Detection sensitivity: Pipet 1 mL of the standard solution (1), add the mobile phase to make exactly 20 mL, and use this solution as the standard solution (2). Adjust the detection sensitivity so that the peak area of sennoside B obtained from 10 μL of the standard solution (2) can be measured by the automatic integration method, and the peak height of sennoside B from 10 μL of the standard solution (1) is about 20% of the full scale.

Time span of measurement: About 4 times as long as the retention time of sennoside B after the peak of solvent.

L-Serine $C_3H_7NO_3$ [K 9105, Special class]

Sesame oil [Same as the namesake monograph in Part II]

Silica gel An amorphous, partly hydrated silicic acid occurring in glassy granules of various sizes. When used as a desiccant, it is frequently coated with a substance that changes color when the capacity to absorb water is exhausted. Such colored products may be regenerated by being heated at 110°C until the gel assumes the original color.

Residue on ignition: not more than 6% (2 g, 950 ± 50°C).

Water absorption: not less than 31%. Weigh accurately about 10 g of silica gel, and allow to stand for 24 hours in a closed container in which the atmosphere is maintained at 80% relative humidity with sulfuric acid having a specific gravity of 1.19. Weigh again, and calculate the increase in mass.

Silica gel for gas chromatography A silica gel prepared for gas chromatography.

Silica gel for liquid chromatography A silica gel prepared for liquid chromatography.

Silica gel for thin-layer chromatography A silica gel prepared for thin-layer chromatography.

Silica gel with complex fluorescent indicator for thin-layer chromatography A silica gel for thin-layer chromatography containing suitable complex fluorescent indicators.

Silica gel with fluorescent indiator for thin-layer chromatography A silica gel for thin-layer chromatography containing a suitable fluorescent indicator.

Siliceous earth [K 8330, First class]

Siliceous earth for chromatography A siliceous earth prepared for chromatography.

Siliceous earth for gas chromatography A siliceous earth prepared for gas chromatography.

Silicone oil Colorless clear liquid, having no odor.

Viscosity: 50 – 100 mm^2/s.

Silicone resin Light gray, half-clear, viscous liquid or a pasty material. It is almost odorless.

Viscosity and refractive index—Place 15 g of silicone resin in a Soxhlet extractor, then extract with 150 mL of carbon tetrachloride for 3 hours. The kinematic viscosity of the residual liquid, obtained by evaporating carbon tetrachloride from the extract on a water bath, is 100 to 1100 mm^2/s (25°C). Its refractive index is 1.400 to 1.410 (25°C).

Specific gravity: 0.98 – 1.02

Loss on drying: 0.45 – 2.25 g with the extracted residue obtained in the Viscosity and refractive index (100°C, 1 hour).

Silicotungstic acid 26-water $SiO_2.12WO_3.26H_2O$

White to slightly yellowish, crystals. Deliquescent. Very soluble in water and in ethanol (95).

Loss on ignition: 14 – 15% (2 g, dry at 110°C for 2 hours then 700 – 750°C, constant mass).

Clarity and color of solution: a solution (1 in 20) is clear and colorless.

Silver chromate-saturated potassium chromate TS Dissolve 5 g of potassium chromate in 50 mL of water, add silver nitrate TS until a pale red precipitate is produced, and filter. To the filtrate add water to make 100 mL.

Silver diethyldithiocarbamate See silver *N*, *N*-diethyldithiocarbamate.

Silver nitrate $AgNO_3$ [K 8550, Special class]

Silver nitrate-ammonia TS Dissolve 1 g of silver nitrate in 20 mL of water, and add ammonia TS dropwise with stirring until the precipitate is almost entirely dissolved.

Storage—Preserve in tight, light-resistant containers.

Silver nitrate TS Dissolve 17.5 g of silver nitrate in water to make 1000 mL (0.1 mol/L). Preserve in light-resistant containers.

