COCHINEAL
FOR HOMOEOPATHIC PREPARATIONS

COCCUS CACTI
FOR HOMOEOPATHIC PREPARATIONS

Coccus cacti ad praeparationes homoeopathicas

DEFINITION

Whole, dried, female insect, *Coccus cacti* L. (*Dactylopius coccus* Costa).

Content: minimum 15.0 per cent of carminic acid ($C_{22}H_{20}O_{13}$; M_r 492.4) (dried drug).

CHARACTERS

Macroscopic characters described under identification test A.

IDENTIFICATION

A. Female insect, collected after fecundation and before the thorough development of the eggs, covered with an insulating shell, grey, black or red. Small granules more or less hemispherical, wrinkled, with still visible cross striations corresponding to the limits of the segments of the body and containing a granular inside, easily reduced to a dark red powder.

B. Thin-layer chromatography (*2.2.27*).

Test solution. Add 10 mL of *ethanol* (65 per cent *V/V*) *R* to 0.5 g of finely-powdered drug (355). Shake for 15 min. Centrifuge. Collect the supernatant.

Reference solution. Dissolve 5 mg of *carminic acid R* and 5 mg of *chlorogenic acid R* in 10 mL of *ethanol* (65 per cent *V/V*) *R*.

Plate: *TLC silica gel plate R.*

Mobile phase: *glacial acetic acid R, water R, butanol R* (10:10:40 *V/V/V*).

Application: 10 µL, as bands.

Development: over a path of 10 cm.

Drying: in air.

Detection: expose to *ammonia R* vapours. Examine in ultraviolet light at 365 nm.

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

Results: see below the sequence of fluorescent zones present in the chromatograms of 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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Chlorogenic acid: a greenish-blue zone	An intense blue zone A blue zone
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Carminic acid: a red spread out zone	A red spread out zone (carminic acid) A reddish-pink zone
Reference solution	**Test solution**

TESTS

Foreign matter (*2.8.2*): maximum 2 per cent.

Loss on drying (*2.2.32*): maximum 10.0 per cent determined on 1.0 g of powdered drug (355) by drying in an oven at 100-105 °C for 2 h.

Total ash (*2.4.16*): maximum 5.0 per cent.

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Test solution. In a round-bottomed flask, place 0.250 g of powdered drug (355) and add 100 mL of *ethanol* (60 per cent *V/V*) R. Heat under a reflux condenser on a water-bath for 1 h. Cool and filter through a plug of absorbent cotton into a 250.0 mL volumetric flask. Rinse the round-bottomed flask and the plug of cotton with *ethanol* (60 per cent *V/V*) *R* until the fitrate becomes colourless. Dilute to 250.0 mL with *ethanol* (60 per cent *V/V*) *R.* In a 50.0 mL volumetric flask, place 10.0 mL of this solution and dilute to 50.0 mL with *ethanol* (60 per cent *V/V*) *R.*

Reference solution. In a 50.0 mL volumetric flask dissolve 0.030 g of *carminic acid R* in *ethanol* (60 per cent *V/V*) *R* and dilute to 50.0 mL with the same solvent. In a 50.0 mL volumetric flask, place 3.0 mL of this solution and dilute to 50.0 mL with *ethanol* (60 per cent *V/V*) *R.*

Compensation liquid: *ethanol* (60 per cent *V/V*) *R.*

Measure the absorbance of the test solution and of the reference solution, immediately at 495 nm in comparison with the compensation liquid.

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

Calculate the percentage content of carminic acid from the expression:

$$\frac{A_1 \times m_2 \times 150}{A_2 \times m_1}$$

A_1 = absorbance of the test solution,
A_2 = absorbance of the reference solution,
m_1 = mass of the dried drug sample, in grams,
m_2 = mass of carminic acid sample in the reference solution, in grams.

STOCK

DEFINITION

Cochineal mother tincture complies with the requirements of the general technique for the preparation of mother tinctures of animal origin (see *Homoeopathic Preparations (1038)* and French Pharmacopoeia Authority Supplement). The mother tincture is prepared with ethanol (65 per cent *V/V)*, using the whole, dried, female insect *Coccus cacti* L. (*Dactylopius coccus* Costa).

Content: minimum 0.25 per cent *m/m* of carminic acid ($C_{22}H_{20}O_{13}$; M_r 492.4).

CHARACTERS

Appearance: crimson red liquid.

Characteristic pungent odour.

IDENTIFICATION

Thin-layer chromatography (*2.2.27*).

Test solution. Mother tincture.

Reference solution. Dissolve 5 mg of *carminic acid R* and 5 mg of *chlorogenic acid R* in 10 mL of *ethanol* (65 per cent *V/V) R*.

Plate: *TLC silica gel plate R.*

Mobile phase: *glacial acetic acid R, water R, butanol R* (10:10:40 *V/V/V*).

Application: 10 µL, as bands.

Development: over a path of 10 cm.

Drying: in air.

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

Detection: expose to *ammonia R* vapours. Examine in ultraviolet light at 365 nm.

Results: see below the sequence of fluorescent zones present in the chromatograms of 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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Chlorogenic acid: a greenish-blue zone	An intense blue zone A blue zone
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Carminic acid: a red spread out zone	A red spread out zone (carminic acid) A reddish-pink 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 1.0 per cent *m/m*.

ASSAY

Ultraviolet and visible absorption spectrophotometry (*2.2.25*).

Test solution. In a 50.0 mL volumetric flask, place 0.500 g of mother tincture and dilute to 50.0 mL with *ethanol* (60 per cent *V/V*) R.

Reference solution. In a 50.0 mL volumetric flask, dissolve 0.025 g of *carminic acid R* in *ethanol* (60 per cent *V/V) R* and dilute to 50.0 mL with the same solvent. In a 50.0 mL volumetric flask, place 3.0 mL of this solution and dilute to 50.0 mL with *ethanol* (60 per cent *V/V*) *R*.

Compensation liquid: *ethanol* (60 per cent *V/V*) *R.*

Measure the absorbance of the test solution and the reference solution at 495 nm in comparison with the compensation liquid.

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

Calculate the percentage content *m/m* of carminic acid, from the expression:

$$\frac{A_1 \times m_2 \times 6}{A_2 \times m_1}$$

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 carminic acid sample in the reference solution, in grams.

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