Identification (1) Determine the absorption spectrum of a solution of Salbutamol Sulfate in 0.1 mol/L hydrochloric acid TS (1 in 12,500) 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 Salbutamol Sulfate, previously dried, 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 Salbutamol Sulfate (1 in 20) responds to the Qualitative Tests for sulfate.

Purity (1) Clarity and color of solution—Dissolve 1.0 g of Salbutamol Sulfate in 20 mL of water: the solution is clear and colorless.

(2) Heavy metals—Proceed with 1.0 g of Salbutamol Sulfate 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 0.020 g of Salbutamol Sulfate in 10 mL of water, and use this solution as the sample solution. Pipet 1 mL of the sample solution, add water to make exactly 100 mL, and use this solution as the standard solution. Perform the test with these solutions as directed under the Thin-layer Chromatography. Spot 5 μL each of the sample solution and the standard solution on a plate of silica gel for thin-layer chromatography. Develop the plate with a mixture of ethyl acetate, 2-propanol, water and ammonia solution (28) (25:15:8:2) to a distance of about 15 cm, and air-dry the plate. Leave the plate in a well-closed vessel saturated with diethylamine vapor for 5 minutes, and spray evenly 4-nitrobenzenediazonium chloride TS: the spots other than the principal spot from the sample solution are not more intense than the spot from the standard solution in color.

(4) Boron—Take 0.05 g of Salbutamol Sulfate and 5.0 mL of the boron standard solution, and transfer to a platinum crucible. Add 5 mL of potassium carbonate-sodium carbonate TS, evaporate on a water bath to dryness, and dry at 120°C for 1 hour. Ignite the residue immediately. After cooling, add 0.5 mL of water and 3 mL of curcumin TS to the residue, warm gently in a water bath for 5 minutes. After cooling, add 3 mL of acetic acid-sulfuric acid TS, mix, and allow to stand for 30 minutes. Add ethanol (95) to make exactly 100 mL, and filter. Discard the first 10 mL of the filtrate, and use the subsequent filtrate as the sample solution and the standard solution. Perform the test with these solutions as directed under the Ultraviolet-visible Spectrophotometry, using ethanol (95) as the blank: the absorbance of the sample solution at 555 nm is not larger than that of the standard solution.

Loss on drying Not more than 0.5% (1 g, in vacuum at a pressure not exceeding 0.67 kPa, 100°C, 3 hours).

Residue on ignition Not more than 0.10% (1 g).

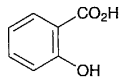
Assay Weigh accurately about 0.9 g of Salbutamol Sulfate, previously dried, and dissolve in 50 mL of acetic acid (100) by warming. After cooling, titrate with 0.1 mol/L perchloric acid VS until the color of the solution changes from purple through blue to blue-green (indicator: 3 drops of crystal violet TS). Perform a blank determination, and make any necessary correction.

Each mL of 0.1 mol/L perchloric acid VS
= 57.67 mg of $(C_{13}H_{21}NO_3)_2.H_2SO_4$

Containers and storage Containers—Tight containers.

Salicylic Acid

サリチル酸



$C_7H_6O_3$: 138.12
2-Hydroxybenzoic acid [*69-72-7*]

Salicylic Acid, when dried, contains not less than 99.5% of $C_7H_6O_3$.

Description Salicylic Acid occurs as white crystals or crystalline powder. It is odorless and has a slightly acid, followed by an acrid taste.

It is freely soluble in ethanol (95), in acetone and in diethyl ether, soluble in hot water, and slightly soluble in water .

Identification A solution of Salicylic Acid (1 in 500) responds to the Qualitative Tests (1) and (3) for salicylate.

Melting point 158 - 161°C

Purity (1) Chloride—Dissolve 5.0 g of Salicylic Acid in 90 mL of water by heating, cool, dilute with water to 100 mL, and filter. Discard the first 20 mL of the filtrate, take subsequent 30 mL of the filtrate, add 6 mL of dilute nitric acid and water to make 50 mL, and perform the test using this solution as the test solution. Prepare the control solution with 0.35 mL of 0.01 mol/L hydrochloric acid VS (not more than 0.008%).

(2) Sulfate—To 30 mL of the filtrate obtained in (1) add 1 mL of dilute hydrochloric acid and water to make 50 mL, and perform the test using this solution as the test solution. Prepare the control solution with 0.35 mL of 0.005 mol/L sulfuric acid VS (not more than 0.011%).

(3) Heavy metals—Dissolve 2.0 g of Salicylic Acid in 25 mL of acetone, add 4 mL of sodium hydroxide TS, 2 mL of dilute acetic acid and water to make 50 mL, and perform the test using this solution as the test solution. Prepare the control solution as follows: to 2.0 mL of Standard Lead Solution add 25 mL of acetone, 2 mL of dilute acetic acid and water to make 50 mL (not more than 10 ppm).

(4) Readily carbonizable substances—Perform the test with 0.5 g of Salicylic Acid: the solution has no more color than Matching Fluid C.

Loss on drying Not more than 0.5% (2 g, silica gel, 3 hours).

Residue on ignition Not more than 0.05% (1 g).

