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December 30, 1999

VIA HAND DELIVERY

Office of Special Nutritionals
Center for Food Safety and Applied Nutrition
Food and Drug Administration
200 C St., S.W.
Washington, DC 20204

Dear Sir or Madam:

This notification is being filed pursuant to section 403(r)(6) of the Federal Food, Drug and Cosmetic Act ("FFDCA"), 21 U.S.C. § 343(r)(6), and in accordance with the requirements of 21 C.F.R. § 101.93. Uniweal, Ltd., Room 803, Corn Yan Center, 3 Jupiter Street, North Point, Hong Kong, People's Republic of China, plans to market a dietary supplement bearing the following statements on the label and/or in the labeling:

Name of supplement: GARNIODA™

Dietary ingredients: Calcium Sulfate, hydrated (natural) (crystal)
Ginseng, oriental (root)
Cinnamon, cassia (twig)
Tree Peony Bark (Mu-Dan-Pi) (cortex)
White Mulberry (leaf)
Lotus (leaf)

Structure/function statements:

This product helps to maintain cardiovascular function and a healthy blood circulatory system.

97S - 0162

1-WA-1295093.1

LET 4856

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These effects on the structure/function of the body arise from the proprietary blend of dietary ingredients present in GARNIODA™ (as listed above).

Summary of Substantiation:

The claim “helps to maintain cardiovascular function and a healthy blood circulatory system” for GARNIODA™, is based on, and supported by, reference to authoritative scientific literature, and the existence of the previously notified/permitted claims for selected ingredients in the proprietary blend.

The Pharmacopoeia of the People’s Republic of China,^{1/} which is approved by the Ministry of Public Health of the People’s Republic of China, summarizes the specific manufacturing procedures used to produce the dietary ingredients in GARNIODA™ and the actions and indications associated with the blood circulatory and cardiovascular systems. In addition, the Physicians Desk Reference for Herbal Medicines^{2/} states information about the effects of several of the dietary ingredients in GARNIODA™ on the blood circulatory and cardiovascular systems, and provides information about the associated indications for use.

Specifically, the Pharmacopoeia of the People’s Republic of China states the following actions and indications for the component ingredients of GARNIODA™.

- Calcium Sulfate, hydrated (natural) (crystal)
Action: “to remove heat, quench fire”;^{3/}

1/ The Pharmacopoeia Commission of PRC, Pharmacopoeia of the People’s Republic of China (Chemical Industry Press) (English ed. 1997) (excerpts attached).

2/ Physicians Desk Reference for Herbal Medicines (Thomas Fleming, RPh., et al., eds., Medical Economics Co. 1998) (hereinafter “PDR for Herbal Medicines”) (excerpts attached).

3/ Pharmacopoeia of the People’s Republic of China, *supra* note 1, at 81-82 (gypsum fibrosum, also known as hydrated calcium sulfate).

- Ginseng, oriental (root)
Action: to reinforce the vital energy, to remedy collapse and restore the normal pulse, to promote the production of body fluid; Indications: heart failure, cardiogenic shock;^{4/}
- Cinnamon, cassia (twig)
Action: “to reinforce yang, to relieve palpitation, and to promote the descending of qi”;
Indications: cardiac palpitation;^{5/}
- Tree Peony Bark (Mu-Dan - Pi) (root)
Action: “[t]o remove heat from blood, to activate blood circulation and eliminate blood stasis”; Indications: “spitting of blood epistaxis”;^{6/} and
- Lotus (leaf)
Action: “relieve summer heat . . . and arrest bleeding”; Indications: “spitting of blood, epistaxis, hemochezia.”^{7/}

FDA has previously been notified of, and has permitted, claims similar to the proposed claims for certain of the ingredients. Specifically, notified and permitted structure/function claims for ginseng include the following:

- “[p]romotes cardiovascular health”;^{8/}
- “dietary supplement for cardiovascular health”;^{9/} and

4/ Id. at 151-52; see PDR for Herbal Medicines, supra note 2, at 1009.

5/ Pharmacopoeia of the People’s Republic of China, supra note 1, at 176-77 (italics omitted); PDR for Herbal Medicines, supra note 2, at 750.

6/ Pharmacopoeia of the People’s Republic of China, supra note 1, at 32-33.

7/ Id. at 50; PDR Herbal Medicines, supra note 2, at 990.

