

**ARTICHOKE  
FOR HOMOEOPATHIC PREPARATIONS**

**CYNARA SCOLYMUS  
FOR HOMOEOPATHIC PREPARATIONS**

**Cynara scolymus ad praeparationes homoeopathicas**

**DEFINITION**

Fresh leaf of *Cynara scolymus* L.

**IDENTIFICATION**

- A. Very large, thorn-free leaf, pinnatipartite at the base of the plant, sessile, pinnatifid or lobed in the upper part; the upper side is light green, the underside whitish and tomentose due to numerous, multicellular, long covering trichomes, white and felt-like; prominently raised veins; the lamina is divided into lobed-segments, narrow and dentate with irregular teeth, broad or acute.
- B. Take a sample of epidermis from the underside of the leaf. Examine under a microscope using *chloral hydrate solution R*: lamina epidermis composed of cells with markedly sinuous cell-walls, numerous anomocytic stomata (2.8.3); long uniseriate and multicellular covering trichomes with a short pedicel composed of several, hard cells with slightly thickened cell-walls and a coiled, flagellate, distal cell; sessile, biseriate secretory trichomes of Asteraceae type.

**TESTS**

**Loss on drying** (2.2.32): minimum 70.0 per cent, determined on 5.0 g of finely-cut drug, by drying in an oven at 105 °C for 2 h.

**STOCK**

**DEFINITION**

Artichoke mother tincture is prepared with ethanol (55 per cent V/V), using the fresh leaf of *Cynara scolymus* L.

*Content*: minimum 0.02 per cent *m/m* of total *ortho*-dihydroxycinnamic derivatives, expressed as chlorogenic acid (C<sub>16</sub>H<sub>18</sub>O<sub>9</sub>; *M<sub>r</sub>* 354.3)

**PRODUCTION**

*Method 1.1.10 (2371)*. Drug fragmented into 1-5 cm segments. Maceration time: 3 to 5 weeks.

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

## CHARACTERS

*Appearance:* brown liquid.

## IDENTIFICATION

Thin layer chromatography (2.2.27).

*Test solution.* Mother tincture.

*Reference solution.* Dissolve 5 mg of *rutin R*, 5 mg of *chlorogenic acid R* and 10 mg of *luteolin-7 glucoside 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:* 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 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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Luteolin-7-glucoside: an orange zone Chlorogenic acid: a greenish-blue zone Rutin: an orange zone	An orange-yellow zone A green zone An orange zone (luteolin-7-glucoside) A greenish-blue zone (chlorogenic acid) A more or less intense orange zone (rutin)
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<b>Reference solution</b>	<b>Test solution</b>

## 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*.

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

## ASSAY

Ultraviolet and visible absorption spectrophotometry (2.2.25).

*Test solution.* In a 10.0 mL volumetric flask, place 3.000 g of mother tincture and dilute to 10.0 mL with *ethanol (50 per cent V/V) R*.

*Reference solution.* In a 10.0 mL volumetric flask, place successively and shake after each addition: 1.0 mL of stock solution, 2 mL of *hydrochloric acid 0.5 M*, 2 mL of a solution comprising 100 g/L of *sodium nitrite R* and 100 g/L of *sodium molybdate R*, 2 mL of *dilute hydroxide sodium solution R* and dilute to 10.0 mL with water *R*.

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

Measure immediately the absorbance of the test solution at 525 nm in comparison with the compensation liquid.

Calculate the percentage content  $m/m$  of total *ortho*-dihydroxycinnamic derivatives, expressed as chlorogenic acid from the expression:

$$\frac{A \times 100}{188 \times m}$$

i.e: taking the specific absorbance of chlorogenic acid to be 188 at 525 nm.

$A$  = absorbance of the test solution at 525 nm,

$m$  = mass of the mother tincture sample, in grams.