

Sheet No.

GT200-FO007 Food & Beverage

Amino Acid Level and Amino Acids Analysis of Sake — 1/3

Method : Neutralization titration
Apparatus : Automatic Titrator GT-200
Electrode: Micro titration Combined glass electrode Micro titration Combined glass electrode inner solution: 3.3 mol/L potassium chloride solution
Titration mode : SET-P, Detection: pH
Related standard : Official Analysis Method of the National Tax Administration Agency Sake, Amino acids, Method by pH Meter

*This sheet is provided as information. It is not to guarantee the analysis values. Please use under the ideal conditions considering external factors including the analysis environment and properties of the sample.

Outline

Standards of sake are stipulated by the Item "Sake" of the Official Analysis Method of the National Tax Administration Agency. Sake contains about 20 types of amino acids, and values of amino acid level and amino acids are used as indicators for tastiness and depth of flavor.

Reagents

[Titrant]

■0.1 mol/L sodium hydroxide solution (for volumetric analysis)

[Prepared reagent]

■Neutral formalin: Add about 2 drops of phenolphthalein indicator solution to 50 ml of formaldehyde solution (special grade), and neutralize using 0.1 mol/L sodium hydroxide solution while stirring until the solution color becomes pale pink. Add water to volume up to 100 ml.

Analytical Procedure

[Titration-1]

- (1) Place 10 ml of sample solution into a 20-ml beaker using a volumetric pipette.
- (2) Titrate using 0.1 mol/L sodium hydroxide solution. (MODE: ADJUST, END1: 8.2 pH, Vover 0 ml)

[Titration-2]

- (1) Add 5 ml of neutral formalin into a sample which underwent Titration-1.
- (2) Titrate using 0.1 mol/L sodium hydroxide solution. (MODE: SET-P, END1: 8.2 pH)

[Equation]

Amino Acid Level (%) = A1 × f**Amino Acids (g/100 ml) = Amino Acid Level × 0.075** (derived as glycine)

A1 : Titer of 0.1 mol/L sodium hydroxide solution in (Titration-2) (ml)

f : Factor of 0.1 mol/L sodium hydroxide solution

Sheet No.

GT200-FO007 Amino Acid Level and Amino Acids Analysis of Sake 2/3

Other

- Carry out pH calibration using pH reference solutions prior to measurement.
- Adding 1 unit of automated buret (GTETTU) enables connecting Titration-1 and Titration-2.
- Handle measurement reagents with care after reading through and understanding their labels and safety data sheets.
- Wear personal protective equipment such as protective goggles and gloves when handling the reagents.

Measurement Results

	Sample amount (ml)	Titer (ml)	Amino acid level (%)	Amino acids (g/100 ml)
1	10	1.2946	1.30	0.10
2		1.2404	1.24	0.09
3		1.2863	1.29	0.10

Number of data	(n)	3	3
Average		1.3	0.1
Standard deviation	(SD)	0.0292	0.0022
Relative standard deviation	(RSD%)	2.2919	2.2919

Amino acid level and amino acids of sake were measured. The result of measuring this sample with GT-200 was amino acid level of 1.3% and amino acids of 0.10 g/100 ml.

Sheet No.

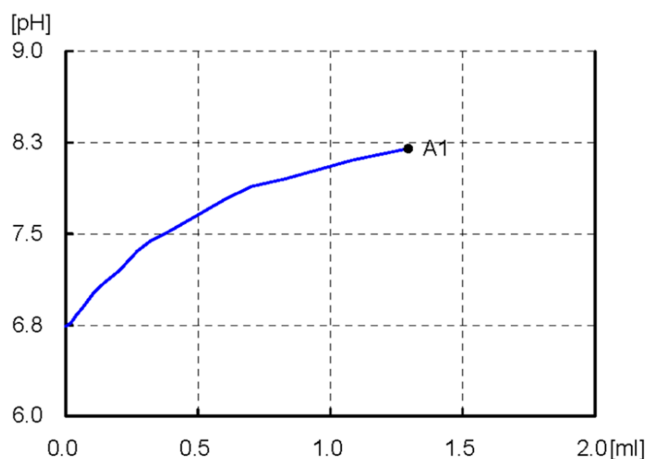
GT200-FO007 Amino Acid Level and Amino Acids Analysis of Sake 3/3

ID No.: 14 GT No.1

User: GT-200

Measurement date : 2013/03/12 15:21
 Sample name : Sake

Measurement type : Sample Titr
 Sample size (S) : 10 [ml]



C1: 1.30 []

C2: 0.10 []

A1: 1.2946 [ml] 8.2 [pH]

Pi : 6.74 [pH]
 Start : 0 [ml] 6.74 [pH]
 End : 1.296 [ml] 8.201 [pH] Time: 0' 54"

Run File No.: 8 Amino acids and amino acid level of sake

Titration File No.: 31 Amino acids and amino acid level of sake (2)

Mode : SET-P End1 : 8.2 [pH]

Detect : pH

BRT No. : 1

Reagent : 2

WTint : 60 [sec]

Vup : 300 [μl]

Vlow : 20 [μl]

dE : 0.1 [pH]

dT : 3 [sec]

Vmax : 50 [ml]

Vover : 0 [ml]

End1 : 8.2 [pH]

C1: A1*f

[]

C2: C1*0.075

[]

Reag : 0.1M NaOH

E : 1

M : 0.1 [Mol/l]

f : 1.001

Buret Injection Speed: 500 [ul/sec]