YELLOW JESSAMINE FOR HOMOEOPATHIC PREPARATIONS

GELSEMIUM FOR HOMOEOPATHIC PREPARATIONS

Gelsemium sempervirens ad praeparationes homoeopathicas
Other Latin name used in homoeopathy: **Gelsemium sempervirens**

DEFINITION

Dried underground organ of *Gelsemium sempervirens (L.)* Ait. *(G. nitidus* Michx., *Bignonia sempervirens L.).*

Content: minimum 0.13 per cent of gelsemine ($C_{20}H_{22}N_2O_2$; M_r 322.4) (dried drug).

CHARACTERS

Macroscopic and microscopic characters described under identification tests A and B.

The drug has a hard consistency.

IDENTIFICATION

A. The underground organ occurs as straight or twisted fragments of variable length, 1-2 cm in diameter, with yellowish thread-like rootlets. The outside is grey-yellow, rough, creviced and longitudinally-grooved. The rhizome, generally similar in appearance to the root, is up to 3 cm in diameter.

B. Reduce the drug to a powder (355). The powder is pale yellow. When examined under a microscope using *chloral hydrate solution R,* the following are observed: isolated or small groups of lignified sclereids; long, fragmented non-lignified fibres; isolated or small clusters of calcium oxalate prisms crystals; cork fragments, those from the rhizome consist of thin-walled, polygonal cells, some containing a pale orange-yellow pigment; those from the root consist of dark orange-brown, thicker-walled, more irregular cells; vessels with perforated walls; sclerenchyma-tous medullary rays. When examined under a microscope using a 500 g/L solution of *glycerol R*, the powder comprises: starch grains, frequently simple, but sometimes composed of 2-4 units. The grains are small, spherical or almost polyhedral, up to 12 µm in diameter and sometimes with a small, rounded or slit-shaped hilum.

C. Thin-layer chromatography (*2.2.27*).

Test solution. To 3.0 g of finely-cut drug, add 30 mL of *ethanol R (65 per cent* V/V). Cover. Heat for 15 min on a water-bath at 60 °C. Allow to cool. Filter.

Reference solution. Dissolve 5 mg of *sempervirine nitrate R* and 50 mg of *scopoletin R* in 100 mL *methanol R.* Dilute 10.0 mL of solution to 100.0 mL with the same solvent.

Plate: TLC silica gel plate R.

Mobile phase: glacial acetic acid R, water R, butanol R (10:10:40 V/V/V).

The General Chapters and General Monographs of the European Pharmacopoeia and Preamble of the French Pharmacopoeia apply.

Application: 50 mL, as bands.

Development: over a path of 10 cm.

Drying: in air.

Detection A: ultraviolet light at 365 nm.

Results A: see below the sequence of fluorescent zones present in the chromatograms obtained with the reference solution and the test solution.

Top of the plate	
Scopoletin: a blue zone Sempervirine nitrate: a purple-blue zone	A blue zone (scopoletin) A purple-blue zone (sempervirine) Two purple-blue zones
Reference solution	Test solution

Detection B: first spray with a 10 g/L solution of *potassium ferricyanide R* then with a 26 g/L solution of *ferric chloride R.* Examine in daylight.

Results B: see below the sequence of zones present in the chromatograms of the reference solution and the test solution.

Top of the plate	
Scopoletin: a blue zone	A blue zone (scopoletin) Four blue zones
Reference solution	Test solution

TESTS

Foreign matter (*2.8.2*): it complies with the test for foreign matter.

Loss on drying *(2.2.32):* maximum 11.0 per cent, determined on 1.00 g of finely-cut drug, by drying in an oven at 105 °C for 2h.

Total ash *(2.4.16):* maximum 6.0 per cent.

ASSAY

Liquid chromatography *(2.2.29).*

Test solution. In a 250 mL round-bottomed flask, place 500.0 mg of powdered drug (500) and add 90 mL of *ethanol R (65 per cent V/V*). Heat under a reflux condenser for 15 min. Allow to cool. Filter. Rinse the filter and flask with 6 mL of *ethanol R (65 per cent* V/V). Dissolve the residue in 90 mL of *ethanol R (65 per cent V/V*). Treat as above. Combine the filtrates and the washings in a 200.0 mL volumetric flask and dilute to 200.0 mL with *ethanol R (65 per cent* V/V). Place 4.0 mL of solution in a 10.0 mL volumetric flask and dilute

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to 10.0 mL with the mobile phase.

Reference solution. In a 100.0 mL volumetric flask, dissolve 25.0 mg of *gelsemine R* in 10 mL of *ethanol R* and dilute to 100.0 mL with the same solvent. Place 10.0 mL of this solution in a 50.0 mL volumetric flask and dilute to 50.0 mL with the mobile phase. Place 5.0 mL of this solution in a 100.0 mL volumetric flask and dilute to 100.0 mL with the mobile phase.

