fer to a 25-mL volumetric flask, and add 0.25 mol/L sulfuric acid TS to make exactly 25 mL. Determine the absorbance A of this solution at the wavelength of maximum absorbance at about 265 nm as directed under the Ultraviolet-visible Spectrophotometry.

$$\text{Amount (mg) of chlorpheniramine maleate } (C_{16}H_{19}ClN_2.C_4H_4O_4) = \frac{A}{210} \times 1250$$

Containers and storage Containers—Tight containers.

Chlorpheniramine Maleate Tablets

マレイン酸クロルフェニラミン錠

Chlorpheniramine Maleate Tablets contain not less than 93% and not more than 107% of the labeled amount of *dl*-chlorpheniramine maleate ($C_{16}H_{19}ClN_2.C_4H_4O_4$: 390.86).

Method of preparation Prepare as directed under Tablets, with Chlorpheniramine Maleate.

Identification (1) Weigh a portion of powdered Chlorpheniramine Maleate Tablets, equivalent to 0.05 g of Chlorpheniramine Maleate according to the labeled amount, shake with 40 mL of 0.1 mol/L hydrochloric acid TS, and filter. Transfer the filtrate to a separator, and wash with 40 mL of chloroform. Add 10 mL of sodium hydroxide TS, and extract with 20 mL of hexane. Wash the hexane layer with 5 mL of water. Centrifuge, if necessary, shake the hexane extract with 0.5 g of anhydrous sodium sulfate for several minutes, and filter. To 5 mL of the filtrate [the remaining filtrate to be used in (3)] add 2 mL of Dragendorff's TS, and shake: a red-orange precipitate is produced.

(2) Transfer a portion of powdered Chlorpheniramine Maleate Tablets, equivalent to 0.05 g of Chlorpheniramine Maleate according to the labeled amount, to a glass-stoppered flask, add 20 mL of diethyl ether, allow to stand for 10 minutes with frequent shaking, decant, and discard the diethyl ether. Add 20 mL of diethyl ether to the residue, allow to stand for 10 minutes with frequent shaking, decant, and discard the diethyl ether. Repeat the same procedure once more. Dissolve the residue in 20 mL of water, shake vigorously for 15 minutes, and centrifuge. Transfer the supernatant liquid to a separator, and extract with two 40-mL portions of chloroform. Combine the chloroform extracts, add 0.01 g of activated charcoal, shake for a few minutes, and filter. Evaporate the filtrate with the aid of a current of air by warming in a water bath at about 40°C. Add 0.2 to 0.3 mL of 2-propanol to the residue, shake vigorously, add 10 mL of diethyl ether, rub the inside wall of the beaker with a glass rod, if necessary, and allow to stand. Discard the supernatant liquid, and dry the residue in a desiccator (in vacuum, silica gel) for 1 hour: the residue melts between 128°C and 135°C.

(3) Evaporate the remaining filtrate obtained in (1), in a water bath at about 50°C under a reduced pressure, and determine the infrared absorption spectrum of the residue as directed in the film method under the Infrared Spectrophotometry: it exhibits absorption at the wave numbers of about 2943 cm^{-1}, 2814 cm^{-1}, 2765 cm^{-1}, 1589 cm^{-1}, 1491 cm^{-1}, 1470 cm^{-1}, 1434 cm^{-1}, 1091 cm^{-1} and 1015 cm^{-1}.

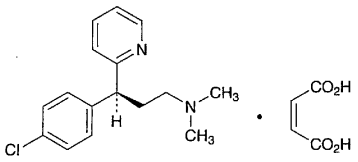
Assay Weigh accurately and powder not less than 20 Chlorpheniramine Maleate Tablets. Weigh accurately a portion of the powder, equivalent to about 3 mg of chlorpheniramine maleate ($C_{16}H_{19}ClN_2.C_4H_4O_4$), to a 100-mL separator, add 20 mL of 0.05 mol/L sulfuric acid TS, and shake for 5 minutes. Add 20 mL of diethyl ether, and allow to stand for 5 minutes with frequent shaking. Centrifuge, if necessary, and filter the water layer through a dry filter paper into the second separator. Extract the diethyl ether layer with two 10-mL portions of 0.05 mol/L sulfuric acid TS, filter the acid extracts, and combine the filtrates with the water layer in the second separator. Wash the filter with a small amount of 0.05 mol/L sulfuric acid TS, and combine the washings with the filtrate. Add sodium hydroxide TS into this solution dropwise until a red litmus paper turns slightly blue, add 2 mL of sodium hydroxide TS, and extract with two 50-mL portions of diethyl ether. Combine the diethyl ether extracts, wash with 20 mL of water, and extract with 20-mL, 20-mL and 5-mL portions of 0.25 mol/L sulfuric acid TS successively. Combine all acid extracts, and add 0.25 mol/L sulfuric acid TS to make exactly 50 mL. Pipet 10 mL of this solution, transfer to a 25-mL volumetric flask, and add 0.25 mol/L sulfuric acid TS to make exactly 25 mL. Determine the absorbance *A* of this solution at the wavelength of maximum absorbance at about 265 nm as directed under the Ultraviolet-visible Spectrophotometry.

$$\text{Amount (mg) of chlorpheniramine maleate } (C_{16}H_{19}ClN_2.C_4H_4O_4) = \frac{A}{210} \times 1250$$

Containers and storage Containers—Tight containers.

d-Chlorpheniramine Maleate

d-マレイン酸クロルフェニラミン



$C_{16}H_{19}ClN_2.C_4H_4O_4$: 390.86
N-[(3*S*)-3-(4-Chlorophenyl)-3-pyridin-2-ylpropyl]-*N*,*N*-dimethylamine monomaleate [*2438-32-6*]

d-Chlorpheniramine Maleate, when dried, contains not less than 99.0% of $C_{16}H_{19}ClN_2.C_4H_4O_4$.

