dark red. This solution shows a strong light green fluorescence under ultraviolet light. Add carefully 10 mL of water to this solution: the color changes from yellow to orange-yellow with a light green fluorescence, and a yellow-brown flocculent precipitate is formed.

(2) Dissolve 0.01 g of the dried matter obtained in (1) in 1 mL of methanol, add 1 mL of Fehling's TS, and heat: an orange to red precipitate is formed.

(3) To 0.1 g of the dried matter obtained in (1) add 2 mL of sodium hydroxide TS, and allow to stand for 10 minutes. Filter the solution to remove the precipitate formed, mix the filtrate with 1 mL of dilute hydrochloric acid, filter if necessary, then adjust the solution to a pH of about 6 with diluted ammonia TS (1 in 10), and add 2 to 3 drops of iron (III) chloride TS: a brown precipitate is formed.

(4) Determine the infrared absorption spectrum of the dried matter obtained in (1) as directed in the potassium bromide disk method under the Infrared Spectrophotometry, and compare the spectrum with the Reference Spectrum or the spectrum of previously dried Hydrocortisone Succinate Reference Standard: both spectra exhibit similar intensities of absorption at the same wave numbers. If any difference appears between the spectra, dissolve Hydrocortisone Sodium Succinate and Hydrocortisone Succinate Reference Standard in methanol, respectively, then evaporate the methanol to dryness, and repeat the test on the residues.

(5) Hydrocortisone Sodium Succinate responds to the Qualitative Tests (1) for sodium salt.

Optical rotation $[\alpha]_D^{20}$: +135 – +145° (0.1 g, calculated on the dried basis, ethanol (95), 10 mL, 100 mm).

Purity (1) Clarity and color of solution—Dissolve 0.5 g of Hydrocortisone Sodium Succinate in 10 mL of water: the solution is clear and colorless.

(2) Other steroids—Dissolve 0.025 g of Hydrocortisone Sodium Succinate in methanol to make exactly 10 mL, and use this solution as the sample solution. Separately, dissolve 0.025 g of hydrocortisone in methanol to make exactly 10 mL. Pipet 1 mL of this solution, add methanol to make exactly 20 mL, and use this solution as the standard solution (1). Pipet 6 mL of the standard solution (1), add methanol to make exactly 10 mL, and use this solution as the standard solution (2). Perform the test with these solutions as directed under the Thin-layer Chromatography. Spot 3 μL each of the sample solution and the standard solutions (1) and (2) on a plate of silica gel with fluorescent indicator for thin-layer chromatography. Develop the plate with a mixture of chloroform, ethanol (99.5) and formic acid (150:10:1) to a distance of about 10 cm, and air-dry the plate. Examine under ultraviolet light (main wavelength: 254 nm): the spot from the sample solution corresponding to the spot from the standard solution (1) is not more intense than the spot from the standard solution (1). Any spot other than the principal spot and the above spot obtained from the sample solution is not more than one, and is not more intense than the spot from the standard solution (2).

Loss on drying Not more than 2.0% (0.5 g, 105°C, 3 hours).

Assay Weigh accurately about 0.01 g of Hydrocortisone Sodium Succinate, and dissolve in methanol to make exactly 100 mL. Pipet 5 mL of this solution, add methanol to make exactly 50 mL, and use this solution as the sample solution. Separately, weigh accurately about 0.01 g of Hydrocortisone Succinate Reference Standard, previously dried at 105°C for 3 hours, proceed in the same manner as directed for the sample solution, and use this solution as the standard solution. Determine the absorbances, A_T and A_S, of the sample solution and the standard solution at 240 nm as directed under the Ultraviolet-visible Spectrophotometry, respectively.

Amount (mg) of $C_{25}H_{33}NaO_8$
= amount (mg) of Hydrocortisone Succinate Reference Standard
$\times \frac{A_T}{A_S} \times 1.0475$

Containers and storage Containers—Tight containers. Storage—Light-resistant.

Hydrocortisone Succinate

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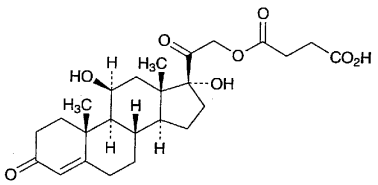

$C_{25}H_{34}O_8$: 462.53
11β,17,21-Trihydroxypregn-4-ene-3,20-dione 21-(hydrogen succinate) [*2203-97-6*]

Hydrocortisone Succinate, when dried, contains not less than 97.0% and not more than 103.0% of $C_{25}H_{34}O_8$.

Description Hydrocortisone Succinate occurs as a white crystalline powder.

It is very soluble in methanol, freely soluble in ethanol (99.5), sparingly soluble in ethanol (95), and practically insoluble in water.

Identification (1) To 3 mg of Hydrocortisone Succinate add 2 mL of sulfuric acid: the solution shows a yellowish green fluorescence immediately, and the color of the solution gradually changes through orange-yellow to dark red. This solution shows a strong light green fluorescence under ultraviolet light. Add carefully 10 mL of water to this solution: the color changes from yellow to orange-yellow with a light green fluorescence, and a yellow-brown flocculent precipitate is formed.

(2) Determine the infrared absorption spectrum of Hydrocortisone Succinate, previously dried, as directed in the potassium bromide disk method under the Infrared Spectrophotometry, and compare the spectrum with the Reference Spectrum or the spectrum of previously dried Hydrocortisone Succinate Reference Standard: both spectra exhibit similar intensities of absorption at the same wave numbers. If any difference appears between the spectra, dissolve Hydrocortisone Succinate and Hydrocortisone Succinate Reference Standard in methanol, respectively, then

evaporate the methanol to dryness, and repeat the test on the residues.

