DOWNY HEMPNETTLE FOR HOMOEOPATHIC PREPARATIONS

GALEOPSIS OCHROLEUCA FOR HOMOEOPATHIC PREPARATIONS

Galeopsis segetum ad praeparationes homoeopathicas

DEFINITION

Whole, fresh, blooming plant, *Galeopsis segetum* Necker (= *Galeopsis dubia* Leers).

CHARACTERS

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

IDENTIFICATION

A. Annual plant with developed main root, puberulent, ramose, erect stem, 10 to 50 cm high with no bulge. Leaves, 3 to 6 cm long, and 1 to 3 cm large, lanceolate, oval, petioled, opposite; with regular saw-like indentations, velvety and silky mainly underneath, showing protruding veins on the underside and slightly depressed on the upper side. Flowers displayed in often pauciflorous whorls at the axil of variegated pale yellow or pinkish leaves. Pubescent silky calix, with quite similar indentations, lanceaolate with awl or bell shape. Corolla, 2 to 3 cm, 3 or 4 times longer than the calix with a glabrous inside tube showing 2 conical bulges at the base of the inferior mid lobe and a superior lip arched like a helmet.

B. Take a sample of abaxial epidermis of a leaf. Examine under a microscope using *chloral hydrate solution R*: epidermis composed of cells with lobed outline, numerous stomata of anomocytic type (*2.8.3*); covering and secretory trichomes. Multicellular covering trichomes (2 to 3 cells) with large rounded basal cell; intermediate cells, swollen at their junction and pointed, oblong distal cell. Secretory trichomes of two types: some with unicellular foot and 4-celled head, others with unicellular foot and 8-celled head of Labiatae type.

TESTS

Foreign matter (*2.8.2*): maximum 5 per cent.

Loss on drying (*2.2.32*): minimum 60.0 per cent determined on 5.0 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

STOCK

DEFINITION

Downy hempnettle 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 whole, fresh, blooming plant, *Galeopsis segetum* Necker.

Content: minimum 0.02 per cent *m/m* of total hydroxycinnamic derivatives, expressed as

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

chlorogenic acid ($C_{16}H_{18}O_9$; M_r 354.3).

CHARACTERS

Appearance: greenish-brown liquid.

IDENTIFICATION

A. Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *chlorogenic acid R*, 5 mg of *rosmarinic acid R*, and 5 mg of *rutin R* in 20 mL of *ethanol* (*96 per cent*) *R*.

Plate: *TLC silica gel plate R*.

Mobile phase: *anhydrous formic acid R, water R, ethyle acetate R* (10:10:80 *V/V/V*).

Application: 20 µL, as bands.

Development: over a path of 10 cm.

Drying: in air.

Detection: first spray with a 10 g/L solution of *diphenylboric acid aminoethyl ester R* in *methanol R* then with a 50 g/L solution of *macrogol 400 R* in *methanol R.* Allow to dry for about 30 min. Examine in ultraviolet light at 365 nm.

Results: see below the sequence of fluorescent zones present in the chromatograms obtained with the reference solution and the test solution. Furthermore other faint fluorescent zones may be present in the chromatogram obtained with the test solution.

Top of the plate	
Rosmarinic acid: a greenish-blue zone ------ Chlorogenic acid: a greenish-blue zone ------ Rutin: an orange zone	 ------ A greenish-blue zone (chlorogenic acid) An orange zone ------
Reference solution	**Test solution**

B. Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 10 mg of *boldine R* and 10 mg of *stachydrine hydrochloride R* in 10 mL of *ethanol* (*96 per cent*) *R*.

Plate: *TLC silica gel plate R*.

Mobile phase: *water R, methanol R, glacial acetic acid R, methylene chloride R* (2:3:8:15 *V/V/V/V*).

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

Application: 20 µL, as bands.

Development: over a path of 10 cm.

Drying: in air.

Detection: spray with *potassium iodobismuthate solution R1*. Examine in daylight.

Results: see below the sequence of zones present in the chromatograms obtained with the reference solution and the test solution. Furthermore other faint zones may be present in the chromatogram obtained with the test solution.

Top of the plate	
Boldine: an orange zone --- --- Stachydrine hydrochloride: an orange zone	 --- --- An orange zone (stachydrine)
Reference solution	**Test solution**

TESTS

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

Dry residue (*2.8.16*): minimum 1.0 per cent *m/m*.

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Mother solution. In a 20.0 mL volumetric flask, place 10.00 g of mother tincture and dilute to 20.0 mL with *ethanol* (50 per cent *V/V*) *R*.

Test solution. In a 20.0 mL volumetric flask, place 2.0 mL of mother solution, add 4.0 mL of *hydrochloric acid 0.5 M*, 4.0 mL of a solution comprising 100 g/L *sodium nitrite R* and 100 g/L *sodium molybdate R* in equal quantities, then 4.0 mL of *dilute sodium hydroxide solution R*. Shake, then dilute to 20.0 mL with *water R*.

Compensation liquid. In a 20.0 mL volumetric flask, place 2.0 mL of mother solution, add 4.0 mL *hydrochloric acid 0.5 M,* then 4.0 mL of *dilute sodium hydroxide solution R.* Shake, then dilute to 20.0 mL with *water R*.

Measure the absorbance of the test solution immediately at 525 nm, in comparison with the compensation liquid.

Calculate the percentage content *m/m* of total hydroxycinnamic derivatives, expressed as chlorogenic acid from the expression:

$$\frac{A \times 200}{188 \times m}$$

i.e. taking the specific absorbance of chlorogenic acid to be 188.

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

A = absorbance of the test solution at 525 nm,
m = mass of the mother tincture sample, in grams.

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