Silver *N,N*-diethyldithiocarbamate $C_5H_{10}AgNS_2$ [K 9512]

Soda lime [K 8603, First class]

Sodium acetate See sodium acetate trihydrate.

Sodium acetate-acetone TS Dissolve 8.15 g of sodium acetate trihydrate and 42 g of sodium chloride in 100 mL of water, and add 68 mL of 0.1 mol/L hydrochloric acid VS, 150 mL of acetone and water to make 500 mL.

Sodium acetate, anhydrous CH_3COONa [K 8372, Special class]

Sodium acetate trihydrate $CH_3COONa.3H_2O$ [K 8371, Special class]

Sodium acetate TS Dissolve 13.6 g of sodium acetate trihydrate in water to make 100 mL (1 mol/L).

Sodium benzoate for assay [Same as the monograph Sodium Benzoate]

Sodium bicarbonate See sodium hydrogen carbonate.

Sodium bicarbonate for pH determination See sodium hydrogen carbonate for pH determination.

Sodium bicarbonate TS See sodium hydrogen carbonate TS.

Sodium bismuthate See bismuth sodium trioxide.

Sodium bisulfite See sodium hydrogen sulfite.

Sodium bisulfite TS See sodium hydrogen sulfite TS.

Sodium bitartrate See sodium hydrogen tartrate monohydrate.

Sodium bitartrate TS See sodium hydrogenh tartrate TS.

Sodium borate for pH determination See sodium tetraborate for pH determination.

Sodium borate decahydrate See sodium tetraborate

decahydrate.

Sodium borohydride $NaBH_4$ White to grayish white, crystals, powder or masses. Freely soluble in water.

Content: not less than 95%. Assay—Weigh accurately 0.25 g of sodium borohydride, dissolve in 20 mL of diluted sodium hydroxide TS (30 in 100), and add water to make exactly 500 mL. Pipet 20 mL of this solution, put in a glass-stoppered iodine flask, and cool in ice. Add exactly 40 mL of iodine TS, allow to stand at a dark place for 10 minutes, add exactly 10 mL of diluted sulfuric acid (2 in 12), and titrate with 0.1 mol/L sodium thiosulfate VS (back titration) (indicator: starch solution). Perform a blank determination in the same manner, and make any necessary correction.

Each mL of 0.1 mol/L sodium thiosulfate VS
= 0.4729 mg of $NaBH_4$

Sodium bromide NaBr [K 8514, Special class]

Sodium carbonate See sodium carbonate decahydrate.

Sodium carbonate, anhydrous Na_2CO_3 [K 8625, Sodium carbonate, Special class]

Sodium carbonate decahydrate $Na_2CO_3.10H_2O$ [K 8624, Special class]

Sodium carbonate for pH determination Na_2CO_3 [K 8625, for pH determination]

Sodium carbonate (standard reagent) Na_2CO_3 [K 8005, Standard reagent for volumetric analysis]

Sodium carbonate TS Dissolve 10.5 g of anhydrous sodium carbonate in water to make 100 mL (1 mol/L).

0.55 mol/L Sodium carbonate TS Dissolve 5.83 g of anhydrous sodium carbonate in water to make 100 mL.

Sodium chloride NaCl [K 8150, Special class]

Sodium chloride (standard reagent) NaCl [K 8005, Standard reagent for volumetric analysis]

Sodium chloride TS Dissolve 10 g of sodium chloride in water to make 100 mL.

0.1 mol/L Sodium chloride TS Dissolve 6 g of sodium chloride in water to make 1000 mL.

Sodium citrate See trisodium citrate dihydrate.

Sodium cobaltinitrite See sodium hexanitrocobaltate (III).

Sodium cobaltinitrite TS See sodium hexanitrocobaltate (III) TS.

Sodium 1-decanesulfonate $CH_3(CH_2)_9SO_3Na$ White powder.

Purity Clarity and color of solution—Dissolve 1.0 g in 40 mL of water: the solution is clear and colorless.

Residue on ignition: 28.5 - 29.5% (1 g).