Assay Weigh accurately about 0.5 g of Salicylic Acid, previously dried, dissolve in 25 mL of neutralized ethanol,

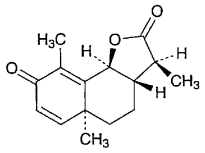
and titrate with 0.1 mol/L sodium hydroxide VS (indicator: 3 drops of phenolphthalein TS).

Each mL of 0.1 mol/L sodium hydroxide VS
= 13.812 mg of $C_7H_6O_3$

Containers and storage Containers—Well-closed containers.

Santonin

サントニン



$C_{15}H_{18}O_3$: 246.30
(3*S*,3a*S*,5a*S*,9b*S*)-3a,5,5a,9b-Tetrahydro-3,5a,9-trimethylnaphtho[1,2-*b*]furan-2,8(3*H*,4*H*)-dione
[*481-06-1*]

Santonin contains not less than 98.5% of $C_{15}H_{18}O_3$.

Description Santonin occurs as colorless crystals, or a white, crystalline powder. It is odorless, and tasteless at first, but afterward develops a slightly bitter taste.

It is freely soluble in boiling ethanol (95) and in chloroform, sparingly soluble in ethanol (95), slightly soluble in hot water and in diethyl ether, and practically insoluble in water.

It becomes yellow by light.

Identification (1) Dissolve 0.2 g of Santonin in 2 mL of potassium hydrox-ide-ethanol TS: a red color develops.

(2) Shake 0.01 g of powdered Santonin with 1 mL of diluted sulfuric acid (1 in 2), boil, and cool. Add 1 drop of dilute iron (III) chloride TS: a purple color develops.

Optical rotation $[\alpha]_D^{20}$: −170 – −175° (0.2 g, chloroform, 10 mL, 100 mm).

Melting point 172 – 175°C

Purity (1) Alkaloids—Boil 0.5 g of Santonin with 20 mL of diluted sulfuric acid (1 in 100), cool, and filter. Dilute 10 mL of the filtrate with water to 30 mL, add 3 drops of iodine TS, and allow to stand for 3 hours: no turbidity is produced.

(2) Artemisin—Dissolve 1.0 g of powdered Santonin in 2 mL of chloroform by slight warming: the solution is clear and colorless, or any yellow color produced is not darker than Matching Fluid A.

(3) Phenols—Boil 0.20 g of Santonin with 10 mL of water, cool, and filter. To the filtrate add bromine TS until the color of the solution becomes yellow: no turbidity is produced.

(4) Acid-coloring substances—Moisten 0.01 g of Santonin with nitric acid: no color develops immediately. Moisten Santonin with sulfuric acid, previously cooled to 0°C: no color is produced immediately.

Residue on ignition Not more than 0.25% (1 g).

Assay Weigh accurately about 0.25 g of Santonin, dissolve in 10 mL of ethanol (95) by warming, add exactly 20 mL of 0.1 mol/L sodium hydroxide VS, and heat on a water bath under a reflux condenser for 5 minutes. Cool quickly, and titrate the excess sodium hydroxide with 0.05 mol/L hydrochloric acid VS (indicator: 3 drops of phenolphthalein TS). Perform a blank determination.

Each mL of 0.1 mol/L sodium hydroxide VS
= 24.631 mg of $C_{15}H_{18}O_3$

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

Santonin Tablets

サントニン錠

Santonin Tablets contain not less than 92% and not more than 108% of the labeled amount of santonin ($C_{15}H_{18}O_3$: 246.30).

Method of preparation Prepare as directed under Tablets, with Santonin.

Identification To a portion of powdered Santonin Tablets, equivalent to 0.5 g of Santonin according to the labeled amount, add 50 mL of chloroform, shake, filter, and evaporate the filtrate to dryness. Proceed with this as directed in the Identification under Santonin.

Assay Weigh accurately, and powder not less than 20 Santonin Tablets. Weigh accurately a portion of the powder, equivalent to about 0.05 g of santonin ($C_{15}H_{18}O_3$), add 40 mL of methanol, shake for 10 minutes, and add methanol to make 50 mL. Centrifuge this solution, pipet 5 mL of the supernatant liquid, add exactly 3 mL of the internal solution, add methanol to make 10 mL, and use this solution as the sample solution. Separately, dissolve about 0.05 g of santonin for assay, accurately weighed, in methanol to make exactly 50 mL. Pipet 5 mL of this solution, add exactly 3 mL of the internal solution, add methanol to make 10 mL, and use this solution as the standard solution. Perform the test with 1 μL each of the sample solution and the standard solution as directed under the Liquid Chromatography according to the following conditions, and calculate the ratios, Q_T and Q_S, of the peak area of santonin to that of the internal standard.

Amount (mg) of santonin ($C_{15}H_{18}O_8$)
= amount (mg) of Santonin Reference Standard
$\times \frac{Q_T}{Q_S}$

Internal standard solution—A solution of ethyl paraoxybenzoate in ethanol (95) (1 in 1000).

Operating conditions—

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

Column: A stainless steel column about 4 mm in inside diameter and about 15 cm in length, packed with octadecylsilanized silica gel for liquid chromatography (5 μm in particle diameter).

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