Column:
— *size: l* = 0.25 m, *Ø* = 3 mm,
— *stationary phase: octadecylsilyl silica gel for chromatography R (5* mm). *Mobile phase: butylamine R, water R, methanol R* (0.1:22:78 *V/V/V*).

Flow rate: 0.4 mL/min.

Detection: spectrophotometer at 255 nm.

Injection: 20 mL.

Note the retention time of gelsemine.

Locate gelsemine in the test solution chromatogram using the retention time noted in the reference solution chromatogram.

Calculate the percentage content of gelsemine, expressed with reference to the dried drug, from the expression:

$$\frac{A_1 \times m_2 \times 5}{A_2 \times m_1}$$

A_1 = peak area for gelsemine in the test solution chromatogram,

A_2 = peak area for gelsemine in the reference solution chromatogram,

m_1 = mass of the dried drug sample in milligrams,

m_2 = mass of gelsemine in the reference solution in milligrams.

STOCK

DEFINITION

Yellow jessamine mother tincture complies with the requirements of the general technique for the preparation of mother tinctures (see *Homoeopathic Preparations (1038)* and French Pharmacopoeia Authority Supplement). The mother tincture is prepared with ethanol (65 per cent *V/V*), using the dried underground part of *Gelsemium sempervirens (L.)* Ait.

Content: minimum 0.010 per cent *m/m* of gelsemine ($C_{20}H_{22}N_2O_2$; M_r 322.4).

The General Chapters and General Monographs of the European Pharmacopoeia and Preamble of the French Pharmacopoeia apply.

CHARACTERS

Appearance: brown-yellow liquid.

IDENTIFICATION

Thin-layer chromatography (2.2.27).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *sempervirine nitrate R* and 50 mg of *scopoletin R* in 100 mL of *methanol R.* Dilute 10.0 mL of solution to 100.0 mL with the same solvent.

Plate: TLC silica gel plate R.

Mobile phase: glacial acetic acid R, water R, butanol R (10:10:40 *V/V/V*).

Application: 50 mL, as bands.

Development: over a path of 10 cm.

Drying: in air.

Detection A: ultraviolet light at 365 nm.

Results A: see below the sequence of fluorescent zones present in the chromatograms of the reference solution and the test solution.

Top of the plate	
Scopoletin: a blue zone Sempervirine nitrate: a purple-blue zone	A blue zone (scopoletin) A purple-blue zone (sempervirine) Two purple-blue zones
Reference solution	Test solution

Detection B: first spray with a 10 g/L solution of *potassium ferricyanide R,* then with a 26 g/L solution of *ferric chloride R.* Examine in daylight.
Results B: see below the sequence of zones present in the chromatograms of the reference solution and the test solution.

Top of the plate	
Scopoletin: a blue zone	A blue zone (scopoletin) Four blue zones
Reference solution	Test solution

TESTS

Ethanol *(2.9.10):* 60 per cent *V/V* to 70 per cent *V/V*.

The General Chapters and General Monographs of the European Pharmacopoeia and Preamble of the French Pharmacopoeia apply.

Dry residue (*2.8.16*): minimum 0.5 per cent *m/m.*

ASSAY

Liquid chromatography *(2.2.29).*

Test solution. In a 10.0 mL volumetric flask, place 250.0 mg of mother tincture and dilute to 10.0 mL with the mobile phase.

Reference solution. In a 100.0 mL volumetric flask, dissolve 25.0 mg of *gelsemine R* in 10 mL of *ethanol R* and dilute to 100.0 mL with the same solvent. Place 10.0 mL of this solution in a 50.0 mL volumetric flask and dilute to 50.0 mL with the mobile phase. Place 5.0 mL of this solution in a 50.0 mL volumetric flask and dilute to 50.0 mL with the mobile phase.

Column:
— *size: l* = 0.250 m, *Ø* = 3 mm,
— *stationary phase: octadecylsilyl silica gel for chromatography R (5* mm).

Mobile phase: butylamine R, water R, methanol R (0.1:22:78 *V/V/V*).

Flow rate: 0.4 mL/min.

Detection: spectrophotometer at 255 nm.

Injection: 20 mL.

Note the retention time of gelsemine.

Locate gelsemine in the test solution chromatogram using the retention time noted in the reference solution chromatogram.

Calculate the percentage content *m/m* of gelsemine from the expression:

$$\frac{A_1 \times m_2}{A_2 \times m_1 \times 5}$$

A_1 = peak area for gelsemine in the test solution chromatogram,

A_2 = peak area for gelsemine in the reference solution chromatogram,

m_1 = mass of the mother tincture sample in milligrams,

m_2 = mass of gelsemine in the reference solution in milligrams.