Sodium desoxycholate $C_{24}H_{39}NaO_4$ White, odorless, crystalline powder.

Identification—Determine the infrared absorption spectrum of sodium desoxycholate, previously dried, according to the potassium bromide disk method under the Infrared Spectrophotometry: it exhibits absorption at the wave numbers of about 3400 cm^{-1}, 2940 cm^{-1}, 1562 cm^{-1} and 1408 cm^{-1}.

Purity Related substances—Dissolve 0.10 g of sodium desoxycholate in 10 mL of methanol, and use this solution as the sample solution. Pipet 1 mL of this solution, add methanol 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 10 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 1-butanol, methanol and acetic acid (100) (80:40:1) to a distance of about 10 cm, and air-dry the plate. Spray evenly concentrated sulfuric acid on the plate, and heat at 105°C for 10 minutes: the spots other than the principal spot from the sample solution are not more intense than the spot from the standard solution.

Sodium diethyldithiocarbamate See sodium *N*, *N*-diethyldithiocarbamate trihydrate.

Sodium *N*,*N*-diethyldithiocarbamate trihydrate $(C_2H_5)_2NCS_2Na.3H_2O$ [K 8454, Special class]

2 mol/L Sodium dihydrogenphosphate TS Dissolve 312.02 g of sodium dihydrogenphosphate dihydrate in water to make 1000 mL.

Sodium dihydrogenphosphate dihydrate $NaH_2PO_4.2H_2O$ [K 9009, Special class]

0.05 mol/L Sodium dihydrogenphosphate TS Dissolve 7.80 g of sodium dihydrogenphosphate dihydrate in water to make 1000 mL.

0.1 mol/L Sodium dihydrogenphosphate TS Dissolve 7.80 g of sodium dihydrogenphosphate dihydrate in 450 mL of water, adjust to a pH of 5.8 exactly with sodium hydroxide TS, and add water to make 500 mL.

0.05 mol/L Sodium dihydrogenphosphate TS, pH 2.6 Dissolve 7.80 g of sodium dihydrogenphosphate dihydrate in 900 mL of water, adjust the pH to exactly 2.6 and add water to make 1000 mL.

0.05 mol/L Sodium dihydrogenphosphate TS, pH 3.0 Dissolve 3.45 g of sodium dihydrogenphosphate dihydrate in 500 mL of water (solution A). Dilute 2.45 g of phosphoric acid with water to make 500 mL (solution B). To a volume of solution A add solution B until the mixture is adjusted to pH 3.0.

0.1 mol/L Sodium dihydrogenphosphate TS, pH 3.0 Dissolve 15.60 g of sodium dihydrogenphosphate dihydrate in 900 mL of water, adjust the pH to 3.0 with phosphoric acid, and add water to make 1000 mL.

Sodium disulfite $Na_2S_2O_5$ [K 8501, First class]

Sodium disulfite TS Dissolve 0.10 g of sodium disulfite in 10 mL of 1 mol/L hydrochloric acid TS, and add acetone to make 100 mL.

Sodium dodecylbenzene sulfonate $C_{18}H_{29}SO_3Na$ White, crystalline powder or mass.

pH—The pH of a solution of 0.5 g of sodium dodecylbenzene sulfonate in 50 mL of freshly boiled and cooled water is between 5.0 and 7.0. Measure the pH at 25°C passing nitrogen with stirring.

Loss on drying: not more than 0.5% (1 g, 105°C, 2 hours).

Content: not less than 99.0%. Assay—Weigh accurately about 0.04 g of sodium dodecylbenzene sulfonate, previous-

ly dried, and perform the test as directed in (4) Sulfur in the Procedure of determination under the Oxygen Flask Combustion Method, using a mixture of 20 mL of water and 2 mL of strong hydrogen peroxide water as absorbing solution.

