COMMON WALNUT
FOR HOMOEOPATHIC PREPARATIONS

JUGLANS REGIA
FOR HOMOEOPATHIC PREPARATIONS

Juglans regia ad praeparationes homoeopathicas

DEFINITION

Mixture of equal quantities of leaf and pericarp from the fresh, green fruit of *Juglans regia* L.

CHARACTERS

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

IDENTIFICATION

A. Petiolate leaf, compound, imparipinnate measuring up to 25 cm long. Elongated rachis, swollen into a roll of flesh at the basis with a depression shaping a gutter in the upper part. Leaflets, 5 -9, spaced out, elliptic, opposite with a terminal leaflet markedly bigger at the base than at the apex and measuring up to 12 cm long and 6 cm large; leaflet with entire, slightly sinuous margins, green, coriaceous, glabrous, darker on the upper side; pinnate ribs with tufts of brown hairs clearly conspicuous on the underside, at the intersection of the main rib and the secondary ribs. Pericarp of the unripe fruit, fleshy and coriaceous, composed of the epicarp, glabrous, green sometimes marked with light spots and mesocarp, fibrous about 1 cm thick. Short style ending with two spaced out, stigma-marked branches sometimes persistent.

B. Take a fragment of abaxial epidermis of the leaflet. Examine under a microscope using *chloral hydrate solution R.* Epidermis showing cells with slightly sinuous cell-walls and with a smooth cuticle, anomocytic stomata (*2.8.3*) surrounded by 4-7 subsidary cells, secretory trichomes of two types: some sessile with uni or bicellular head, the others with 1-7 cell- foot and multicellular head. Scarce covering trichomes grouped in pairs or more, unicellular, conical, with thick cell-walls, present at the intersection of the ribs.

TESTS

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

Loss on drying (*2.2.32*): minimum 65.0 per cent, determined on 10,0 g of the finely-cut mixture 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

Common walnut mother tincture complies with the requirements of the general technique for the preparation of mother tinctures (see *Homoeopathic Preparations (1038)* and French Pharmacopoeia Supplement). The mother tincture is prepared with ethanol (65 per cent *V/V*), using a mixture of equal quantities of leaf and pericarp from the fresh, green fruit of *Juglans regia* L.

Adjusted content: minimum 0.002 per cent and maximum 0.008 per cent of total quinones derivatives, expressed as juglone ($C_{10}H_6O_3$; M_r 171.2)

CHARACTERS

Appearance: dark brown liquid.

IDENTIFICATION

Thin-layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 10 mg of *hyperoside R* and 10 mg of *quercitrine R* in 20 mL of *methanol R*.

Plate: *TLC silica gel plate R.*

Mobile phase: *anhydrous formic acid R, water R, ethyl acetate R* (10:10:80 *V/V/V*).

Application: 20 µL as bands.

Development: over a path of 10 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 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 solution and the test solution. 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 the plate	
Quercitrine: an orange zone ------ Hyperoside: an orange zone -----	A green zone An orange zone (quercitrine) ----- A bright orange zone (hyperoside) -----
Reference solution	**Test solution**

TESTS

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

Methanol and 2-propanol (*2.9.11*): maximum 0.05 per cent *V/V*; maximum 0.05 per cent *V/V.*

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

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Test solution. Add 10 mL of *dilute hydrochloric acid R* and 2.5 mL of *ferric chloride solution R1* to 5.000 g of mother tincture. Heat under a reflux condenser on a water-bath for 30 min. Allow to cool at room temperature. Transfer the solution into a separating funnel and shake twice with 20 mL of *pentane R.* Filter the combined organic solutions through an appropriate damp-proofing filter. Evaporate the filtrate under reduced pressure at low temperature. Dissolve the residue in 20.0 mL of *ethanol R*.

Compensation liquid: *ethanol R.*

Measure the absorbance of the test solution at 422 nm, in comparison with the compensation liquid.

Calculate the percentage content *m/m* of total quinones derivatives, expressed as juglone, from the expression:

$$\frac{A \times 20}{214 \times m}$$

i.e. taking the specific absorbance of juglone to be 214 at 422 nm.

A = absorbance of the test solution at 422 nm,
m = mass of the mother tincture sample, in grams.

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