WHITE DEADNETTLE FOR HOMOEOPATHIC PREPARATIONS

LAMIUM ALBUM FOR HOMOEOPATHIC PREPARATIONS

Lamium album ad praeparationes homoeopathicas

DEFINITION

Whole, fresh, flowering plant, *Lamium album* L.

IDENTIFICATION

A. Plant measuring 15-65 cm high. Whitish stoloniferous rhizome. Four-angled section stems and hairy leaves. Green, oval leaves, heart-shaped, inversed in their lower part, markedly and irregularly serrated, acute at the apex; long leaves tapering to a point at the upper part of the flowering stems. White or yellowish-white flowers clustered at the axils of each pair of leaves in the upper part of the plant. Calyx frequently spotted with black near its base, with elongated teeth, narrow, acute, limp, more or less spaced out from each other and longer than the rest of the calyx. Corolla tube very narrow at its base, then suddenly widened and bending backwards, inclosing a ring of very oblique hairs; upper lip hairy outwardly and on the margins, bearing a double fold; lower lip with a middle lobe more or less rounded and 2 side lobes shaped by 2 or 3 acute and short teeth on either side. Stamen with hairy anthers. Nectaries well developed in the front part of the flower, reaching a little more than half the length of the ovary.

B. Take a fragment of abaxial epidermis from the leaf. Examine under a microscope using *chloral hydrate solution R.* The epidermis of the lamina is composed of cells with markedly sinuous walls, stomata generally diacytic (*2.8.3*), covering trichomes and glandular trichomes. The multicellular and uniseriate covering trichomes are of two types: some are stiff with thickened and slightly punctuated walls, the others with a basal cell with strongly thickened wall and a distal part with thin and punctuated wall; very frequently the distal part is missing; the glandular trichomes are of two types: very scarce trichomes of laminacea type with unicellular foot and multicellular head (8-12 cells); the others with unicellular foot and bi to tetra cellular, rounded head.

TESTS

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

Loss on drying (*2.2.32*): minimum 65.0 per cent, determined on 5.0 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

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

STOCK

DEFINITION

White deadnettle mother tincture is prepared with ethanol (55 per cent *V/V*), using the whole, fresh, flowering plant, *Labium album* L.

Content: minimum 0.030 per cent *m/m* of total flavonoids, expressed as rutin ($C_{27}H_{30}O_{16}$, $3H_2O$; M_r 665).

PRODUCTION

Method 1.1.10 (2371). Drug fragmented into 4-5 cm long segments. Maceration time: 3-5 weeks.

CHARACTERS

Appearance: greenish-brown liquid.

IDENTIFICATION

Thin-layer chromatography (*2.2.27*).

Test solution. Mother tincture.

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

Plate: *TLC silica gel plate R* (5-40 µm) [or *TLC silica gel plate R* (2-10 µm)].

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

Application: 20 µL [or 10 µL] as bands.

Development: over a path of 10 cm [or 7 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.

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

Top of the plate	
	A yellowish-green zone A blue zone ------
------ Chlorogenic acid: a greenish-blue zone Rutin: an orange zone ------	A greenish-blue zone An orange zone ------
Reference solution	**Test solution**

TESTS

Ethanol (*2.9.10*): 50 per cent *V/V* to 60 per cent *V/V.*

Dry residue (*2.8.16*): minimum 2.0 per cent *m/m*.

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Stock solution. Evaporate 2.000 g of mother tincture to dryness, under reduced pressure. Dilute the residue in 25.0 mL of a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R.*

Test solution. Place 10.0 mL of stock solution into a 25.0 mL volumetric flask, add 10.0 mL of a 25 g/L *boric acid R* and 20 g/L *oxalic acid R* solution in *anhydrous formic acid R* and dilute to 25.0 mL with *glacial acetic acid R.*

Compensation liquid. Place 10.0 mL of stock solution into a 25.0 mL volumetric flask, add 10.0 mL of *anhydrous formic acid R* then dilute to 25.0 mL with *glacial acetic acid R.*

Reference stock solution. In a 50.0 mL volumetric flask, dissolve 25.0 mg of *rutin CRS* in a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R* and dilute to 50.0 mL with the same mixture.

Reference solution. Place 1.0 mL of reference stock solution into a 25.0 mL volumetric flask, add 9 mL of a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R*. Then add 10.0 mL of a 25 g/L *boric acid R* and 20 g/L *oxalic acid R* solution in *anhydrous formic acid R* and dilute to 25.0 mL with *glacial acetic acid R.*

Compensation liquid of the reference solution. Place 1.0 mL of reference stock solution into a 25.0 mL volumetric flask, add 9 mL of a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R.* Then add 10.0 mL of *anhydrous formic acid R* and dilute to 25.0 mL with *glacial acetic acid R.*

Thirty min after the addition of the last reagent, measure the absorbance of the test solution and the reference solution at 420 nm, in comparison with the compensation liquids.

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

Calculate the percentage content *m/m* of total flavonoids, expressed as rutin, from the expression:

$$\frac{A_1 \times m_2 \times p}{A_2 \times m_1 \times 20}$$

A_1 = absorbance of the test solution,
A_2 = absorbance of the reference solution,
m_1 = mass of the mother tincture sample, in grams,
m_2 = mass of *rutin CRS* sample, in grams,
p = percentage content of rutin in *rutin CRS*.

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