Each mL of 0.005 mol/L barium perchlorate VS
= 1.7424 mg of $C_{18}H_{29}SO_3Na$

Sodium fluoride NaF [K 8821, Special class]

Sodium fluoride (standard reagent) NaF [K 8005, Standard reagent for volumetric analysis]

Sodium fluoride TS Dissolve 0.5 g of sodium fluoride in 100 mL of 0.1 mol/L hydrochloric acid TS. Prepare before use.

Sodium 1-heptane sulfonate $C_7H_{15}NaO_3S$ White, crystals or crystalline powder.

Purity Clarity and color of solution—Dissolve 1.0 g of sodium 1-heptane sulfonate in 10 mL of water: the solution is clear and colorless.

Loss on drying: not more than 3.0% (1 g, 105°C, 3 hours).

Content: not less than 99.0%. Assay—Dissolve about 0.4 g of sodium 1-heptane sulfonate, previously dried and weighed accurately, in 50 mL of water, transfer to a chromatographic column, prepared by packing a chromatographic tube 9 mm in inside diameter and 160 mm in height with 10 mL of strongly acidic ion exchange resin for column chromatography (425 to 600 μm in particle diameter, H type), and flow at a flow rate of about 4 mL per minute. Wash the column at the same flow rate with 150 mL of water, combine the washings with the effluent solution, and titrate with 0.1 mol/L sodium hydroxide VS (indicator: 10 drops of bromothymol blue TS) until the color of the solution changes from yellow to blue.

Each mL of 0.1 mol/L sodium hydroxide VS
= 20.225 mg of $C_7H_{15}NaO_3S$

Sodium 1-hexane sulfonate $C_6H_{13}NaO_3S$ White, crystals or crystalline powder.

Loss on drying: not more than 3.0% (1 g, 105°C, 2 hours).

Content: not less than 98.0%. Assay—Weigh accurately about 0.4 g of sodium 1-hexane sulfonate, previously dried, and dissolve in 25 mL of water. Transfer 15–20 mL of this solution into a chromatographic column about 11 mm in diameter and about 500 mm in height of strongly acidic ion exchange resin for column chromatography (246 μm to 833 μm in particle diameter, type H), and elute at the rate of about 5 - 10 mL per minute, then wash the column with five 50-mL portions of water at the rate of about 5 - 10 mL per minute. Combine the washings to the eluate, 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
= 18.822 mg of $C_6H_{13}NaO_3S$

Sodium hexanitrocobaltate (III) $Na_3Co(NO_2)_6$ [K 8347, Special class]

Sodium hexanitrocobaltate (III) TS Dissolve 10 g of sodium hexanitrocobaltate (III) in water to make 50 mL, and filter if necessary. Prepare before use.

Sodium hydrogen carbonate $NaHCO_3$ [K 8622, Special class]

Sodium hydrogen carbonate for pH determination $NaHCO_3$ [K 8622, Sodium hydrogen carbonate, for pH determination]

Sodium hydrogen carbonate TS Dissolve 5.0 g of sodium hydrogen carbonate in water to make 100 mL.

Sodium hydrogen sulfite [K 8059, Special class]

Sodium hydrogen sulfite TS Dissolve 10 g of sodium hydrogen sulfite in water to make 30 mL. Prepare before use.

Sodium hydrogen tartrate monohydrate $NaHC_4H_4O_6.H_2O$ [K 8538, Sodium hydrogentartrate monohydrate, Special class]

Sodium hydrogen tartrate TS Dissolve 1 g of sodium bitartrate in water to make 10 mL (0.5 mol/L). Prepare before use.

Sodium hydrosulfite $Na_2S_2O_4$ [K 8737, Sodium dithionite, Special class]

Sodium hydroxide NaOH [K 8576, Special class]

Sodium hydroxide-dioxane TS Dissolve 0.80 g of sodium hydroxide in a mixture of 1,4-dioxane and water (3:1) to make 100 mL.

Sodium hydroxide-methanol TS Dissolve by thorough shaking 4 g of sodium hydroxide in methanol to make 100 mL. To the supernatant liquid obtained by centrifugation add methanol to make 500 mL. Prepare before use.

