

**ELDERBERRY  
FOR HOMOEOPATHIC PREPARATIONS**

**SAMBUCUS NIGRA  
FOR HOMOEOPATHIC PREPARATIONS**

***Sambucus nigra* ad praeparationes homoeopathicas**

DEFINITION

Fresh, blooming flower heads of *Sambucus nigra* L.

CHARACTERS

Macroscopic characters described under identification.

IDENTIFICATION

Blooming flower head comprising the inflorescence, in large, compound corymb, reaching up to 20 cm in diameter, and the end of the green stem about 10 cm long. Corymb usually comprising 5 branches, each one branching out into 3 secondary twigs, bearing 2 flowers each. Peduncled flowers, about 5 mm in diameter, bearing 3 small bracts. Green gamosepal calyx with 5 spread out teeth. White corolla fused into a tube at the base with 5 largely oval lobes. Five stamens with filaments fused on the tube of the corolla. Free, yellow anthers, alternating with the lobes of the petals. Inferior ovary with 3 loculi. Short style with 3 obtuse stigmas. Actinomorphic flowers in the centre of the corymb, those on the margin, often asymmetric, the outside petal being more developed.

TESTS

**Foreign matter** (2.8.2): maximum 5 per cent, including less than 2 per cent of stems covered with suber.

**Loss on drying** (2.2.32): minimum 75.0 per cent, determined on 5.0 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

***Sambucus ebulus***. The presence of reddish peduncles and stamens with reddish filaments shows adulteration by *Sambucus ebulus* L.

**STOCK**

DEFINITION

Elderberry mother tincture complies with the requirements of the general technique for the

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preparation of mother tinctures (see *Homoeopathic Preparations (1038)* and French Pharmacopoeia Authority Supplement). The mother tincture is prepared with ethanol (45 per cent V/V), using the fresh, blooming flower head of *Sambucus nigra* L.

*Content:* minimum 0.060 per cent *m/m* of total flavonoids, expressed as rutin ( $C_{27}H_{30}O_{16} \cdot 3H_2O$ ;  $M_r$  665).

#### CHARACTERS

*Appearance:* amber brown liquid.

#### IDENTIFICATION

Thin-layer chromatography (2.2.27).

Examine the chromatograms obtained in the test "Mother tincture of *Sambucus ebulus*".

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

Top of the plate	
-----	A greenish-blue zone
Isoquercitroside: an orange zone	An orange zone (isoquercitroside) <span style="float: right;">-----</span>
Chlorogenic acid: a light blue zone	A light blue zone (chlorogenic acid)
Rutin: an orange zone	An orange zone (rutin)
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<b>Reference solution</b>	<b>Test solution</b>

#### TEST

##### **Mother tincture of *Sambucus ebulus*.**

*Test solution.* Mother tincture.

*Reference solution.* Dissolve 1 mg of *chlorogenic acid R*, 2.5 mg of *isoquercitroside R* and 2.5 mg of *rutin R* in 10 mL of *methanol R*.

*Plate:* TLC silica gel plate R.

*Mobile phase:* anhydrous formic acid R, water R, methyl ethyl ketone R, ethyl acetate R (10:10:30:50 V/V/V/V).

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*Application:* 10 µL as bands.

*Development:* over a path of 15 cm.

*Drying:* in air.

*Detection:* first spray with a 10 g/L solution of *diphenylboric acid aminoethyl ester R* in *methanol R* then 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:* the presence of a pink zone in the chromatogram obtained with the test solution, located below the zone due to rutin in the chromatogram obtained with the reference solution, shows adulteration by the mother tincture of *Sambucus ebulus L.*

**Ethanol (2.9.10):** 40 per cent V/V to 50 per cent V/V.

**Dry residue (2.8.16):** minimum 2.2 per cent m/m.

## ASSAY

Ultraviolet and visible absorption spectrophotometry (2.2.25).

*Stock solution.* Place 5.000 g of mother tincture into a 50.0 mL volumetric flask, and dilute to 50.0 mL with a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R*.

*Test solution.* In a 50.0 mL volumetric flask, place 2.0 mL of stock solution and 25.0 mL of a solution composed of 25.0 g/L *boric acid R* and 20.0 g/L *oxalic acid R* in *anhydrous formic acid R* then dilute to 50.0 mL with *glacial acetic acid R*.

*Compensation liquid.* Place 2.0 mL of stock solution and 25.0 mL of *anhydrous formic acid R* into a 50.0 mL volumetric flask then dilute to 50.0 mL with *glacial acetic acid R*.

*Reference stock solution.* In a 50.0 mL volumetric flask, dissolve 4.0 mg of *rutin R* in a mixture of 10 volumes of *methanol R* and 100 volumes of *glacial acetic acid R* and dilute to 50.0 mL with the same solvent.

*Reference solution.* In a 50.0 mL volumetric flask, place 4.0 mL of reference stock solution and 25.0 mL of a solution composed of 25.0 g/L *boric acid R* and 20.0 g/L *oxalic acid R* in *anhydrous formic acid R* and dilute to 50.0 mL with *glacial acetic acid R*.

*Reference compensation liquid.* In a 50.0 mL volumetric flask, place 4.0 mL of reference stock solution and 25.0 mL of *anhydrous formic acid R* then dilute to 50.0 mL with *glacial acetic acid R*.

Forty min after the addition of the last reagent, measure the absorbance of the test solution and the reference solution at 425 nm, in comparison with the compensation liquids.

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

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$$\frac{A_1 \times m_2 \times p \times 2}{A_2 \times m_1}$$

$A_1$  = absorbance of the test solution,

$A_2$  = absorbance of the reference solution,

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

$m_2$  = mass of the rutin sample, in grams,

$p$  = percentage content of rutin in *rutin R*.

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