# Analysis of refined and unrefined sugars by ionRocket



【Keyword】 Sugar, Monosaccharide, Disaccharide, ionRocket, DART®

【Subject area】 Food, Quality Control (QC), Research and Development (R&D)

## ■ Introduction

The ionRocket is a thermal desorption device for DART®-MS (Direct Analysis in Real Time- Mass Spectrometry) which allows samples to be heated on a gradient from ambient to 600 °C prior to ionization.. In ionRocket-DART®-MS analysis, thermal extracts from samples are observed at lower temperature and pyrolysates from samples are observed at higher temperatures.

## ■ Samples

Caster sugar, soft brown sugar, and wasanbon (a refined Japanese sugar).

## ■ Method

ionRocket was mounted on DART®-MS. The sample, a fleck of sugar, was placed into the POT. The sample temperature was raised 100 °C/min by the ionRocket from room temperature to 600 °C. The total run time was about 7 min.

## ■ Result

The result is shown in heat maps in Figure 1 (A), Figure 2 (A) and Figure 3 (A).

The mass spectra at 4 min are shown in Figure 1 (B), Figure 2 (B) and Figure 3 (B). In every sample, *m/z* 180.08 and *m/z* 342.13 was observed. These ions would be monosaccharide and disaccharide, respectively.

Soft brown sugar is easily differentiated from caster sugar and Wasanbon by this analysis. Additionally, wasonbon is revealed as the most purified of these sugars. The sugar refinement process is reflected in the sample heat maps and mass spectra.

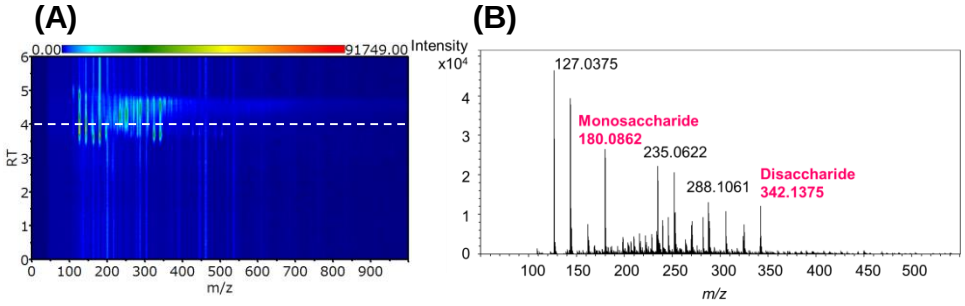


**Figure 1. Caster sugar**
(A) Heat map (B) Mass spectrum at 4 min

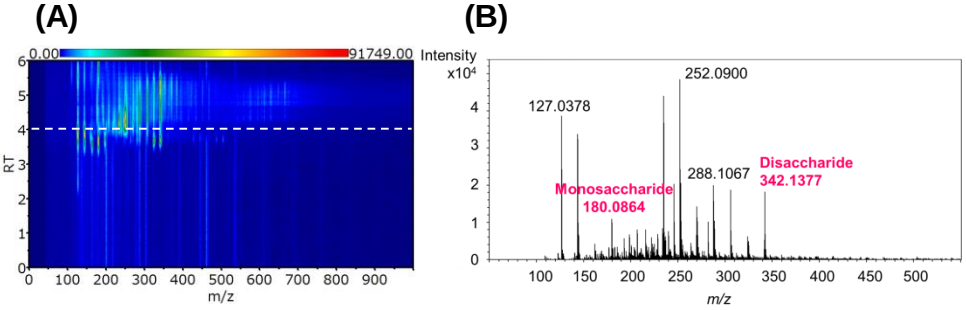


**Figure 2. Soft brown sugar**
(A) Heat map (B) Mass spectrum at 4 min

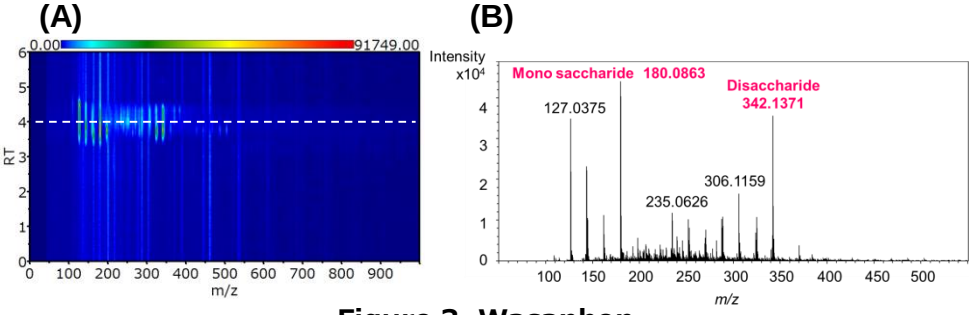


**Figure 3. Wasanbon**
(A) Heat map (B) Mass spectrum at 4 min

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