Sodium hydroxide TS Dissolve 4.3 g of sodium hydroxide in water to make 100 mL (1 mol/L). Preserve in polyethylene bottles.

Sodium hydroxide TS, dilute Dissolve 4.3 g of sodium hydroxide in freshly boiled and cooled water to make 1000 mL. Prepare before use (0.1 mol/L).

0.01 mol/L Sodium hydroxide TS Dilute 10 mL of sodium hydroxide TS with water to make 1000 mL. Prepare before use.

0.05 mol/L Sodium hydroxide TS To 10 mL of 0.5 mol/L sodium hydroxide TS add water to make 100 mL.

0.2 mol/L Sodium hydroxide TS Dissolve 8.0 g of sodium hydroxide in freshly boiled and cooled water to make 1000 mL. Prepare before use.

0.5 mol/L Sodium hydroxide TS Dissolve 22 g of sodium hydroxide in water to make 1000 mL. Preserve in polyethylene bottles.

2 mol/L Sodium hydroxide TS Dissolve 8.6 g of sodium hydroxide in water to make 100 mL. Preserve in polyethylene bottles.

4 mol/L Sodium hydroxide TS Dissolve 168 g of sodium hydroxide in water to make 1000 mL. Preserve in polyethylene bottles.

8 mol/L Sodium hydroxide TS Dissolve 336 g of sodium hydroxide in water to make 1000 mL. Preserve in polyethylene bottles.

Sodium hypobromite TS To 8 mL of bromine TS add 25 mL of water and 25 mL of sodium carbonate TS. Prepare before use.

Sodium hypochlorite-sodium hydroxide TS To a volume of sodium hypochlorite TS for ammonium limit test, equivalent to 1.05 g of sodium hypochlorite (NaClO: 74.44), add 15 g of sodium hydroxide and water to make 1000 mL. Prepare before use.

Sodium hypochlorite TS Prepare the solution by passing chlorine into sodium hydroxide TS while cooling with ice, so as to contain 5% of sodium hypochlorite (NaClO: 74.44). Prepare before use.

Sodium hypochlorite TS for ammonium limit test Clear, colorless or pale green-yellow solution prepared by passing chlorine into sodium hydroxide or sodium carbonate solution, having the odor of chlorine.

Content: not less than 4.2 w/v% as sodium hypochlorite (NaClO: 74.44). Assay—Pipet 10 mL of sodium hypochlorite TS for ammonium limit test, and add water to make exactly 100 mL. Transfer exactly 10 mL of this solution to a glass-stoppered flask, add 90 mL of water, then add 2 g of potassium iodide and 6 mL of diluted acetic acid (1 in 2), stopper tightly, shake well, and allow to stand for 5 minutes in a dark place. Titrate the liberated iodine with 0.1 mol/L sodium thiosulfate VS (indicator: 3 mL of starch TS). Perform a blank determination in the same manner, and make any necessary correction.

Each mL of 0.1 mol/L sodium thiosulfate VS
= 3.7221 mg of NaClO.

Sodium iopodate for assay $C_{12}H_{12}I_3N_2NaO_2$ [Same as the monograph Sodium Iopodate. It contains not less than 99.0% of $C_{12}H_{12}I_3N_2NaO_2$, calculated on the dried basis.

Sodium lauryl sulfate [Same as the namesake monograph in Part II]

Sodium metabisulfite See sodium disulfite.

Sodium metabisulfite TS See sodium disulfite TS.

Sodium, metallic Na [K 8687, Sodium, Special class]

Sodium molybdate See sodium molybdate dihydrate.

Sodium molybdate dihydrate $Na_2MoO_4.2H_2O$ [K 8906, Special class]

Sodium Na [K 8687, special class]

Sodium naphthoquinone sulfonate TS Dissolve 0.25 g of sodium β-naphthoquinone sulfonate in methanol to make 100 mL.

