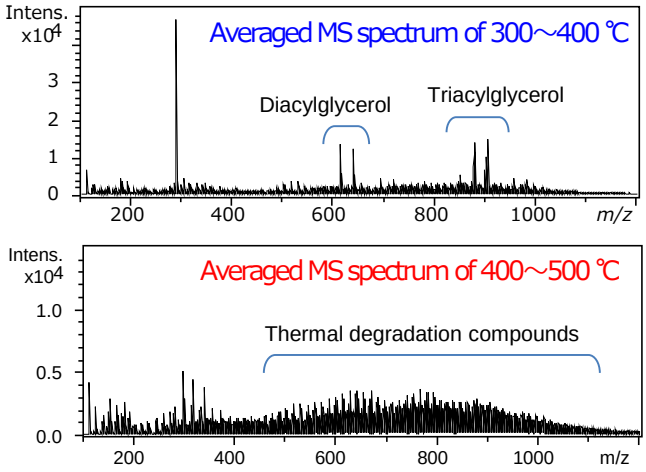


Figure 3. MS spectra of heated sample

pyvot
Phone: 212-204-0075
Email: info@pyvot.tech
Web: www.pyvot.tech

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