



## Simultaneous determination of organic acids in Japanese fermented food, miso

Miso is a traditional Japanese food, and it is fermented food made from rice, wheat, soybeans, and salt as raw materials.

Miso is classified as rice miso, wheat miso, bean miso, and mixed miso<sup>1)</sup>.

It is also known that there is a variety according to regional characteristics even in the same type<sup>2)</sup>.

We analyzed six kinds of organic acids (citric acid, malic acid, succinic acid, lactic acid, formic acid and acetic acid) for commercial miso. The samples after pretreatment are separated by ion-exclusion chromatography and then detected at UV 210 nm. Different profiles of organic acids were obtained from each type of miso.



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## Chromatogram and organic acid amounts of commercial miso

### Analytical conditions

Mobile phase : 3 mmol/L HClO<sub>4</sub>  
Column : GL-C610H-S 7.8 X 300 mm  
Column Temperature : 60 °C  
Flow rate : 0.5 mL/min  
Injection vol. : 50 µL  
Detection : UV at 210 nm

### Sample pretreatment

Weighing 1.0 g of miso  
↓  
Dissolve into 10 mL with pure water  
↓  
Extract for 30 min. with ultrasonic bath  
↓  
Centrifuge at 3000 min<sup>-1</sup> for 20 min.  
↓  
Take the supernatant 1 mL, add 5 % TCA 1 mL  
↓  
Centrifuge at 15000 min<sup>-1</sup> for 15 min.  
↓  
Filter the supernatant with 0.45 µm membrane filter

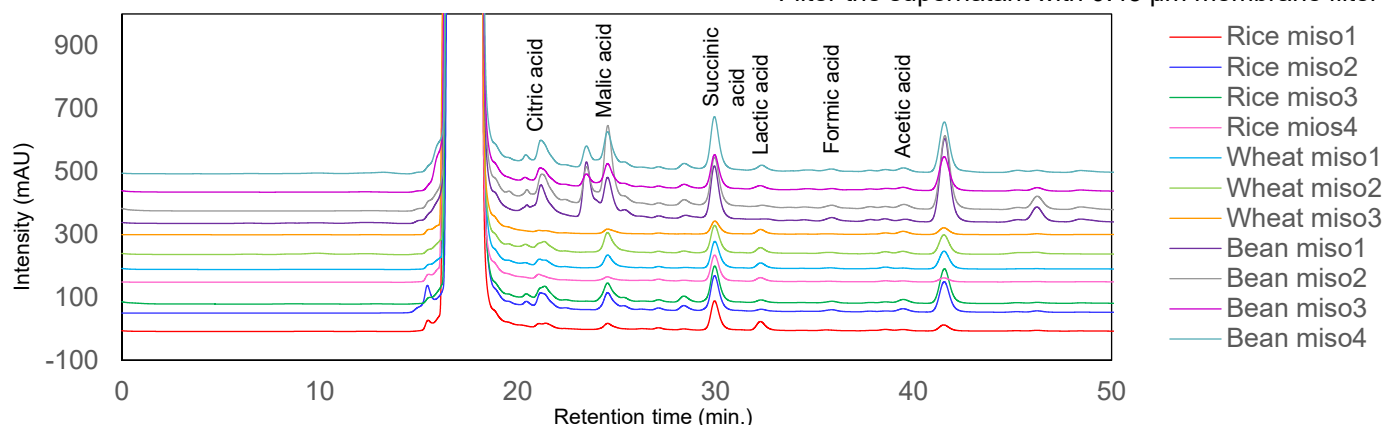


Fig. 1 Chromatogram for organic acid analysis

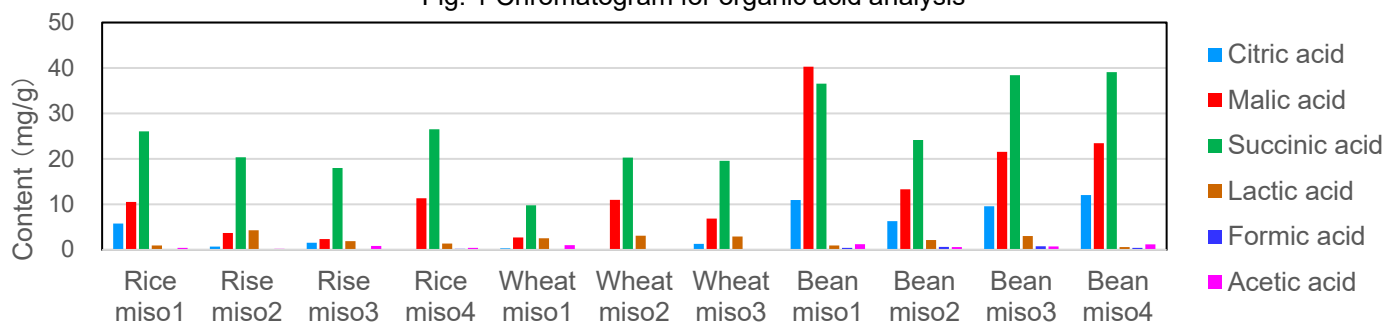


Fig. 2 Organic acid content in miso

✓ Bean miso has tended to have a high content of citric acid, malic acid, succinic acid.

### Reference

1) 「みそ品質表示基準」平成23年10月31日消費者庁告示第11号

2) 堂本康彦. 麦味噌の地域特について. 日本醸造協会雑誌, 1982, 77.7: 432-438.

NOTE: These data are an example of measurement; the individual vales can not be guaranteed.