

**LEMON BALM
FOR HOMOEOPATHIC PREPARATIONS**

**MELISSA OFFICINALIS
FOR HOMOEOPATHIC PREPARATIONS**

***Melissa officinalis* ad praeparationes homoeopathicas**

DEFINITION

Fresh aerial parts of *Melissa officinalis* L., harvested before flowering.

CHARACTERS

Lemon-like odour.

IDENTIFICATION

- A. Lemon balm is a perennial plant, 30-80 cm high, with an erect, ramified, more or less pubescent stem. The leaves are opposite, oval-cordiform with long petioles. The lamina is thin 3-4 cm long, with roughly dentate or crenulate margins, bright green on the top, paler on the underside. The veins form a network between the meshes of which the lamina protrudes, giving the underside of the leaf a characteristic waffle-like appearance.
- B. Examine a fragment of the lower epidermis from the leaf under a microscope, using *chloral hydrate solution R*. The epidermis presents: cells with sinuous walls and diacytic stomata (2.8.3); short, straight, finely striated cuticle, many conical unicellular covering trichomes; multicellular uniseriate covering trichomes with pointed tip and thick verrucous walls; 8-celled Labiateae-type secretory trichomes; secretory trichomes with 1 to 3-celled stalk and 1 or 2-celled head;

TESTS

Foreign matter (2.8.2): maximum 5 per cent.

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 2h

STOCK

DEFINITION

The mother tincture is prepared with ethanol (65 per cent V/V), using the fresh aerial parts of *Melissa officinalis* L.

Content: minimum 0.025 per cent *m/m* of total hydroxycinnamic derivatives, expressed as rosmarinic acid

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(C₁₈H₁₆O₈; *M_r* 360.3).

PRODUCTION

Method 1.1.10 (2371). Drug fragmented into 0,5-5 cm long segments. Maceration time: 2-4 weeks.

CHARACTERS

Appearance: green-brown liquid.

IDENTIFICATION

Thin-layer chromatography (2.2.27).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *caffeic acid R* and 5 mg of *rosmarinic acid R* in 100 mL of *ethanol (96 per cent) R*.

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

Mobile phase: water R, methanol R, glacial acetic acid R, methylene chloride R (2:3:8:15 V/V/V/V).

Application: 20 µL [or 5 µL] as bands.

Development: over a path of 10 cm [or 7 cm].

Drying: in air.

Detection A: examine in ultraviolet light at 365 nm.

Results A: 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	
Caffeic acid: a blue zone Rosmarinic acid: a blue zone	A blue zone (caffeic acid) A blue zone (rosmarinic acid) ----- A blue-grey zone Two blue zones -----
Reference solution	Test solution

Detection B: first 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 B: 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

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chromatogram obtained with the test solution.

Top of the plate	
Caffeic acid: a greenish-blue zone Rosmarinic acid: a green zone — —	A greenish-blue zone (caffeic acid) A green zone (rosmarinic acid) A green zone — -----
Reference solution	Test solution

TESTS

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

Dry residue (2.8.16): minimum 1.1 per cent *m/m*.

ASSAY

Ultraviolet and visible absorption spectrophotometry (2.2.25).

Test solution. In a 100.0 mL volumetric flask, introduce 5.00 g of mother tincture and dilute to 100.0 mL with *ethanol* (50 per cent V/V) R (solution A). Introduce 1.0 mL of this solution in a 100.0 mL volumetric flask, add 2 mL of 0.5 M *hydrochloric acid*, 2 mL of a solution prepared by dissolving 10 g of *sodium nitrite R* and 10 g of *sodium molybdate R* in 100 mL of *water R*, then add 2 mL of *dilute sodium hydroxide solution R*. Dilute to 10.0 mL with *water R* and mix.

Compensation liquid. In a 10.0 mL volumetric flask, introduce 1.0 mL of solution A, 2 mL of 0.5 M *hydrochloric acid R*, 2 mL of *dilute sodium hydroxide solution R* and dilute to 10.0 mL with *water R*.

Detection: 505 nm.

Calculate the percentage content *m/m* of total hydroxycinnamic derivatives, expressed as rosmarinic acid, from the expression:

$$\frac{A \times 2.5}{m}$$

i.e. taking the specific absorbance of rosmarinic acid to be 400 at 505 nm.

A = absorbance at 505 nm,
m = mass of the sample, in grams.

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