

**BUTCHER'S BROOM
FOR HOMOEOPATHIC PREPARATIONS**

**RUSCUS ACULEATUS
FOR HOMOEOPATHIC PREPARATIONS**

Ruscus aculeatus ad praeparationes homoeopathicas

DEFINITION

Fresh, whole or fragmented underground part of *Ruscus aculeatus* L.

CHARACTERS

Macroscopic characters described under identification.

IDENTIFICATION

Creeping rhizome, yellowish-grey, about 10 cm long, knotty, articulated of irregular thickness and marked with very close rings; upper side bearing cut remains of stems, erect, stiff, finely striated longitudinally and of a whitish-colour, about 2-5 cm long; under and side surfaces bearing adventitious roots, full and ligneous, about 2.5 mm in diameter, the same colour as the rhizome, measuring up to 20 cm long. The cross-section of the rhizome shows a cortical zone relatively thin, very clearly separated from the central cylinder by a pericyclic zone, very conspicuous and fairly thick; central part characterised by numerous pits corresponding to the vascular bundles.

TESTS

Foreign matter (2.8.2): maximum 5 per cent.

Loss on drying (2.2.32): minimum 60.0 per cent, determined on 5.0 g of finely-cut drug by drying in an oven at 105 °C for 2 h.

STOCK

DEFINITION

Butcher's broom 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, whole or fragmented underground part of *Ruscus aculeatus* L.

Content: minimum 0.25 per cent of total saponins, expressed as ruscogenins [mixture of neoruscogenin (C₂₇H₄₀O₄; M_r 428.6) and ruscogenin (C₂₇H₄₂O₄; M_r 430.6)].

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

CHARACTERS

Appearance: light orange liquid.

IDENTIFICATION

Thin-layer chromatography (2.2.27).

Test solution. Place 15.0 g of mother tincture and 50 mL of *dilute hydrochloric acid R* into a 100 mL volumetric flask. Heat on a water-bath under a reflux condenser for 40 min. Allow to cool and extract the mixture with 3 quantities, each of 25 mL of *methylene chloride R*. Combine the organic solutions and dry over *anhydrous sodium sulfate R*. Filter and evaporate to dryness. Dissolve the residue in 5 mL of *methanol R*.

Reference solution. Dissolve 1 mg of *ruscogenin R* and 1 mg of *stigmasterol R* in *methanol R* and dilute to 5 mL with the same solvent.

Plate: TLC silica gel plate R.

Mobile phase: *methanol R*, *methylene chloride R* (7:93 V/V).

Application: 10 µL as bands.

Development: over a path of 15 cm.

Drying: in air.

Detection: spray with *vanillin reagent R*. Heat the plate at 100-105 °C for 5 min. Allow to cool for 10 min and 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	
Stigmasterol: a purple zone -----	A purple zone ----- A purple zone
Ruscogenin: a brownish-yellow zone -----	A brownish-yellow zone (ruscogenin) Several variously coloured zones -----
Reference solution	Test solution

TESTS

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

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

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

ASSAY

Ultraviolet and visible absorption spectrophotometry (2.2.25).

Test solution. In a 100.0 mL volumetric flask, place a sample of mother tincture about 2.500 g and dilute to 100.0 mL with *methanol R*. Shake. Take 1.0 mL of this solution and evaporate to dryness. Dissolve the residue in 10.0 mL of *sulfuric acid R*. Leave in contact for 1h.

Compensation liquid. *Sulfuric acid R*.

Measure the absorbance of the test solution at 395 nm in comparison with the compensation liquid.

Calculate the percentage content *m/m* of total saponins, expressed as ruscogenins from the expression:

$$\frac{A \times 1,000}{354 \times m}$$

i.e. taking the specific absorbance of ruscogenins to be 354.

A = absorbance of the test solution,

m = mass of the mother tincture sample, in grams.