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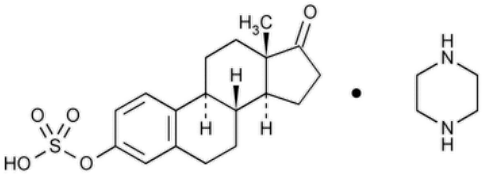
Estropipate

Change to read:



$C_{18}H_{22}O_5S \cdot C_4H_{10}N_2$ ▲436.57▲ (ERR 1-Dec-2021)

Estra-1,3,5(10)-trien-17-one, 3-(sulfooxy)-, compd. with piperazine (1:1).

Estrone hydrogen sulfate compound with piperazine (1:1) CAS RN®: 7280-37-7; UNII: SVI38UY019.

» Estropipate contains not less than 97.0 percent and not more than 103.0 percent of $C_{18}H_{22}O_5S \cdot C_4H_{10}N_2$, calculated on the dried basis.

Packaging and storage—Preserve in tight containers.

USP Reference standards ⟨11⟩—

USP Estrone RS
USP Estropipate RS

Identification, *Spectroscopic Identification Tests* ⟨197⟩*, Infrared Spectroscopy: 197K*.

Loss on drying ⟨731⟩—Dry it at 105° for 1 hour: it loses not more than 1.0% of its weight.

Residue on ignition ⟨281⟩: not more than 0.5%.

Free estrone—

Stock impurity standard preparation—Weigh accurately 25.0 mg of USP Estrone RS into a 100-mL volumetric flask, dilute with spectrophotometric-grade methanol to volume, and sonicate to achieve complete solution.

Impurity standard preparation—Weigh accurately 25.0 mg of USP Estropipate RS into a 25-mL volumetric flask, add 2.0 mL of *Stock impurity standard preparation*, dilute with spectrophotometric-grade methanol to volume, and sonicate to achieve complete solution.

Standard preparation—Weigh accurately 25.0 mg of USP Estropipate RS into a 25-mL volumetric flask, dilute with spectrophotometric-grade methanol to volume, and sonicate to achieve complete solution.

Test preparation—Using a portion of Estropipate, accurately weighed, prepare as directed under *Standard preparation*.

Mobile phase—Mix 650 mL of 0.025 M potassium dihydrogen phosphate with 350 mL of spectrophotometric-grade acetonitrile. Filter the solution through a membrane filter having a porosity of 1 µm or less, and degas at a pressure of less than 100 mm of mercury until no further bubbles appear. The concentration of acetonitrile may be varied to meet system suitability requirements and to provide a suitable elution time for all components.

Chromatographic system—Typically, a high-pressure liquid chromatograph, operated at room temperature, is fitted with a 30-cm × 3.9-mm stainless steel column that contains packing L1. The mobile phase is maintained at a pressure and flow rate (approximately 1.5 mL per minute) capable of giving the required resolution (see *System suitability test*) and a suitable elution time. An UV detector that monitors absorption at a wavelength of 213 nm is used with a recorder adjusted such that approximately 0.04 absorbance unit gives a full-scale reading.

System suitability test—Chromatograph two injections of the *Impurity standard preparation*, and determine that after the injection front the small peak (estrone) after the major peak does not differ in peak response between the duplicate injections by more than 4%. Also determine that the small peak after the major component has a retention time relative to the major component of approximately 5.5. (For a particular column, resolution may be increased by decreasing the amount of acetonitrile in the *Mobile phase*.)

Procedure—Inject separately 5.0-µL portions of the *Standard preparation,* the *Impurity standard preparation*, and the *Test preparation* into the high-pressure liquid chromatograph by means of a suitable sampling valve or high-pressure microsyringe. Measure the peak responses for the estrone peak relative to the estropipate peak obtained with the *Standard preparation,* the *Impurity standard preparation*, and the *Test preparation*. Calculate the percentage of free estrone taken by the formula:

$$2.5(C/W)(H_U/H_S)$$

in which H_U and H_S are the measured peak heights of the impurity (estrone) in the *Test preparation* and the *Impurity standard preparation* corrected for the peak height of estrone in the *Standard preparation*, respectively, *W* is the weight, in mg, of estropipate in the *Test preparation*, and *C* is the concentration, in µg per mL, of USP Estrone RS in the *Impurity standard preparation.* Not more than 2.0% is found.

Assay—

Standard preparation—Prepare as directed under *Free estrone.*

Assay preparation—Prepare as directed for *Test preparation* under *Free estrone.*

Chromatographic system—Use the same system as in test for *Free estrone.* Adjust the recorder so that approximately 0.4 absorbance unit gives a full-scale reading.

System suitability test—Chromatograph two injections of the *Standard preparation*, and determine that only one major peak is observed after the injection front. The peak responses between the duplicate injections for the major peak do not differ by more than 3%.

Procedure—Inject 5.0 µL of the *Assay preparation* and the *Standard preparation* into the high-pressure liquid chromatograph by means of a suitable sampling valve or high-pressure microsyringe. Measure the peak heights for the respective estropipate peak (it is actually an estrone sulfate peak) obtained with the *Assay preparation* and the *Standard preparation.* Calculate the quantity, in mg, of $C_{18}H_{22}O_5S \cdot C_4H_{10}N_2$ in the portion of Estropipate taken by the formula:

$$25C(H_U/H_S)$$

in which H_U and H_S are the peak heights obtained with the *Assay preparation* and the *Standard preparation*, respectively, and C is the concentration, in mg per mL, of USP Estropipate RS in the *Standard preparation*.

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
ESTROPIPATE	Documentary Standards Support	SM52020 Small Molecules 5

Chromatographic Database Information: Chromatographic Database

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

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