POKE ROOT FOR HOMOEOPATHIC PREPARATIONS PHYTOLACCA DECANDRA FOR HOMOEOPATHIC PREPARATIONS

Phytolacca decandra ad praeparationes homoeopathicas

DEFINITION

Whole, fresh plant with ripe berries, *Phytolacca americana* L. (= *P. decandra* L.).

IDENTIFICATION

A. Perennial plant that may reach over 2 m high. Large, napiform root. Erect, ramified stem, that may turn reddish. Alternate, elliptical oval leaves, entire, glabrous, 10-40 cm long, that may turn reddish as well. Inflorescence in elongated raceme, opposite to the leaves, 10-15 cm long. Dark red berries, turning purplish-black when ripe, fleshy, globular with a trough in the middle and presenting 10 ribs. Some perennial flowers, each comprising 5 whitish-pink petal-like sepals, 10 stamens, one superior ovary with 10 carpels topped by a short style.

B. Take a sample of underside epidermis of the leaf. Examine under a microscope, using *chloral hydrate solution R*: lamina epidermis composed of cells with sinuous cell-walls and numerous anomocytic stomata (*2.8.3*), most of the time accompanied by cells of spongy parenchyma containing numerous chloroplasts and by some big rounded cells containing calcium oxalate raphides.

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

DESCRIPTION

Poke root mother tincture is prepared with *ethanol* (45 per cent *V*/*V*), using the whole, fresh plant with ripe berries, *Phytolacca americana* L. (= *P. decandra* L.).

Content : minimum 0.02 per cent *m*/*m* of total flavonoids, expressed as rutin ($C_{27}H_{30}O_{16}$, 3 H_2O ; M_r 665).

PRODUCTION

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

CHARACTERS

Brown liquid.

IDENTIFICATION

Thin-layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *hederasaponine C R* and 5 mg of *hederin R* in *methanol R* and dilute to 10 ml with the same solvent.

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*).

Application : 20 µl, as bands.

Development : over a path of 12 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.

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Top of the plate	
Hederin : a brown zone --- --- Hederasaponine C : a brown zone	A brown zone --- Two brown zones --- Two joined brown zones
Test solution	**Test solution**

TESTS

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

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. In a 25.0 ml volumetric flask, place 10.0 ml of stock solution, add 10.0 ml of a solution of 25.0 g/l *boric acid R* and 20.0 g/l *oxalic acid* R in *anhydrous formic acid R* then dilute to 25.0 ml with *glacial acetic acid R*.

Compensation liquid 1. In a 25.0 ml volumetric flask, place 10.0 ml of stock solution, add 10.0 ml of *anhydrous formic acid R* and 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 solvent. In a 20.0 ml volumetric flask place 5.0 ml of this solution, add a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R* and dilute to 20.0 ml with the same solvent.

Reference solution. In a 25.0 ml volumetric flask, place 4.0 ml of reference stock solution, add 6.0 ml of a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R* then 10.0 ml of a solution of 25.0 g/l *boric acid R* and 20.0 g/l *oxalic acid R* in *anhydrous formic acid R* then dilute to 25.0 ml with *glacial acetic acid R*.

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Compensation liquid 2. In a 25.0 ml volumetric flask, place 4.0 ml of reference stock solution, add 6.0 ml of a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R*, 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, at 420 nm, in comparison with compensation liquid 1 and the absorbance of the reference solution, in comparison with compensation liquid 2.

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

$$\frac{A_1 \times m_2 \times 0.05 \times p}{A_2 \times m_1}$$

A_1 = absorbance of the test solution,

A_2 = absorbance of the reference solution,

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

m_2 = mass of rutin sample in the reference solution, in grams,

p = percentage content of rutin in *rutin CRS*.

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