Status: Currently Official on 16-Feb-2025
Official Date: Official Prior to 2013
Document Type: NF Monographs
DocId: GUID-BEA0A37C-3B01-4DC6-BDC1-F5E5DC4FFDFE_1_en-US
DOI: https://doi.org/10.31003/USPNF_M62470_01_01
DOI Ref: 703at

Peppermint

DEFINITION

Peppermint consists of the dried leaf and flowering top of *Mentha piperita* L. (Fam. Labiatae).

SPECIFIC TESTS

• **Articles of Botanical Origin,** *Foreign Organic Matter*⟨561⟩**:** NMT 2.0% of stems more than 3 mm in diameter and other foreign organic matter

• **Botanic Characteristics**

Unground peppermint: Leaves, slender stems, and flowering tops. The leaves are opposite, usually more or less crumpled, and frequently detached from the stem. The petiole is 4–15 mm in length, slightly pubescent; the blade, when entire, is ovate-oblong to oblong-lanceolate, 1.5–9 cm in length with an acute apex, a narrowed or rounded base, and a sharply serrate margin; light green to dark green in color; its upper surface is nearly glabrous, its lower surface has a few hairs on the veins and many amber-colored glandular hairs. The stem is quadrangular, 1–3 mm in diameter, glabrous except for a few scattered deflexed hairs, green to dark purple. The flowers occur as a compact, oblong or oval spike of verticillasters, 1–1.5 cm in breadth, rounded at the summit, and in fruit attaining a length of 3–7 cm. The bracts are oblong-lanceolate, 4–7 mm in length; the calyx, tubular-campanulate, equally five-toothed, pubescent, and glandular-punctate, green to dark purple; the corolla is glabrous, light purple, tubular-campanulate, four-cleft, 3 mm in length; stamens, 4, short and equal; style two- or rarely three-cleft at the summit. The nutlets are ellipsoidal, 500 µm in diameter. Peppermint has an aromatic, characteristic odor and a pungent taste, and produces a cooling sensation in the mouth.

Histology

Leaf: The lamina is dorsiventral. Both the upper and the lower epidermis consist of epidermal cells with wavy, anticlinal walls and stomata, the latter enclosed by a pair of subsidiary cells with a common wall at right angles to the guard cells. Many of the epidermal cells, especially over the veins and midrib, bear nonglandular and glandular hairs. The nonglandular hairs, also numerous along the margin, are uniseriate with longitudinally striate and papillose cuticle, up to 8 cells in length and tapered to a pointed apex. The glandular hairs occur in two types. The larger of these are sunken in depressions of the epidermis and consist of a one- to two-celled stalk and a glandular head of 8 radiating cells beneath the raised cuticle of which volatile oil is secreted. The smaller type of glandular hair consists of a one- to two-celled stalk and a one-celled glandular head containing volatile oil. Beneath the upper epidermis occurs a single layer of palisade parenchyma up to 80 µm in length and, directly underneath it, spongy parenchyma of 3 or 4 layers of chloroplastid-containing cells, through which zone course the fibrovascular tissues of the veins.

Stem: The stem is quadrangular. It shows a layer of epidermis bearing hairs similar to those of the leaf and possessing cuticularized outer convex walls, a narrow cortex of chlorenchyma, a clear endodermis of tangentially elongated, thin-walled cells with colorless contents, a narrow phloem, a cambium, and a xylem broadest in the regions beneath the stem angles and containing narrow wood-wedges separated by xylem rays one cell in width. The wood-wedges consist chiefly of simple pitted and spiral vessels, tracheids, and wood-fibers. Beneath each of the four angles of the stem occurs an elliptic to ovate zone of collenchyma. A large pith composed of thin-walled parenchyma occupies the center.

Powdered peppermint: Green to light olive green. Shows fragments of leaf epidermis with wavy vertical walls and, if from the lower surface of the leaf, with numerous stomata and glandular and nonglandular hairs, the latter especially numerous along the veins; glandular hairs with a one- to two-celled stalk and one- to eight-celled head, usually set in a depression in the leaf and containing volatile oil and frequently yellowish or brownish crystals that are birefringent; nonglandular hairs with thin, papillose walls and frequently with short, longitudinal striations of 1–8 cells and up to 1.4 mm in length, the terminal cell pointed or sometimes globular; fragments of chlorenchyma with vascular tissue, the vessels spiral or with simple pits and but slightly lignified; fragments of collenchyma and of thin-walled, nonlignified fibers associated with parenchyma. The pollen grains are spheroidal and smooth.

Topic/Question	Contact	Expert Committee
PEPPERMINT	Documentary Standards Support	CE2020 Complex Excipients
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	CE2020 Complex Excipients

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. Information currently unavailable

Current DocID: GUID-BEA0A37C-3B01-4DC6-BDC1-F5E5DC4FFDFE_1_en-US
DOI: https://doi.org/10.31003/USPNF_M62470_01_01
DOI ref: 703at