

Herbal Medicines Compendium

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Peumus boldus Leaf

Proposed For Development Version 0.1

Peumus boldus Leaf

DEFINITION

The article consists of the dried leaves of *Peumus boldus* Molina (Family Monimiaceae). It meets the *Acceptance criteria* under the Assay.

SYNONYMS

Boldea boldus Molina (Looser)

Boldea fragrans (Pers.) Endl.

Boldu boldus (Molina) Lyons

Boldu chilinum Nees

Boldu chilensis Schult. & Schult. f.

POTENTIAL CONFOUNDING MATERIALS

Cryptocarya peumus: Morphological similarity

SELECTED COMMON NAMES

Bulgarian: Болдо

Chinese: 波爾多, 波耳多

Czech: Boldovník vonný

English: Boldo, boldina, baldina

French: Boldo, feuille de boldo

German: Boldoblätter

Greek: Μπολυτο

Hebrew: בולדו, בולדו

Hungarian: Boldo levél

Italian: Foglia di boldo

Japanese: ボルド (borudo)

Korean: 볼도, 볼도 리프

Lithuanian: Kvapusis čilmedis

Portuguese: Boldo

Russian: Болдо, Больдо

Slovak: Boldovník vonný

Spanish: Hoja de boldo

Swedish: Boldo

CONSTITUENTS OF INTEREST

Isoquinoline alkaloid: Boldine, isoboldine, isocorydine *N*-oxide, laurotetanine, isocorydine, *N*-methyllaurotetanine

Volatile oil: *p*-cymol, cineole, ascaridole

IDENTIFICATION

• A. BOTANICAL CHARACTERISTICS

Macroscopic: Leaf is oval or elliptical, about 5 cm long with short petiole, an obtuse or slightly emarginate or mucronate apex; an equal and rounded base; margin is entire and slightly undulate with thickened edges that are more or less revolute; lamina is grayish-green, thick, tough and brittle; upper surface is rough with numerous prominent small protuberances and a depressed venation; lower surface is finely pubescent with the protuberances less well-marked, and a prominent, pinnate venation.

Microscopic

Transverse section: Dorsiventral with two layers of palisade composed of cells of nearly equal length. Upper epidermal cells are polygonal, thick-walled, indistinctly beaded; lower epidermal cells are somewhat larger; stellate clustered unicellular covering trichomes with more or less thickened and lignified walls on both epidermises; some epidermal cells show scars of fallen trichomes; hypodermis, usually of one layer but may be up to three or more layers, cells resembling those of the epidermis, thick-walled, pitted in both the anticlinal and periclinal walls; vascular strands contain narrow xylem elements, thick-walled sclerenchymatous fibers and lignified pitted parenchymatous cells. Numerous almost-spherical oil cells present in the spongy mesophyll. Aggregates of small, blunt-ended prismatic crystals present in many mesophyll cells.

• B. THIN-LAYER CHROMATOGRAPHY

Standard solution A: 2.0 mg/mL of USP Boldine RS (To Come) in 5 mL methanol

Standard solution B: Mix 1 g of USP *Peumus boldus* Leaf Powder RS (To Come) with 10 mL of methanol, sonicate for 10 min, centrifuge, and use the supernatant.

Sample solution: Mix 1 g of *Peumus boldus* Leaf, finely powdered, with 10 mL of methanol, sonicate for 10 min, centrifuge, and use the supernatant.

Chromatographic system

(See *Chromatography* <621>, *Thin-Layer Chromatography*.)

Adsorbent: Chromatographic silica gel with an average particle size of 5 μm (HPTLC plates)

Application volume: 2 μL of *Standard solution A*, and 6 μL each of *Standard solution B* and *Sample solution*; as 8-mm bands

Relative humidity: Condition the plate to a relative humidity of about 33% using a suitable device.

Developing solvent system: Toluene, methanol, and diethyl amine (80:10:10)

Developing distance: 6 cm

Derivatization reagent: 1% Iodine reagent. Dissolve 1 g of iodine in 100 mL of alcohol (C₂H₅OH).

Analysis

Samples: *Standard solution A*, *Standard solution B*, and *Sample solution*

Apply the *Samples* as bands to a suitable HPTLC plate and dry. Develop the chromatogram in a saturated chamber, remove the plate from the chamber, and dry. Derivatize with *Derivatization reagent*, heat at 100° for 3 min, and examine under visible light.

System suitability: *Standard solution B* chromatogram exhibits, in the lower half, three brown bands. The lowest band corresponds in color and *R_F* to the boldine band in the chromatogram of *Standard solution A*. The chromatogram exhibits three bands in the upper half, in the following order of increasing *R_F*: a yellow band and two green bands.

Acceptance criteria: The *Sample solution* chromatogram exhibits a band corresponding in color and R_f to the boldine band in the chromatogram of *Standard solution A*. The *Sample solution* exhibits the following bands corresponding in color and R_f to similar bands in the chromatogram of *Standard solution B*: two brown bands in the lower half of the chromatogram at R_f above that of the boldine band, and three bands in the upper half, a yellow band and two green bands.

ASSAY

• CONTENT OF ISOQUINOLINE ALKALOIDS

CALL FOR SUBMISSION OF VALIDATED INFORMATION

Additional information including validation data will be required to complete the development of the Assay. For requirements, please see under "*Composition*" and related sections of the guidelines document "*Monographs in the Herbal Medicines Compendium*" at <http://hmc.usp.org/about/general-notice-resources> [1].

Interested parties are encouraged to submit their proposals to complete the monograph.

• VOLATILE OIL DETERMINATION <561>

Sample: 10 g of *Peumus boldus* leaf, freshly and coarsely comminuted

Acceptance criteria: NLT 0.5% on the dried basis

CONTAMINANTS

• ELEMENTAL IMPURITIES—PROCEDURES <233>

Acceptance criteria

Arsenic: NMT 2 µg/g

Cadmium: NMT 0.3 µg/g

Lead: NMT 5 µg/g

Mercury: NMT 0.2 µg/g

• **ARTICLES OF BOTANICAL ORIGIN, General Method for Pesticide Residues Analysis <561>:** Meets the requirements

• **MICROBIAL ENUMERATION TESTS <61>:** The total aerobic bacterial count does not exceed 10^5 cfu/g, the total combined molds and yeasts count does not exceed 10^3 cfu/g, and the bile-tolerant Gram-negative bacteria does not exceed 10^3 cfu/g.

• **TESTS FOR SPECIFIED MICROORGANISMS <62>:** Meets the requirements of the tests for the absence of *Salmonella* species and *Escherichia coli*

SPECIFIC TESTS

• **ARTICLES OF BOTANICAL ORIGIN, Foreign Organic Matter <561>:** NMT 4.0% of twigs and NMT 2.0% of other foreign matter

• ARTICLES OF BOTANICAL ORIGIN, Total Ash <561>

Analysis: 1.0 g of *Peumus boldus* leaf, finely powdered

Acceptance criteria: NMT 13%

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in well-closed containers, protected from light and moisture, and

store at room temperature.

- **LABELING:** The label states the Latin binomial and the part(s) of the plant contained in the article.

- **USP REFERENCE STANDARDS <11>**

USP Boldine RS (To Come)

USP *Peumus boldus* Leaf Powder RS (To Come)

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