HOP STROBILE (FRESH CONES) FOR HOMOEOPATHIC PREPARATIONS

HUMULUS LUPULUS RECENS FOR HOMOEOPATHIC PREPARATIONS

Humulus lupus recens ad praeparationes homoeopathicas

DEFINITION

Fresh, ripe, female inflorescence of *Humulus lupulus* L.

IDENTIFICATION

Greenish cone, 2-5 cm long; petiolate, ovoid, made up of many oval, sessile membranous, overlapping bracts. Outside bracts flattened and symmetrical. Inside bracts longer, asymmetrical at the base because of a fold generally circling an induviate fruit (achene). Ovary, or more rarely the fruit, the base of the bracts and especially the induvial fold, covered with small orange-yellow glands.

TESTS

Loss on drying (*2.2.32*): minimum 70.0 per cent, determined on 5.000 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

STOCK

DEFINITION

Hop strobile mother tincture is prepared with ethanol (55 per cent *V/V)*, using the fresh, ripe, female inflorescence of *Humulus lupulus* L.

Content: minimum 0.10 per cent *m/m* of total tannins, expressed as pyrogallol ($C_6H_6O_3$; M_r 126.1).

PRODUCTION

Method 1.1.10 (2371). Drug fragmented into segments 0.5-1.5 cm long. Maceration time: 2-4 weeks.

CHARACTERS

Appearance: orange-brown liquid.

IDENTIFICATION

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

A. Thin layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *rutin R* and 5 mg of *isoquercitroside R* in 20 mL of *ethanol* (*96 per cent*) *R*.

Plate: *TLC silica gel plate R* (5-40 µm) [or *TLC silica gel plate* (2-10 µm)].

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

Application: 40 µL [or 8 µL of test solution and 5 µL of reference solution], as bands.

Development: over a path of 10 cm [or 6 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: 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	
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	A greenish-yellow zone
Isoquercitroside: an orange zone	An orange zone (isoquercitroside)
Rutin: an orange zone	An orange zone (rutin)
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Reference solution	**Test solution**

B. Thin layer chromatography (*2.2.27*).

Test solution. Shake 10 mL of mother tincture with two quantities each of 15 mL of *petroleum ether R*. Combine the ether phases and dry them on *anhydrous sodium sulfate R.* Filter then evaporate to dryness on a water-bath. Dissolve the residue in 1 mL of *methanol R*.

Reference solution. Dissolve 10 mg of humulene *R* and 5 mg of *β-sitosterol R* in 10 mL of *methylene chloride R*.

Plate: *TLC silica gel plate R* (5-40 µm) [or *TLC silica gel plate* (2-10 µm)].

Mobile phase: *di-isopropyl ether R, toluene R* (20:80 *V/V).*

Application: 20 µL [or 3 µL], as bands.

Development: over a path of 10 cm [or 6 cm].

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

Drying: in air.

Detection: spray with *anisaldehyde solution R* in *methanol R* and heat at 100-105 °C for 10 min. Examine in daylight.

Results: see below the sequence of zones present in the chromatograms obtained with the reference solution and the test solution. The chromatogram obtained with the reference solution may show an additional, pink zone in the middle third, corresponding to an isomer of humulene. Furthermore other faint zones may be present in the chromatogram obtained with the test solution.

Top of the plate	
Humulene: an intense pink zone	A pink zone (humulene)
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	A brownish-pink zone
	A pink zone
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β-sitosterol: a pink zone	A pink zone
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*.

ASSAY

Tannins (*2.8.14*). Use 25.00 g of mother tincture.

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