

**BLUE COHOSH
FOR HOMOEOPATHIC PREPARATIONS**

**CAULOPHYLLUM THALICTROIDES
FOR HOMOEOPATHIC PREPARATIONS**

Caulophyllum thalictroides ad praeparationes homoeopathicas

DEFINITION

Dried underground organ of *Caulophyllum thalictroides* (L.) Michaux.

CHARACTERS

Macroscopic and microscopic characters described under identification tests A and B.

IDENTIFICATION

- A. Blue cohosh rhizome occurs in the form of brownish, extremely tortuous, irregular fragments, about 1 cm in diameter. Long, yellowish-brown wavy roots, about 0.5 mm in diameter emerge from the lower part and are entangled around the rhizome. In addition the rhizome has many deep leaf scars, nodes and a few fine striations. The transverse section shows a dark, outer ring of cork surrounding the lighter parenchyma and a circle of numerous grey dots can be observed near the surface.
- B. Reduce the underground organ to a powder (355). The powder is brown. Examine under a microscope, using *chloral hydrate solution R*. The powder contains: fragments of cork made up of superimposed polyhedral cells, fragments of parenchyma made up of amyloiferous polyhedral cells separated by meatuses, fragments of wood made up of punctuate or reticulate vessels and lignified ligneous parenchyma cells. Examine under a microscope using *glycerine R*. The powder contains numerous rounded starch granules, less than 10 µm in diameter, isolated or in groups of 2 or 3.
- C. Thin-layer chromatography (2.2.27).

Test solution. To 3 g of finely cut drug, add 30 mL of *ethanol* (65 per cent V/V) *R*. Cover. Heat for 15 min on a water-bath at 60 °C. Allow to cool. Filter.

Reference solution. Dissolve 5 mg of *cytisine R* and 5 mg of *sparteine sulfate R* in 20 mL of *methanol R*.

Plate: TLC silica gel plate *R*.

Mobile phase: *glacial acetic acid R*, *methanol R*, *methylene chloride R* (5:47.5:47.5 V/V/V).

Application: 40 µL as bands.

Development: over a path of 15 cm.

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

Drying: in air.

Detection: spray with *potassium iodobismuthate solution R*, then with *sodium nitrite solution R*. 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 zones may be present in the chromatogram obtained with the test solution.

Top of the plate	
Sparteine sulfate: an orange-brown zone	An orange-brown zone
Cytisine: a purple zone	An orange-brown zone An orange-brown zone
Reference solution	Test solution

D. Thin-layer chromatography (2.2.27).

Test solution. To 3 g of finely cut drug, add 30 mL of *ethanol* (65 per cent V/V) R. Cover. Heat for 15 min on a water-bath at 60 °C. Allow to cool. Filter.

Reference solution. Dissolve 10 mg of *caulophyllogenine R* and 10 mg of *hederagenine R* in 40 mL of *methanol R*.

Plate: TLC silica gel plate R.

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

Application: 40 µL as bands.

Development: over a path of 15 cm.

Drying: in air.

Detection: spray with a 100 g/L solution of *sulfuric acid R* in *ethanol* (96 per cent) R. Heat for 10 min at 100-105 °C. 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 zones may be present in the chromatogram obtained with the test solution

Top of the plate	
Hederagenine: a purple zone Caulophyllogenine: a purple zone	Two orange-pink zones Two purple-pink zones A greenish zone A grey zone
Reference solution	Test solution

TESTS

Foreign matter (2.8.2): maximum 3 per cent.

Loss on drying (2.2.32): minimum 12.0 per cent, determined on 1.0 g of finely cut drug, by drying in an oven at 105 °C for 2 h.

Total ash (2.4.16): maximum 10.0 per cent, determined on 1.000 g of finely cut drug.

STOCK

DEFINITION

Blue cohosh mother tincture complies with the general technique for the preparation of mother tinctures (see *Homœopathic Preparations (1038)* and French Pharmacopoeia Authority Supplement). The mother tincture is prepared with *ethanol* (65 per cent V/V), using the dried underground organs of *Caulophyllum thalictroides* (L.) Michaux.

CHARACTERS

Appearance: orange-brown liquid.

Liquorice-like odour.

IDENTIFICATION

A. Thin-layer chromatography (2.2.27).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *cytisine R* and 5 mg of *sparteine sulfate R* in 20 mL of *methanol R*.

Plate: TLC *silica gel plate R*.

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

Mobile phase: glacial acetic acid R, methanol R, methylene chloride R (5:47.5:47.5 V/V/V).

Application: 40 µL as bands.

Development: over a path of 15 cm.

Drying: in air.

Detection: spray with potassium iodobismuthate solution R, then with sodium nitrite solution R. 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 zones may be present in the chromatogram obtained with the test solution.

Top of the plate	
Sparteine sulfate: an orange-brown zone	An orange-brown zone
Cytisine: a purple zone	An orange-brown zone
Reference solution	Test solution

B. Thin-layer chromatography (2.2.27).

Test solution. Mother tincture.

Reference solution. Dissolve 10 mg of caulophyllogenine R and 10 mg of hederagenine R in 40 mL of methanol R.

Plate: TLC silica gel plate R.

Mobile phase: methanol R, methylene chloride R (10:90 V/V).

Application: 40 µL as bands.

Development: over a path of 15 cm.

Drying: in air.

Detection: spray with a 100 g/L solution of sulfuric acid R in ethanol (96 per cent) R. Heat for 10 min at 100-105 °C. 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 zones may be present in the chromatogram obtained with the test solution.

Top of the plate

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

Hederagenine: a purple zone Caulophyllogenine: a purple zone	Two orange-pink zones Two purple-pink zones A greenish zone A grey zone
Reference solution	Test solution

TESTS

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

Dry residue: minimum 1.3 per cent *m/m* (see French Pharmacopoeia Authority Supplement).

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