

**BLACKCURRANT
FOR HOMOEOPATHIC PREPARATIONS**

**RIBES NIGRUM
FOR HOMOEOPATHIC PREPARATIONS**

Ribes nigrum ad praeparationes homoeopathicas

DEFINITION

Fresh leaves of *Ribes nigrum* .L.

CHARACTERS

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

IDENTIFICATION

- A. The upper side of the leaf of blackcurrant is dark green and virtually glabrous. The underside is paler and covered with secretory trichomes whose head contains golden-yellow resinous substances. The lamina is 6-10 cm long and 7-12 cm wide. It has 3 (occasionally 5) triangular lobes with highly dentate edges. The main and secondary veins are dark green and highly distinct on the underside. They anastomose in many places to form a characteristic network. The petiole is dark green and rigid with a deep groove at the top. It is almost half as long as the lamina.
- B. Examine a fragment of epidermis from the underside of the leaf under a microscope, using *chloral hydrate solution R*. The abaxial epidermis is stomatiferous and contains both covering and secretory trichomes. The stomata are anomocytic (2.8.3) and surrounded by 5-8 subsidiary cells. The covering trichomes are conical, uniseriate, unicellular or bicellular; the secretory trichomes have a unicellular stalk and multicellular globular head, often more than 300 µm in diameter. The epidermis is often accompanied by lacunose parenchyma where numerous small druses, and more rarely prisms of calcium oxalate are visible.

TESTS

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

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.

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

STOCK

DEFINITION

Blackcurrant 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 leaves of *Ribes nigrum* L.

Content: minimum 0.10 per cent *m/m* of total flavonic derivatives, expressed as rutin; (C₂₇H₃₀O₁₆, 3 H₂O ;M_r 665).

CHARACTERS

Appearance: dark brown liquid.

Characteristic odour.

IDENTIFICATION

A. Thin-layer chromatography (2.2.27).

Test solution. Mother tincture.

Reference solution. Dissolve 10 mg of *rutin R*, 10 mg of *astragaline R* and 10 mg of *isoquercitroside R* in 20 mL of *methanol R*.

Plate: TLC silica gel plate R.

Mobile phase: glacial acetic acid R, anhydrous formic acid R, water R, ethyl acetate R (11:11:27:100 V/V/V/V).

Application: 10 µL, as bands.

Development: over a path of 12 cm.

Drying: in air.

Detection: spray with a 10 g/L solution of *diphenylboric acid aminoethyl ester R* in *methanol R*, then spray with a 50 g/L solution of *macrogol 400 R* in *methanol R*. Allow the plate to dry in air for about 30 min. Examine in ultraviolet light at 365 nm.

Results: 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.

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

Top of plate	
Astragal: a greenish-yellow zone -----	An greenish-yellow zone (astragal) -----
Isoquercitroside: an orange zone	An orange zone (isoquercitroside) A more or less intense orange zone A yellow zone
Rutin: an orange zone -----	An orange zone (rutin) -----
	A yellow zone -----
Reference solution	Test solution

B. Thin-layer chromatography (2.2.27).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *apiole R* and 5 mg of *menthyl acetate R* in 20 mL of *ethanol (96 per cent) R*.

Plate: TLC silica gel plate R.

Mobile phase: ethyl acetate R, cyclohexane R (10:90 V/V).

Application: 40 µL, as bands.

Development: over a path of 10 cm.

Drying: in air.

Detection: spray with *anisaldehyde solution R* and heat to 100-150 °C for 10 min. Examine in daylight.

Results: see below the sequence of zones present in the chromatograms obtained with the reference and test solutions.

Top of plate	
Menthyl acetate: a purplish-blue zone -----	A purplish-blue zone -----
Apiole: a pink zone -----	A pink zone -----
	Three-five purplish-pink zones -----
Reference solution	Test solution

TESTS

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

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

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

French Pharmacopoeia 2003

ASSAY

Ultraviolet and visible absorption spectrophotometry (2.2.25).

Stock solution. Weigh a sample m of about 1.00 g of mother tincture and dilute to 100.0 mL with *methanol R*.

Test solution. In a volumetric flask, place 5.0 mL of stock solution and dilute to 10.0 mL with a 20 g/L solution of *aluminium chloride R* in *methanol R*.

Compensation liquid. In a volumetric flask, place 5.0 mL of stock solution and dilute to 10.0 mL with *methanol R*.

Detection: test solution at 425 nm, after 15 min.

Calculate the percentage content m/m of total flavonic derivatives, expressed as rutin, from the expression:

$$\frac{A \times 200}{370 \times m}$$

i.e. taking the specific absorbance of rutin to be 370.

A = absorbance of the test solution measured at 425 nm,

m = mass of the sample, in grams.