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Clove Oil

DEFINITION

Clove Oil is the volatile oil distilled with steam from the dried flower buds of *Syzygium aromaticum* (L.) Merr. and L. M. Perry (Fam. Myrtaceae). It contains NLT 85.0% of total phenolic substances, chiefly eugenol (C₁₀H₁₂O₂).

ASSAY

- PROCEDURE**
Sample: 10 mL of Clove Oil
Analysis: Pipet the *Sample* into a suitable cassia flask, the neck of which is graduated from 0–6 mL at intervals of 0.1 mL. Add 75 mL of 1 N potassium hydroxide, and shake the mixture for 5 min. Heat for 10 min in boiling water, shaking the flask at least 3 times during the heating. Remove the flask from the bath, and cool to room temperature. When the liquids have separated completely, add sufficient 1 N potassium hydroxide to raise the lower level of the oily layer so that it is within the graduated portion of the neck. Measure the volume of the oily layer after standing for 18 h.
Acceptance criteria: NMT 1.5 mL, indicating the presence of NLT 85.0%, by volume, of total phenolic substances in the Oil

IMPURITIES

- LIMIT OF PHENOL**
Sample: 1 mL of Clove Oil
Analysis: Shake the *Sample* with 20 mL of hot water: the water shows not more than a scarcely perceptible acid reaction with blue litmus paper. Cool the mixture, pass the water layer through a wetted filter, and treat the clear filtrate with 1 drop of ferric chloride TS.
Acceptance criteria: The mixture exhibits only a transient, grayish-green color, but not a blue or violet color.

SPECIFIC TESTS

- SPECIFIC GRAVITY (841):** 1.038–1.060
- OPTICAL ROTATION, Angular Rotation(781A):** It is optically inactive or slightly levorotatory. The angular rotation is not grater than –1.5°.
- REFRACTIVE INDEX (831):** 1.527–1.535 at 20°
- SOLUBILITY IN 70% ALCOHOL:** One volume dissolves in 2 volumes of 70% alcohol.

ADDITIONAL REQUIREMENTS

- PACKAGING AND STORAGE:** Preserve in well-filled, tight containers, and avoid exposure to excessive heat.
- LABELING:** The label states the Latin binomial name and, following the official name, the part of the plant source from which the article was derived.

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
CLOVE OIL	Nam-Cheol Kim Scientific Liaison	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines

Chromatographic Database Information: [Chromatographic Database](#)

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