

Status: Currently Official on 18-Feb-2025
 Official Date: Official as of 01-May-2020
 Document Type: Dietary Supplement Monographs
 DocId: GUID-AE8C8D5B-5EBF-41BD-9CAF-75DE5C630103_4_en-US
 DOI: https://doi.org/10.31003/USPNF_M45054_04_01
 DOI Ref: 3nI83

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Powdered Licorice Extract

DEFINITION

Powdered Licorice Extract is prepared from comminuted Licorice extracted with water or suitable solvents such as alcohol, water, or mixtures of these solvents. The ratio of the crude plant material to Powdered Extract is between 5:1 and 7:1. It contains NLT 6.0% of glycyrrhizic acid ($C_{42}H_{62}O_{16}$), calculated on the dried basis.

IDENTIFICATION

• A. THIN-LAYER CHROMATOGRAPHIC IDENTIFICATION TEST

Standard solution: 5 mg/mL of [USP Glycyrrhizic Acid RS](#) in a mixture of alcohol and water (7:3)

Sample solution: 60 mg/mL of Powdered Licorice Extract, in a mixture of alcohol and water (1:1)

Chromatographic system

(See [Chromatography \(621\)](#), [Thin-Layer Chromatography](#).)

Adsorbent: 0.25-mm layer of chromatographic silica gel mixture

Application volume: 2 μ L

Developing solvent system: Butyl alcohol, glacial acetic acid, and water (7:1:2)

Analysis

Samples: *Standard solution* and *Sample solution*

Develop the chromatogram in an unsaturated chamber to a length of 10 cm. Examine the plate under 254-nm light.

Acceptance criteria: The chromatograms show a dark purple zone, among other spots, due to glycyrrhizic acid at an R_f value of 0.4.

COMPOSITION

• CONTENT OF GLYCYRRHIZIC ACID

Diluent: Alcohol and water (1:1)

Solution A: Diluted acetic acid (1 in 15)

Mobile phase: Acetonitrile and *Solution A* (2:3)

Standard solution: 0.25 mg/mL of [USP Glycyrrhizic Acid RS](#) in *Diluent*.

Sample solution: Transfer 150 mg of Powdered Licorice Extract to a flask. Add 25 mL of *Diluent*, heat at 50° for 30 min, cool, centrifuge, and decant the supernatant into a 100-mL volumetric flask. Mix the residue with 20 mL of *Diluent*, repeat the above procedure, and dilute with *Diluent* to volume.

Chromatographic system

(See [Chromatography \(621\)](#), [System Suitability](#).)

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm $\times$ 15-cm; packing L1

Flow rate: 0.6 mL/min

Injection size: 20 μ L

System suitability

Sample: *Standard solution*

Suitability requirements

Column efficiency: NLT 5000 theoretical plates

Tailing factor: NMT 2.0

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of glycyrrhizic acid ($C_{42}H_{62}O_{16}$) in the portion of Powdered Licorice Extract taken:

$$\text{Result} = (r_U/r_S) \times C_S \times (V/W) \times 100$$

r_U = peak area for glycyrrhizic acid from the *Sample solution*

r_S = peak area for glycyrrhizic acid from the *Standard solution*

C_s = concentration of [USP Glycyrrhizic Acid RS](#) in the *Standard solution* (mg/mL)

V = volume of *Sample solution*, 100 mL

W = weight of Powdered Licorice Extract taken to prepare the *Sample solution* (mg)

Acceptance criteria: NLT 6.0% on the dried basis

CONTAMINANTS

Change to read:

- ▲ [BOTANICAL EXTRACTS \(565\), Preparations, General Pharmacopeial Requirements, Pesticide Residues](#) ▲ (CN 1-MAY-2020) : Meets the requirements

SPECIFIC TESTS

- [LOSS ON DRYING \(731\)](#): Dry a sample at 105° for 6 h: it loses NMT 10.0% of its weight.
- [ARTICLES OF BOTANICAL ORIGIN, Total Ash\(561\)](#): NMT 12.0%

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight containers, protected from light.
- **LABELING:** The label states the Latin binomial and, following the official name, the part of the plant from which the article was derived. The label also indicates the content of glycyrrhizic acid, the extracting solvent or solvent mixture used for preparation, and the ratio of the starting material to final product. The label bears a statement indicating that "Excessive amounts or long-term use of Licorice may cause high blood pressure or low potassium, which have been associated with irregular heartbeat and/or muscle weakness. Licorice may worsen the effects of congestive heart failure, cirrhosis, or kidney failure. Diuretic use may increase the risk. If you are pregnant or nursing a baby, seek the advice of a health professional before using this product." It meets the requirements in [Botanical Extracts \(565\), Labeling](#).
- [USP REFERENCE STANDARDS \(11\)](#).
[USP Glycyrrhizic Acid RS](#)

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

Topic/Question	Contact	Expert Committee
POWDERED LICORICE EXTRACT	Anton Bzhelyansky Scientific Liaison	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:

Pharmacopeial Forum: Volume No. PF 30(2)

Current DocID: GUID-AE8C8D5B-5EBF-41BD-9CAF-75DE5C630103_4_en-US

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