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Pyrethrum Extract

DEFINITION
Pyrethrum Extract is a mixture of three naturally occurring, closely related insecticidal esters of chrysanthemic acid (pyrethrins I: jasmolin I, cinerin I, and pyrethrin I) and three closely related esters of pyrethric acid (pyrethrins II: jasmolin II, cinerin II, and pyrethrin II). It contains NLT 90.0% and NMT 110.0% of the labeled amount of pyrethrins (sum of pyrethrins I and pyrethrins II). The ratio of pyrethrins I to pyrethrins II in the Extract is NLT 0.8 and NMT 2.8. It may contain pigments characteristic of chrysanthemum species, triglyceride oils, terpenoids, and carotenoid. It may also contain suitable solvents and antioxidants. It contains no other added substances.

IDENTIFICATION
• **A.** The retention times of the major peaks of the *Sample solution* correspond to those of the *Standard solution*, as obtained in the Assay.

ASSAY
• **PROCEDURE**
Mobile phase: Hexanes and tetrahydrofuran (97.75:2.25)
Standard solution: 0.5 mg/mL of [USP Pyrethrum Extract RS](#) in hexanes
Sample solution: Nominally 0.5 mg/mL of pyrethrins from Extract in hexanes
Chromatographic system
(See [Chromatography \(621\), System Suitability.](#))
Mode: LC
Detector: UV 240 nm
Column: 4.6-mm × 25-cm; 5-μm packing L10
Flow rate: 1.5 mL/min
Injection volume: 10 μL
System suitability
Sample: *Standard solution*
For relative retention times, see [Table 1](#).

Table 1

Name	Relative Retention Time
Jasmolin I	0.78–0.80
Cinerin I	0.86–0.87
Pyrethrin I	1.0
Jasmolin II	1.95–2.15
Cinerin II	2.15–2.4
Pyrethrin II	2.55–2.88

Suitability requirements
Resolution: NLT 2.0 between individual pyrethrin peaks
Relative standard deviation: NMT 1.0%

Analysis 1**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of pyrethrins (sum of pyrethrins I and pyrethrins II) in the portion of Extract taken:

$$\text{Result} = \{\Sigma[(r_U/r_S) \times (C_S/C_U)]\} \times 100$$

 r_U = peak response of individual pyrethrin from the *Sample solution* r_S = peak response of individual pyrethrin from the *Standard solution* C_S = concentration of individual pyrethrin in the *Standard solution* (mg/mL) C_U = nominal concentration of pyrethrins in the *Sample solution* (mg/mL)**Acceptance criteria 1:** 90.0%–110.0%**Analysis 2****Sample:** *Sample solution*

Calculate the ratio of pyrethrins I to pyrethrins II in the portion of Extract taken:

$$\text{Result} = A/B$$

 A = sum of the quantities of pyrethrins I B = sum of the quantities of pyrethrins II**Acceptance criteria 2:** 0.8–2.8**ADDITIONAL REQUIREMENTS**

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers.
- **USP REFERENCE STANDARDS (11).**
[USP Pyrethrum Extract RS](#)

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

Topic/Question	Contact	Expert Committee
PYRETHRUM EXTRACT	Documentary Standards Support	SM12020 Small Molecules 1
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM12020 Small Molecules 1

Chromatographic Database Information: [Chromatographic Database](#)**Most Recently Appeared In:**

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