Analysis of Nitrite ion in Ham

INTRODUCTION

Sodium nitrite, one of color formers, is used in ham and sausages and it is shown as "color former $(NaNO_2)$ " in food labels. It is effective to give a color to make ham look good and has other effects such as food poisoning prevention. As a result of the assay for the nitrite ion in ham, 0.002 g/kg was found indicating that the level was less than the standard specified by the Food Sanitation Law (Meat products: 0.07 g/kg).

| | Method | PREPARATION | | | | | |
|--|------------------------------|-------------------------|-----|--|------------------------------|--|--|
| Analyte : Nitrite ion (NO ₂ ⁻) Analysis method: In accordance with the Food Sanitation Inspection Guidelines, Food Additive Volume 2003 | | | | Refer to the next page (S UV090013-02). | Sheet No. | | |
| Assay range | :0.01 - 1.0 mg/L | | | | | | |
| | INSTRUMENT CON | | | | | | |
| INSTRUMENT : U-1900 WORKING CURVE | | | | | | | |
| SCAN SPEED : 400 nm/min WAVELENGTH : 540 nm | | | | | | | |
| BANDPASS | : 4 nm | | | | | | |
| | | | | | | | |
| 0.05 - | | | | 540 nm I | 0.4 mg/l | | |
| 0.25 | / | 0.25 | | \wedge | 0.4 mg/L | | |
| _{တ္} 0.20 - | | 0.20 |) - | | 0.3 mg/L | | |
| (Ab | / | (Abs) | | IN | 0.2 mg/L | | |
| 90.15 - UB | |) 0.19 92 | 5 - | | • 0.1 mg/l | | |
| ရာ စို့ 0.10 - | / | 0.10 orba |) - | | 0.05 mg/l | | |
| Ak | | Abs | | | | | |
| 0.05 - | | 0.0 | 5 | | Blank | | |
| | - K- | | | | | | |
| 0.0 | 0.1 0.2 0.3 0. | .4 0.5 | 450 | 500 550 600 | 650 | | |
| | Concentration of Nitrite Ion | (mg/L) | | Wavelength (nm) | | | |
| Calibration Curve of of Nitrite Ion Absorbance Spectrum of of Nitrite Ion | | | | | | | |
| Addition Recovery Test | | | | | | | |
| | Ham solution ^(*) | Ham solution + 0.1 mg/L | | Recovery |] | | |
| | 0.109±0.002 mg/L | 0.205±0.001 mg/L | | 95.8 %±0.0 % | | | |
| n = 3, * The solution prepared using 5 g of ham by making up to 100 mL according to the procedure was used for the measurement. | | | | | | | |
| KEY WORDS Bio-Medical Science · Food · Pharmaceutical, Food, Nitrite Ion, Absorbance Spectrum, Calibration Curve, Food Chemistry | | | | Spectrophotometer (UV) | | | |
| Food Compone 10 mm Cell, UV U-3010, U-3310 |), Sheet No. UV09 | 0013-01 | | | | | |

| Pretreatment for Analysis of Nitrite ion | | | | | | |
|--|--|---|--|--|--|--|
| [Preparation Method for Sample Solution] Sample 10 g $\leftarrow 80$ mL of warm water (80°C) Homogenize | For the detailed solution refer to 24. Sodium Nitr Guidelines, Food Additi | n preparation and analysis methods, ite in Food Sanitation Inspection ve Volume 2003. | | | | |
| | Containe ← Rinse so | r Wash 5 times with 10 mL each of warm water lution | | | | |
| ← 20 mL of 0.5 mol/L sodium hydro ← 20 mL of zinc acetate solution (* Stir | oxide solution 1) | | | | | |
| Heat (in water bath at 80°C, 20 min) Cool (in cold water, up to a room temperature) ← Make up to 200 mL with purified water Filter (dry filter paper) | | | | | | |
| Clear filtrate First 20 mL of filtrate | | | | | | |
| 5 mL of sample solution \leftarrow 1 mL of sulfanilamide solution (*2) Stir \leftarrow 1 mL of Naphthylethylenediamine solu | tion (*3) | | | | | |
| Stir ← Make up to 10 mL with purified water Stir Let it stand (20 min) Let it stand (20 min) Measure *2 Sulfanilamide solution Dissolve 0.5 g of sulfanilamide in 100 mL of hydrochloric acid (measure 50 mL and make up to 100 mL with purified water) while heating. *3 Naphthylethylenediamine solution Dissolve 0.12 g of N-1-Naphthylethylenediamine dihydrochloride in 100 mL of purified water. | | | | | | |
| KEY WORDS Bio-Medical Science · Food · Pharmaceutical, Food, Nitrite Ion, Absorbance Spectrum, Calibration Curv Component, Ham, Food Additive, Meat Product, Co U-1900, U-2900, U-2910, U-3900, U-3900H, U-180 | Spectrophotometer (UV) Sheet No. UV090013-02 | | | | | |