Sodium β-naphthoquinone sulfonate $C_{10}H_5NaO_5S$ Yellow to orange-yellow, crystals or crystalline powder. Soluble in water, and practically insoluble in ethanol (95).

Loss on drying: Not more than 2.0% (1 g, in vacuum, 50°C).

Residue on ignition: 26.5 - 28.0% (1 g, after drying).

Sodium nitrate $NaNO_3$ [K 8562, Special class]

Sodium nitrite $NaNO_2$ [K 8019, Special class]

Sodium nitrite TS Dissolve 10 g of sodium nitrite in water to make 100 mL. Prepare before use.

Sodium nitroprusside See sodium pentacyanonitrosylferrate (III) dihydrate.

Sodium nitroprusside TS See sodium pentacyanonitrosylferrate (III) TS.

Sodium 1-octanesulfonate $CH_3(CH_2)_7SO_3Na$ White crystals or powder. Residue on ignition: 32.2 - 33.0% (1.0 g).

Sodium oxalate (standard reagent) $C_2O_4Na_2$ [K 8005, Standard reagent for volumetric analysis]

Sodium pentacyanoammine ferroate (II) *n*-hydrate $Na_3[Fe(CN)_5NH_3].nH_2O$ [K 8689, First class]

Sodium pentacyanonitrosylferrate (III) dihydrate $Na_2Fe(CN)_5(NO).2H_2O$ [K 8722, Special class]

Sodium pentacyanonitrosylferrate (III) TS Dissolve 1 g of sodium pentacyanonitrosylferrate (III) dihydrate in water to make 20 mL. Prepare before use.

Sodium 1-pentane sulfonate $C_5H_{11}NaO_3S$ White, crystals or crystalline powder. Freely soluble in water, and practically insoluble in acetonitrile.

Purity Clarity and color of solution—Dissolve 1.0 g of sodium 1-pentane sulfonate in 10 mL of water: the solution is colorless and clear.

Water: not more than 3.0% (0.2 g).

Content: not less than 99.0%, calculated on the anhydrous basis. Assay—Dissolve about 0.3 g of sodium 1-pentane sulfonate, accurately weighed, in 50 mL of water. Transfer this solution to a chromatographic column, prepared by pouring 10 mL of strongly acidic ion-exchange resin (H type) (424 - 600 μm in particle diameter) into a chromatographic tube, 9 mm in inside diameter and 160 mm in height, and elute at the rate of about 4 mL per minute. Wash the chromatographic column with 50 mL of water at the rate of about 4 mL per minute, and wash again with 100 mL of water in the same manner. Combine the washings with the eluate, and titrate with 0.1 mol/L sodium hydroxide VS (indicator: 10 drops of bromothymol blue TS) until the yellow color of the solution changes to blue.

Each mL of 0.1 mol/L sodium hydroxide VS
= 17.420 mg of $C_5H_{11}NaO_3S$

Sodium perchlorate See sodium perchlorate monohydrate.

Sodium perchlorate monohydrate $NaClO_4.H_2O$ [K 8227, Special class]

Sodium periodate $NaIO_4$ [K 8256, Special class]

Sodium peroxide Na_2O_2 [K 8231, Special class]

Sodium phosphate See trisodium phosphate 12-water.

Sodium phosphate TS Dissolve 5.68 g of disodium hydrogenohosphate and 6.24 g of sodium dihydrogenphosphate dihydrate in water to make 1000 mL.

Sodium *p*-phenol sulfonate $C_6H_5O_4NaS.2H_2O$ White to light yellow, crystals or crystalline powder, having a specific odor.

Identification—(1) To 10 mL of a solution of sodium *p*-phenol sulfonate (1 in 10) add 1 drop of iron (III) chloride TS: a purple color develops.

(2) Determine the absorption spectrum of a solution of sodium *p*-phenol sulfonate (1 in 5000) as directed under the Ultraviolet-visible Spectrophotometry: it exhibits maxima between 269 nm and 273 nm and between 276 nm and 280