

**BEARBERRY  
FOR HOMOEOPATHIC PREPARATIONS**

**UVA-URSI  
FOR HOMOEOPATHIC PREPARATIONS**

***Arctostaphylos uva-ursi* ad praeparationes homoeopathicas**

**DEFINITION**

Fresh, leafy, small branch of *Arctostaphylos uva-ursi* (L.) Spreng.

**CHARACTERS**

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

**IDENTIFICATION**

- A. Ligneous, cylindrical stem covered with brown suber. Young, green, hairy stems. Alternate, thick and tough leaves, about 3 cm long and 2.5 cm large, with a short petiole. Oval limba with obtuse top, green, glossy upper side, paler underside. Glabrous adult, non-ciliated leaves; young leaves more or less ciliated, woolly on the limba edge and the petiole. Pinnate and finely-reticulate venation distinctly visible on both sides.
- B. Take a sample of epidermis from the underside of an adult leaf. Examine under a microscope using *chloral hydrate solution R*. Abaxial epidermis covered with a smooth cuticle consisting of rigid walled, elongated cells on the vein. Glabrous lamina epidermis composed of polyhedral cells and anomocytic stomata (2.8.3) surrounded by 5-11 subsidiary cells. In addition the young leaf epidermis presents unicellular conic covering trichomes and globular multicellular secretory trichomes.

**TESTS**

**Foreign matter** (2.8.2): maximum 5 per cent.

**Loss on drying** (2.2.32): minimum 40.0 per cent determined on 10.0 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

**STOCK**

**DEFINITION**

Bearberry 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 (55 per cent V/V) using the fresh, leafy, small branch of *Arctostaphylos uva-ursi* (L.) Spreng.

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

*Content:* minimum 0.15 per cent *m/m* of anhydrous arbutin ( $C_{12}H_{16}O_7$ ;  $M_r$  272.3).

## CHARACTERS

*Appearance:* brown liquid.

## IDENTIFICATION

Thin layer chromatography (2.2.27).

*Test solution.* Mother tincture.

*Reference solution.* Dissolve 50 mg of *arbutin R*, 25 mg of *gallic acid R*, 25 mg of *hydroquinone R* in *methanol R* and dilute to 20 mL with the same solvent.

*Plate:* TLC silica gel plate *R*.

*Mobile phase:* anhydrous formic acid *R*, water *R*, ethyl acetate *R* (6:6:88 V/V/V).

*Application:* 20  $\mu$ L, as bands.

*Development:* over a path of 15 cm.

*Drying:* at 105-110 °C until the mobile phase has completely disappeared.

*Detection:* spray with a 10 g/L solution of *dichloroquinonechlorimide R* in *methanol R*. Then spray with a 20 g/L solution of *anhydrous sodium carbonate R*. Examine in day light.

*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	
Hydroquinone: a brownish zone	A brownish zone (hydroquinone)
Gallic acid: a brownish zone	A brownish zone (gallic acid)
-----	Series of brownish zones
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Arbutin: a purplish-blue zone	A purplish-blue zone (arbutin)
<b>Reference solution</b>	<b>Test solution</b>

## TESTS

**Ethanol** (2.9.10): 50 per cent V/V to 60 per cent V/V.

**Dry residue** (2.8.16): minimum 3.0 per cent *m/m*.

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

## ASSAY

Liquid chromatography (2.2.29).

*Test solution.* In a 50.0 mL volumetric flask, dissolve 2.000 g of mother tincture in the mobile phase and dilute to 50.0 mL with the same solvent.

*Reference solution.* In a 50.0 mL volumetric flask, dissolve 50.0 mg of *arbutin R* in the mobile phase and dilute to 50.0 mL with the same solvent.

*Column:*

- size:  $l = 0.25$  m,  $\varnothing = 4$  mm.

- stationary phase: silica gel for chromatography octadecylsilyl base-deactivated R (5  $\mu$ m).

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

*Flow rate:* 1.2 mL/min.

*Injection:* 20  $\mu$ L. Retention time of arbutin: about 5 min.

*Detection:* spectrophotometer at 280 nm.

Calculate the percentage content  $m/m$  of anhydrous arbutin, from the expression:

$$\frac{A_1 \times m_2 \times 100}{A_2 \times m_1}$$

$A_1$  = peak area for arbutin in the test solution chromatogram,

$A_2$  = peak area for arbutin in the reference solution chromatogram,

$m_1$  = mass of the mother tincture sample, in grams,

$m_2$  = mass of arbutin sample in the reference solution, in grams.