Translated English of Chinese Standard: GB19641-2015
www.ChineseStandard.net → Buy True-PDF → Auto-delivery.
Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 19641-2015

National Food Safety Standard - Oil Seeds

食品安全国家标准

食用植物油料

Issued on: November 13, 2015 **Implemented on: November 13, 2016**

Issued by: National Health and Family Planning Commission of the People's Republic of China

Table of Contents

Foreword 3
1 Scope 4
2 Terms and Definitions 4
3 Technical Requirements 4
4 Others 5
Appendix A Inspection Method for Datura Seeds 6
Appendix B Inspection Method for Ergot 9
Bibliography 11

National Food Safety Standard - Oil Seeds

1 Scope

This document is applicable to oil seeds for making edible vegetable oil.

2 Terms and Definitions

2.1 Moldy Kernels

Moldy kernels refer to kernels whose surface is obviously moldy and damages the embryo, endosperm or cotyledon, and has no edible value.

3 Technical Requirements

3.1 Sensory Requirements

The sensory requirements shall comply with the stipulations of Table 1.

3.2 Limits of Poisonous and Harmful Fungi and Plant Seeds

The limits of poisonous and harmful fungi and plant seeds shall comply with the stipulations of Table 2.

A.1.2 Identification

Those that comply with the above description of morphological characteristics in A.1.1 can be identified as the datura.

A.2 Alkaloid Colorimetric Characterization

A.2.1 Principle

Atropine and other alkaloids contained in the specimen have a chromogenic reaction with fuming nitric acid and potassium hydroxide solution after extraction.

A.2.2 Reagents

A.2.2.1 Ammonia water (1 + 1).

A.2.2.2 Diethyl ether.

A.2.2.3 Hydrochloric acid (1 + 5).

A.2.2.4 Chloroform.

A.2.2.5 Anhydrous sodium sulfate.

A.2.2.6 Fuming nitric acid.

A.2.2.7 Potassium hydroxide - ethanol solution (100 g/L).

A.2.3 Analytical procedures

Put about 30 datura seeds into a mortar, add ammonia water (1 + 1) to soak them for a while, then, grind them into a viscous shape; add diethyl ether and grind it for three times, 10 mL each time; combine the diethyl ether in a separatory funnel, add 10 mL of hydrochloric acid (1 + 5), shake and extract it for 1 min, then, separate the hydrochloric acid layer into another separatory funnel. Add ammonia water (1 + 1) to make it alkaline and use 10 mL of chloroform to shake and extract it for 1 min, then, extract again, combine the chloroform layer; through anhydrous sodium sulfate, dehydrate it and concentrate to 0.5 mL; reserve it for later use.

Take 0.2 mL of test solution in a small evaporating dish, evaporate the solvent to dryness, then, add 4 drops of fuming nitric acid to dissolve the residue; on a water bath, evaporate it to dryness, and the residue turns yellow. After cooling, add several drops of potassium hydroxide - ethanol solution (100 g/L), then, it will turn corydalis, and then, red. Atropine, hyoscyamine and scopolamine all react in this way.

A.3 Thin Layer Chromatographic Characterization

A.3.1 Principle

After atropine and other alkaloids contained in the specimen are extracted, use thin layer to

separate it, then, use a color developing agent to perform color development and compare it with the reference standard.

A.3.2 Reagents

A.3.2.1 Silica gel G thin-layer plate: thickness 0.3 mm ~ 0.5 mm, activate at 105 °C for 1 h, then, put in a desiccator and reserve it for later use.

A.3.2.2 Developing solvent: methanol - ammonia water (200 + 3).

A.3.2.3 Color developing agent: weigh-take 0.85 g of bismuth subnitrate, add 10 mL of glacial acetic acid and add 40 mL of water to dissolve it. Take 5 mL, add 5 mL of potassium iodide solution (4 g potassium iodide dissolved in 5 mL of water), then, add 20 mL of glacial acetic acid, add water to dilute to 100 mL.

