FRANGULA BARK
FOR HOMOEOPATHIC PREPARATIONS

RHAMNUS FRANGULA
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Rhamnus frangula cortex ad praeparationes homoeopathicas
Other Latin name used in homoeopathy: **Rhamnus**

The herbal drug complies with the requirements of monograph *Rhamnus fragula* L.*(0025).*

STOCK

DEFINITION

Frangula bark mother tincture complies with the requirements of the general technique for the preparation of mother tincture (see *Homoeopathic Preparations (1038)* and French Pharmacopoeia Authority Supplement).
The mother tincture is prepared with ethanol (65 per cent *V/V)*, using the dried bark of the stem and branches of *Rhamnus frangula* L. (*Frangula alnus* Miller).

Content: minimum 0.25 per cent *m/m* of glucofrangulins, expressed as glucofrangulin A ($C_{27}H_{30}O_{14}$; *M*r 578.5).

CHARACTERS

Appearance: reddish-brown liquid.

IDENTIFICATION

Thin-layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution (a). Dissolve 10 mg of *barbaloin R* in 20 mL of *methanol R*.

Reference solution (b). Dissolve 1 mg of *emodin R* in 6 mL of a mixture of *methanol R* and *methylene chloride R* (2:1 *V/V*).

Plate : *TLC silica gel plate R.*

Mobile phase: *water R, methanol R, ethyl acetate R* (13:17:100 *V/V/V*).

Application: 20 µL, as bands.

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

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 and test solutions. Furthermore other faint fluorescent zones may be present in the chromatogram obtained with the test solution.

Top of the plate		
Emodin:	a yellow zone	A yellow zone (emodin) A yellow zone A yellow zone
Barbaloin:	an orange zone	A blue zone An orange zone An orange zone
Reference solutions		**Test solution**

Detection B: spray with a 50 g/L solution of *potassium hydroxide R* in *ethanol (*50 per cent *V/V) R* and heat to 100-105 °C for 15 min. Examine in daylight.

Results B: see below the sequence of zones present in the chromatograms obtained with the reference and test solutions. Furthermore other faint zones may be present in the chromatogram obtained with the test solution.

Top of the plate		
Emodin:	a red zone	A red zone (emodin) A red zone A red zone
Barbaloin:	a yellow zone	A red zone A red zone
Reference solutions		**Test solution**

TESTS

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

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

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

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Carry out the assay protected from bright light.

In a volumetric flask, weigh 2.50 g of mother tincture. Dilute to 25.0 mL with a solution of *methanol (*70 per cent *V/V) R*. Mix. In a separating funnel, place 5.0 mL of solution. Add 50 mL of *water R* and 0.1 mL of *hydrochloric acid R*. Shake with five quantities, each of 20 mL of *light petroleum R*. Allow the layers to separate and transfer the aqueous layer into a 100.0 mL volumetric flask. Combine the light petroleum layers and wash with two quantities, each of 15 mL of *water R*. Use this water for washing the separating funnel and pour into the volumetric flask. Add 5 mL of a 50 g/L solution of *sodium carbonate R* and dilute to 100.0 mL with *water R*. Discard the light petroleum layer. Transfer 40.0 mL of the aqueous solution to a 200 mL round-bottomed flask with a ground-glass neck. Add 20 mL of a 200 g/L solution of *ferric chloride R*. Place the round-bottomed flask in a water-bath with the water level above that of the liquid in the flask, and heat under a reflux condenser for 20 min. Add 2 mL of *hydrochloric acid R* and continue heating for 20 min, shaking frequently until the precipitate has dissolved. Allow to cool and transfer the mixture into a separating funnel. Shake with three quantities, each of 25 mL of *ether R*, previously used to rinse the flask. Combine the 3 ether layers and wash with two quantities, each of 15 mL of *water R*. Transfer the ether layer into a volumetric flask and dilute to 100.0 mL with *ether R*. Evaporate 20.0 mL of the ether solution carefully to dryness and dissolve the residue in 10.0 mL of a 5 g/L solution of *magnesium acetate R* in *methanol R*.

Compensation liquid: *methanol R*.

Detection: 515 nm.

Calculate the percentage content of glucofrangulins, expressed as glucofrangulin A, from the expression:

$$\frac{A \times 3.06}{m}$$

i.e. taking the specific absorbance of glucofrangulin A to be 204.

A = absorbance at 515 nm,

m = mass of the sample, in grams.

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