GROUND-IVY
FOR HOMOEOPATHIC PREPARATIONS

GLECHOMA HEDERACEA
FOR HOMOEOPATHIC PREPARATIONS

Glechoma hederacea ad praeparationes homoeopathicas

DEFINITION

Whole, fresh, blooming plant, *Glechoma hederacea* L.

CHARACTERS

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

IDENTIFICATION

A. Perennial plant with creeping stems whose twigs bear a small bundle of adventive roots on most nodes. Square creeping stems (1 mm to 2 mm large) bearing erect, floriferous twigs. Opposite, petioled, reniform or cordiform leaves; largely indented in 2 lobes at the base, with a slighty embossed surface and crenate edges of the lamina of a dark green colour, sometimes turning purple. Light violet flowers spotted with violet; gathered in the axil of the leaves in clusters of 3 or 4 facing the same direction. Straight tubular calyx with 15 veins, 5 slightly uneven teeth, bilabiate corolla 15 mm to 20 mm with an erect upper lip.

B. Take a sample of epidermis from the underside of the leaf. Examine under a microscope using *chloral hydrate solution R:* abaxial epidermis of the lamina presenting stomata of diacytic type (*2.8.3*), numerous covering trichomes, some are multicellular and uniseriate, stout at the base, with tapered end, others are short, sharp, unicellular; numerous secretory trichomes with unicellular foot and multicellular head of Labiatae type.

TEST

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

Loss on drying (*2.2.32*): minimum 70.0 per cent determined on 5.0 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

STOCK

DEFINITION

Ground-ivy mother tincture complies with the requirements of the general technique for the preparation of mother tinctures (see *Homoeopathic Preparations (1038)* and French Pharmacopoeia

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

Authority Supplement). The mother tincture is prepared with ethanol (45 per cent *V/V)*, using the whole, fresh, blooming plant, *Glechoma hederacea* L.

Content: minimum 0,013 per cent *m/m* of total hydroxycinnamic derivatives, expressed as chlorogenic acid ($C_{16}H_{18}O_9$; M_r 354.3).

CHARACTERS

Appearance: brown liquid.

IDENTIFICATION

Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 10 mg of *rutin R,* 10 mg of *caffeic acid R* and 10 mg of *chlorogenic acid R* in 30 mL of *methanol R.*

Plate: *TLC silica gel plate R*.

Mobile phase: *anhydrous formic acid R, water R, methyl ethyl ketone R, ethyl acetate R* (10:10:30:50 *V/V/V/V).*

Application: 30 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 the plate to dry in air 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	
Caffeic acid: a greenish-blue zone	A greenish-blue zone (caffeic acid) Two to three greenish-blue zones
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Chlorogenic acid: a greenish-blue zone	A greenish-blue zone may occur (chlorogenic acid)
Rutin: an orange zone	A faint orange zone (rutin)
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Reference solution	**Test solution**

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

TEST

Ethanol (*2.9.10*): 40 per cent *V/V* to 50 per cent *V/V*.

Dry residue (*2.8.16*): minimum 1.7 per cent *m/m*.

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Stock solution. In a 20.0 mL volumetric flask, place 5.000 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 tincture, add 4.0 mL of *hydrochloric acid 0.5 M,* 4.0 mL of a solution comprising 100 g/L of *sodium nitrite R* and 100 g/L of *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 of *hydrochloric acid 0.5 M* then 4.0 mL of *dilute sodium hydroxide solution R.* Shake, then dilute to 20.0 mL of *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.

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.