A.3.2.4 Atropine standard solution: weigh-take 120.0 mg of atropine sulfate, dissolve it in 10 mL of water; add ammonia water (1 + 1) to make it alkaline, use chloroform to extract it twice, 8 mL each time. Through a little anhydrous sodium sulfate, dehydrate the chloroform extract and filter it into a 20 mL colorimetric tube with a stopper. Then, use a little chloroform to wash the filter and incorporate the washing solution into the colorimetric tube. Add chloroform to 20 mL, and each milliliter of this solution is equivalent to 5.0 mg of atropine.

A.3.2.5 Scopolamine standard solution: weigh-take 145.0 mg of scopolamine hydrobromide, dissolve it in 10 mL of water, add ammonia water (1 + 1) to make it alkaline, then, use chloroform to extract it twice, 8 mL each time. Through a little anhydrous sodium sulfate, dehydrate the chloroform extract and filter it into a 20 mL colorimetric tube with a stopper. Then, use a little chloroform to wash the filter and incorporate the washing solution into the colorimetric tube. Add chloroform to 20 mL, and each milliliter of this solution is equivalent to 5.0 mg of scopolamine.

A.3.3 Analytical procedures

At 2 cm from the lower end of the thin-layer plate, spot 10 μL of standard solutions of atropine and scopolamine, 30 μL ~ 100 μL of specimen extraction concentrate, with a distance of 1.5 cm between each spot. Place it in a developing tank saturated with developing solvent in advance, and wait until the front of the solvent reaches 10 cm ~ 15 cm, then, take it out and evaporate the developing agent; spray the color developing agent to manifest orange-red spots, which is a positive reaction.

Appendix B

Inspection Method for Ergot

B.1 Identification

B.1.1 Morphological characteristics

Ergot is elongated or banana-shaped, sometimes slightly flat, 3 mm ~ 10 mm long, 1 mm ~ 7 mm thick, black or purple-black on the outside, with longitudinal grooves and transverse cracks, brittle, easy to break, flat cross-section, blunt polygonal or oval, and the center is white, off-white or pinkish-white. After dormancy, sclerotium germinates to generate stroma; infertile stromata stalks are slender, with an oblate spherical head, 1 mm ~ 2 mm in diameter, reddish brown and with perithecium grown on the outer edge.

B.1.2 Tissue sections

Soak the ergot in water for 24 h to make it swell; sandwich it between potatoes or radishes to fix it, and use a small scalpel to cut it into slices as thin as possible. Use methylene blue solution (1 g/L) to develop color and observe under the microscope, its tissue is compact.

B.2 Sclerethryrin and Ergot Alkaloids Characterization

B.2.1 Reagents

B.2.1.1 Tartaric acid solution (20 g/L).

B.2.1.2 Anhydrous ether.

B.2.1.3 Saturated sodium bicarbonate solution.

B.2.1.4 Ammonia water (1 + 1).

B.2.1.5 Chloroform.

B.2.1.6 Para-dimethylaminobenzaldehyde solution: weigh-take 0.125 g of para-dimethylaminobenzaldehyde, add 100 mL of diluted sulfuric acid (slowly pour 65 mL of sulfuric acid into 35 mL of water, mix it well and cool it) to dissolve it, then, add 0.1 mL of ferric chloride solution (50 g/L) and mix it well.

B.2.1.7 Absolute ethanol: there is no fluorescence when observed under the ultraviolet light with a wavelength of 365 nm.

B.2.2 Analytical procedures

Take 20 suspected ergots in a mortar, grind them and add tartaric acid solution (20 g/L) to grind into a viscous shape; add diethyl ether and carefully grind for three times, 10 mL each time;

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. https://www.ChineseStandard.us

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. https://www.ChineseStandard.net

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - https://www.ChineseStandard.us).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading…): https://www.chinesestandard.net/AboutUs.aspx

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: https://www.linkedin.com/in/waynezhengwenrui/

------ The End ------