Optical rotation $[\alpha]_D^{20}$: +147 – +153° (after drying, 0.1 g, ethanol (99.5), 10 mL, 100 nm).

Purity Other steroids—Dissolve 0.025 g of Hydrocortisone Succinate in exactly 10 mL of methanol, and use this solution as the sample solution. Separately, dissolve 0.025 g of hydrocortisone in exactly 10 mL of methanol. Pipet 1 mL of this solution, dilute with methanol to exactly 50 mL, and use this solution as the standard solution. Perform the test with these solutions as directed under the Thin-layer Chromatography. Spot 3 μL each of the sample solution and the standard solution on a plate of silica gel with fluorescent indicator for thin-layer chromatography. Develop the plate with a mixture of chloroform, ethanol (99.5) and formic acid (150:10:1) to a distance of about 10 cm, and air-dry the plate. Examine under ultraviolet light (main wavelength: 254 nm): the spots other than the principal spot from the sample solution are not more intense than the spot from the standard solution.

Loss on drying Not more than 2.0% (0.5 g, 105°C, 3 hours).

Residue on ignition Not more than 0.1% (0.5 g).

Assay Weigh accurately about 0.05 g each of Hydrocortisone Succinate and Hydrocortisone Succinate Reference Standard, previously dried, and dissolve in methanol to make exactly 50 mL. Pipet 5 mL each of these solutions, add exactly 5 mL each of the internal standard solution, then add methanol to make 50 mL, and use these solutions as the sample solution and the standard solution. Perform the test with 10 μL each of the sample solution and the standard solution as directed under the Liquid Chromatography according to the following operating conditions, and calculate the ratios, Q_T and Q_S, of the peak area of hydrocortisone succinate to that of the internal standard, respectively.

$$\text{Amount (mg) of } C_{25}H_{34}O_8 = \text{amount (mg) of Hydrocortisone Succinate Reference Standard} \times \frac{Q_T}{Q_S}$$

Internal standard solution—A solution of butyl parahydroxy benzoate in methanol (1 in 2500).

Operating conditions—

Detector: An ultraviolet absorption photometer (wavelength: 254 nm).

Column: A stainless steel column 4 mm in inside diameter and 30 cm in length, packed with octadecylsilanized silica gel (10 μm in particle diameter).

Column temperature: A constant temperature of about 25°C.

Mobile phase: A mixture of acetic acid-sodium acetate buffer solution, pH 4.0 and acetonitrile (3:2).

Flow rate: Adjust the flow rate so that the retention time of hydrocortisone succinate is about 5 minutes.

System suitability—

System performance: When the procedure is run with 10 μL of the standard solution under the above operating conditions, hydrocortisone succinate and the internal standard are eluted in this order with the resolution between these peaks being not less than 9.

System repeatability: When the test is repeated 6 times with 10 μL of the standard solution under the above operating conditions, the relative standard deviation of the ratios of the peak area of hydrocortisone succinate to that of the internal standard is not more than 1.0%.

Containers and storage Containers—Tight containers.

Storage—Light-resistant.

Hydrocotarnine Hydrochloride

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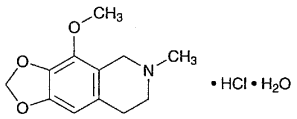

$C_{12}H_{15}NO_3.HCl.H_2O$: 275.73

5,6,7,8-Tetrahydro-4-methoxy-6-methyl-1,3-dioxolo[4,5-*g*]isoquinoline monohydrochloride monohydrate [*5985-55-7*, anhydride]

Hydrocotarnine Hydrochloride, when dried, contains not less than 98.0% of $C_{12}H_{15}NO_3.HCl$: 257.72.

Description Hydrocotarnine Hydrochloride occurs as white to pale yellow crystals or crystalline powder.

It is freely soluble in water, sparingly soluble in ethanol (95) and in acetic acid (100), and slightly soluble in acetic anhydride.

Identification (1) Determine the absorption spectrum of a solution of Hydrocotarnine Hydrochloride (1 in 10,000) as directed under the Ultraviolet-visible Spectrophotometry, and compare the spectrum with the Reference Spectrum: both spectra exhibit similar intensities of absorption at the same wavelengths.

(2) Determine the infrared absorption spectrum of Hydrocotarnine Hydrochloride as directed in the potassium bromide disk method under the Infrared Spectrophotometry, and compare the spectrum with the Reference Spectrum: both spectra exhibit similar intensities of absorption at the same wave numbers.

(3) A solution of Hydrocotarnine Hydrochloride (1 in 50) responds to the Qualitative Tests (2) for chloride.

pH Dissolve 1.0 g of Hydrocotarnine Hydrochloride in 20 mL of water: the pH of the solution is between 4.0 and 6.0.

Purity (1) Clarity and color of solution—Dissolve 0.5 g of Hydrocotarnine Hydrochloride in 10 mL of water: the solution is clear, and when perform the test with this solution as directed under the Ultraviolet-visible Spectrophotometry, using water as the blank, the absorbance at 400 nm is not more than 0.17.

(2) Heavy metals—Proceeds with 1.0 g of Hydrocotarnine Hydrochloride according to Method 1, and perform the test. Prepare the control solution with 2.0 mL of Standard Lead Solution (not more than 20 ppm).

(3) Related substances—Dissolve 0.10 g of Hydrocotarnine Hydrochloride in 10 mL of diluted ethanol (99.5) (1 in 2), and use this solution as the sample solution.