LAVENDER FOR HOMOEOPATHIC PREPARATIONS LAVANDULA VERA FOR HOMOEOPATHIC PREPARATIONS

Lavandula angustifolia ad praeparationes homoeopathicas

DEFINITION

Fresh, blooming, flower-heads of *Lavandula angustifolia* Miller.

CHARACTERS

Macroscopic characters described under identification.

Strong aromatic odour.

IDENTIFICATION

Floriferous stem, about 15 to 20 cm high, bare below the inflorescences; bearing long spikes interrupted by biparous cymes. Triangular-oval bracts, membranous and yellowish-brown. Shortly pedunculated flower. Bluish-green, tubular calyx, ending with 4 very short teeth and a fifth one in the shape of short, rounded lobe. Blue, bilabiate corolla with upper, bifid lip and three-lobed lower lip. Four didynamous stamens, topped by ovoid anthers. Bilocular ovary divided into 4 uniovulate loculi by a false dissepiment.

TESTS

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

Loss on drying (*2.2.32*): minimum 55.0 per cent, determined on 5.0 g of finely-cut drug, by drying in an oven at 100-105 °C for 2 h.

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

2007.

STOCK

DEFINITION

Lavender 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 fresh, blooming, flower-heads of *Lavandula angustifolia* Miller.

Content : minimum 0.015 per cent *m/m* of herniarine ($C_{10}H_8O_3$; M_r 176.2).

CHARACTERS

Greenish-brown liquid.

IDENTIFICATION

A. Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *isoquercitroside R* and 1 mg of *scopoletin R* in 20 ml of *ethanol (96 per cent) R*.

Plate : TLC silica gel plate R.

Mobile phase : anhydrous formic acid R, water R, ethyl 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 spray with a 50 g/l solution of *macrogol 400 R* in *methanol R*. Allow the plate 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.

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

Top of the plate	
Scopoletin : a blue zone --- Isoquercitroside : an orange zone ---	A greenish-blue zone --- A greenish-yellow zone A faint orange zone (isoquercitroside) An orange zone ---
Reference solution	**Test solution**

B. Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 µl of *linalol R* and 5 µl of *linalyl acetate R* in 30 ml of *ethanol (96 per cent) R*.

Plate : TLC silica gel plate R.

Mobile phase : isopropyl ether R, methylene chloride R (10:90 *V/V*).

Application : 30 µl, as bands.

Development : over a path of 10 cm.

Drying : in air.

Detection : spray with *anisaldehyde solution R* and heat at 100-105 °C for 10 min ; 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	
Linalyl acetate : a purplish-grey zone --- Linalol : a purplish-grey zone ---	A purplish zone A purplish-grey zone (linalyl acetate) A pink zone --- A purplish-grey zone (linalol) --- A purplish zone A purple zone
Reference solution	**Test solution**

C. Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *herniarine R* and 2 mg of *coumarin R* in 40 ml of *ethanol (96 per cent) R*.

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

Plate : TLC silica gel plate R.

Mobile phase : isopropyl ether R, methylene chloride R (10:90 *V*/*V*).

Application : 30 µl, as bands.

Development : over a path of 10 cm.

Drying : in air.

Detection A : examine in 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. Furthermore other faint fluorescent zones may be present in the chromatogram obtained with the test solution.

Top of the plate	
Herniarine : a purplish-blue zone	A purplish-blue zone (herniarine)
Reference solution	**Test solution**

Detection B : spray with a 100 g/l solution of *potassium hydroxide R* in *methanol R* ; examine in ultraviolet light at 365 nm.

Results B : 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	
Coumarin : a green zone	A green zone (coumarin)
Herniarine : a blue zone	A blue zone (herniarine)
Reference solution	**Test solution**

TESTS

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

Methanol and 2-propanol (*2.9.11*) : maximum 0.05 per cent *V*/*V* ; maximum 0.05 per cent *V*/*V*.

Dry residue (*2.8.16*) : minimum 1.5 per cent *m*/*m*.

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

ASSAY

Liquid chromatography (*2.2.29*).

Test solution. In a 50.0 ml volumetric flask, place about 1.000 g of mother tincture accurately weighed, dilute to 50.0 ml with *ethanol* (60 per cent *V*/*V*) *R*.

Reference solution. In a 20.0 ml volumetric flask, dissolve 5.0 mg of *herniarine R* and 5.0 mg of *umbelliferone R* in *ethanol* (60 per cent *V*/*V*) *R* and dilute to 20.0 ml with the same solvent. In a 50.0 ml volumetric flask place 1.0 ml of this solution and dilute with *ethanol* (60 per cent *V*/*V*) *R*.

Column :

— *size : l* = 0.25 m, Ø = 4 mm,

— *stationary phase : octadecylsilyl silica gel for chromatography R* (5 μm).

Mobile phase : mix 200 ml of *acetonitrile R*, 800 ml of *water R* and 10 ml of *glacial acetic acid R*.

Flow rate : 1.0 ml/min.

Detection : spectrophotometer at 320 nm.

Injection : 10 μl.

Elution order : when the chromatogram is registered following the prescribed conditions, the constituents elute in the order stated for the preparation of the test solution. Note the retention time of these substances.

System suitability : reference solution.

— *symmetry factor of herniarine :* 0.9 to 1.3.

Calculate the percentage content *m*/*m* of herniarine, from the expression :

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

A_1 = area of the peak of herniarine in the chromatogram obtained with the test solution,

A_2 = area of the peak of herniarine in the chromatogram obtained with the reference solution,

m_1 = mass of the mother tincture sample, in grams,

m_2 = mass of the sample of herniarine in the reference solution, in grams.

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

2007.