Rhatany root

EUROPEAN PHARMACOPOEIA 5.0

Rhatany root

DEFINITION

Rhatany, known as Peruvian rhatany, consists of the dried, usually fragmented, underground organs of *Krameria triandra* Ruiz and Pavon. It contains not less than 5.0 per cent of tannins, expressed as pyrogallol (C₆H₆O₃; "M", 126.1), calculated with reference to the dried drug.

CHARACTERS

It has the macroscopic and microscopic characters described under identification tests A and B.

IDENTIFICATION

A. The taproot is dark red-brown and has a thick, knotty crown. The secondary roots are the same colour and nearly straight or somewhat tortuous. The bark is rugged to scaly in the older pieces and smooth with sharp, transverse fissures in the younger pieces; it separates readily from the wood. The fracture is fibrous in the bark and splintery in the wood. The smooth, transversely cut surface shows a dark brown-red bark about one third of the radius in thickness; a dense, pale red-brown and finely porous wood is present with numerous fine medullary rays; the central heartwood is often darker.

B. Reduce to a powder (355). The powder is brown-red. Examine under a microscope using *chloral hydrate solution R*. The powder shows cork cells containing dark brown phlobaphenes; fragments of uncontracted phloem fibres, usually 12 µm to 30 µm in diameter with moderately thick walls; phloem parenchyma cells in files containing prisms and microcrystals of calcium oxalate; fragments of vessels usually 20 µm to 60 µm in diameter with bordered pits; fragments of tracheids up to 20 µm wide with slit-shaped pits. Examine under a microscope using a 50 per cent V/V solution of glycerol R. The powder shows rounded starch granules, simple or two-to-four compound, an individual granule measuring up to 30 µm in diameter and some granules being found in the cells of the medullary rays and in the parenchyma.

C. Examine by thin-layer chromatography (2.2.27), using a TLC silica gel plate R.

**Test solution.** To 1.0 g of the powdered drug (355) add 10 ml of a mixture of 3 volumes of water R and 7 volumes of alcohol R, shake for 10 min and filter. To the filtrate add 10 ml of light petroleum R and shake. Separate the light petroleum layer, add 2 g of anhydrous sodium sulphate R, shake and filter. Evaporate the filtrate to dryness. Dissolve the residue in 0.5 ml of methanol R. **Reference solution.** Dissolve 5.0 mg of Sudan red G R in 10 ml of methanol R. Apply to the plate as bands 10 µl of each solution. Develop over a path of 15 cm using a mixture of 2 volumes of ethyl acetate R and 98 volumes of toluene R. Allow the plate to dry in air and spray the plate with a 5 g/l solution of fast blue B salt R. Allow the plate to dry in air and spray the plate with 0.1 M ethanolic sodium hydroxide. Examine in daylight. The chromatogram obtained with the reference solution shows in the lower third a red zone due to Sudan red G. The chromatogram obtained with the test solution shows a violet zone due to rhatany phenol I similar in position to the zone of Sudan red G in the chromatogram obtained with the reference solution, below it the brownish zone due to rhatany phenol II and below it the bluish-grey zone due to rhatany phenol III. Further zones may be present.

TESTS

**Extractable matter:** minimum 15.0 per cent.

To 2.00 g of the powdered drug (250) add a mixture of 8 g of water R and 12 g of alcohol R and allow to macerate for 2 h, shaking frequently. Filter, evaporate 5 g of the filtrate to dryness on a water-bath and dry at 100-105 °C for 2 h. The residue weighs a minimum of 75 mg.

**Foreign matter (2.8.2).** It complies with the test for foreign matter.

**Loss on drying** (2.2.32): maximum 10.0 per cent, determined on 1,000 g of the powdered drug (355) by drying in an oven at 100-105 °C for 2 h.

**Total ash** (2.4.16): maximum 8.0 per cent.

01/2005:0289

**RHATANY ROOT**

**Ratanhaiae radix**

STORAGE

Store protected from light.

01/2005:1888

**RHATANY TINCTURE**

**Ratanhaiae tinctura**

**DEFINITION**

Tincture produced from *Rhatany root* (0289).

**Content:** minimum 1.0 per cent m/m of tannins, expressed as pyrogallol (C₆H₆O₃; "M", 126.1).

**PRODUCTION**

The tincture is produced from 1 part of the drug and 5 parts of ethanol (70 per cent V/V) by a suitable procedure.

**CHARACTERS**

**Appearance:** reddish-brown liquid.

**IDENTIFICATION**

Thin-layer chromatography (2.2.27).