Description *d*-Chlorpheniramine Maleate occurs as a white, crystalline powder. It has no odor, and has a bitter taste.

It is very soluble in water and in acetic acid (100), freely soluble in *N*,*N*-dimethylformamide, in ethanol (95) and in chloroform, and very slightly soluble in diethyl ether.

Identification (1) Dissolve 1 mg of *d*-Chlorpheniramine Maleate in 5 mL of water, add 2 mL of Dragendorff's TS,

and shake: a red-orange precipitate is produced.

(2) Dissolve 0.5 g of *d*-Chlorpheniramine Maleate in 5 mL of water, add 2 mL of ammonia solution (28), and extract with three 5-mL portions of chloroform. Separate the water layer, evaporate to dryness, add about 1.5 mL of dilute sulfuric acid and 5 mL of water, and extract with four 25-mL portions of diethyl ether. Combine the diethyl ether extracts, and evaporate on a water bath at a temperature about 35°C with the aid of a current of air: the residue melts between 128°C and 136°C.

(3) Determine the infrared absorption spectrum of *d*-Chlorpheniramine Maleate, previously dried, as directed in the paste 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.

Absorbance $E^{1\%}_{1\,cm}$(265 nm): 210 - 220 (after drying, 5 mg, 0.25 mol/L sulfuric acid TS, 250 mL).

Optical rotation $[\alpha]_D^{20}$: + 39.5 - + 43.0° (after drying, 0.5 g, *N,N*-dimethylformamide, 10 mL, 100 mm).

pH Dissolve 1.0 g of *d*-Chlorpheniramine Maleate in 100 mL of freshly boiled and cooled water: the pH of this solution is between 4.0 and 5.0.

Melting point 111 - 115°C

Purity Clarity and color of solution—Dissolve 1.0 g of *d*-Chlorpheniramine Maleate in 50 mL of water: the solution is clear and colorless.

Loss on drying Not more than 0.5% (1 g, 65°C, 4 hours).

Residue on ignition Not more than 0.15% (1 g).

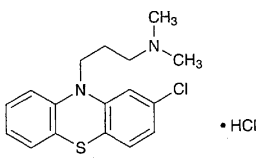
Assay Weigh accurately about 0.3 g of *d*-Chlorpheniramine Maleate, previously dried, and dissolve in 20 mL of acetic acid (100). Titrate with 0.1 mol/L perchloric acid VS until the color of the solution changes from purple through blue-green to green (indicator: 2 drops of crystal violet TS). Perform a blank determination, and make any necessary correction.

Each mL of 0.1 mol/L perchloric acid VS
= 19.543 mg of $C_{16}H_{19}ClN_2.C_4H_4O_4$

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

Chlorpromazine Hydrochloride

塩酸クロルプロマジン



$C_{17}H_{19}ClN_2S.HCl$: 355.33
N-[3-(2-Chlorophenothiazin-10-yl)propyl]-*N,N*-dimethylamine monohydrochloride [*69-09-0*]

Chlorpromazine Hydrochloride, when dried, contains not less than 99.0% of $C_{17}H_{19}ClN_2S.HCl$.

Description Chlorpromazine Hydrochloride occurs as a white to pale yellow, crystalline powder. It is odorless, or has a faint, characteristic odor.

It is very soluble in water, freely soluble in ethanol (95) and in acetic acid (100), sparingly soluble in acetic anhydride, and practically insoluble in diethyl ether.

It is gradually colored by light.

Identification **(1)** To 5 mL of a solution of Chlorpromazine Hydrochloride (1 in 1000) add 1 drop of iron (III) chloride TS: a red color develops.

(2) Dissolve 0.1 g of Chlorpromazine Hydrochloride in 20 mL of water and 3 drops of dilute hydrochloric acid, add 10 mL of 2,4,6-trinitrophenol TS, and allow to stand for 5 hours. Collect the resulting precipitate, wash with water, recrystallize from a small portion of acetone, and dry at 105°C for 1 hour: the crystals so obtained melt between 175°C and 179°C.

(3) Dissolve 0.5 g of Chlorpromazine Hydrochloride in 5 mL of water, add 2 mL of ammonia TS, and heat on a water bath for 5 minutes. Cool, filter, and render the filtrate acidic with dilute nitric acid: the solution responds to the Qualitative Tests (2) for chloride.

Melting point 194 - 198°C

pH Dissolve 1.0 g of Chlorpromazine Hydrochloride in 20 mL of freshly boiled and cooled water, and measure within 10 minutes: the pH of this solution is between 4.0 and 5.0.

Purity **(1)** Clarity and color of solution—A solution of 1.0 g of Chlorpromazine Hydrochloride in 20 mL of water, when observed within 10 minutes, is clear and colorless to pale yellow.

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

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

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

Assay Weigh accurately about 0.7 g of Chlorpromazine Hydrochloride, previously dried, dissolve in 50 mL of a mixture of acetic anhydride and acetic acid (100) (7:3), and titrate with 0.1 mol/L perchloric acid VS (potentiometric titration). Perform a blank determination, and make any necessary correction.

Each mL of 0.1 mol/L perchloric acid VS
= 35.533 mg of $C_{17}H_{19}ClN_2S.HCl$

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