8/ Dietary Supplement Structure/Function Claims: Progenix, F-D-C Rep. (“The Tan Sheet”), Feb. 1, 1999, at 11 (copy attached).

9/ Dietary Supplement Structure/Function Claims: Sinomedical Development, F-D-C

(continued...)

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- “may help maintain cardiovascular health.”^{10/}

In addition, notified and permitted structure/function claims for the other ingredients in GARNIODA™ include the following:

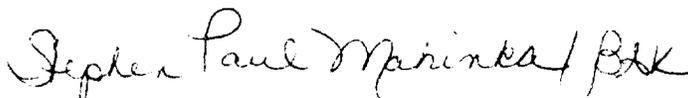
- for cassia and lotus: “used for centuries in China to help moderate metabolic imbalances associated with the heart.”^{11/}

Accordingly, the proposed claim is proper and supportable for the proprietary blend in GARNIODA™:

- This product helps to maintain cardiovascular function and a healthy blood circulatory system.

The undersigned certifies that the information presented and contained in this notification is complete and accurate, and that Uniweal, Ltd. has substantiation that each structure/function statement is truthful and not misleading.

Sincerely,



Stephen Paul Mahinka
Counsel for Uniweal, Ltd.

Enclosures

9/(...continued)

Rep. (“The Tan Sheet”), Feb. 1, 1999, at 14 (copy attached).

10/ Id.

11/ Dietary Supplement Structure/Function Claims: Performance Labs, F-D-C Rep. (“The Tan Sheet”), April 19, 1999, at 23 (copy attached).

PHARMACOPOEIA OF THE PEOPLE'S REPUBLIC OF CHINA

(English Edition 1997)

Volume I

Compiled by The Pharmacopoeia Commission of PRC

CHEMICAL INDUSTRY PRESS
BEIJING, CHINA

PHARMACOPOEIA OF THE PEOPLE'S REPUBLIC OF CHINA

(English Edition 1997)

Volume I

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MONOGRAPHS

PART I

Chinese Materia Medica,
Oil, Fats, etc.

Maxim. or *Rhus punjabensis* Stew. var. *sinica* (Diels) Rehd. et Wils. (Fam. Anacardiaceae). The drug is collected in autumn, boiled in water for a moment or steamed until its outer surface shows grey so as to kill the aphids, and then taken out. According to its form the drug is divided into "Dubei" and "Jiaobei".

Description *Dubei* Oblong or spindle-gloular, 2.5–9 cm long, 1.5–4 cm in diameter. Externally greyish-brown, slightly pubescent. Texture hard and fragile, easily broken, fracture horny, lustrous, gall walls 0.2–0.3 cm thick, inner surface smooth and showing black-brown killed aphids and grey-powdery excreta. Odour, characteristic; taste, astringent.

Jiaobei Rhombic with irregular-corniform branchings and distinct pubescences, gall walls relatively thin.

Identification To about 0.5 g of the powder add 4 ml of water, heat gently, and filter. To 1 ml of the filtrate add 1 drop of ferric chloride TS; a bluish-black precipitate is produced. To 1 ml of the filtrate add 2 drops of 10% potassium antimony tartrate solution; a white precipitate is produced.

Assay Weigh accurately about 2 g of the powder (through No. 3 sieve), carry out the method for determination of tanninoids (Appendix X B). It contains not less than 50% of the tanninoids.

Processing Break and eliminate foreign matter.

Action To remove heat from the lung, to arrest cough, diarrhea, excessive sweating, bleeding and exudation from sores.

Indications Cough and expectoration due to heat in the lung; chronic cough, chronic dysentery or diarrhea, night sweating, hematochezia, hemorrhoidal bleeding, traumatic bleeding, abscess, sores and skin lesions with exudation; diabetes.

Usage and dosage 3–6 g; appropriate quantity for external use.

Storage Preserve in a ventilated and dry place, protected from pressure.

Gecko

(蛤蚧, Gejje)

Tokay Gecko

Tokay is the dried body of *Gekko gekko* Linnaeus (Fam. Gekkonidae). The drug is captured all the year round, removed from the viscera, wiped, opened with bamboo piece to make the whole body flattened and straight, and dried at a low temperature.

Description Flattened slice in shape, head, neck and trunk 9–18 cm long. Head and neck about one third as long as snout-vent length; the dorsum and abdomen 6–11 cm wide; tail 6–12 cm long. The head somewhat flat triangular, two eyes sunken deeply, forming holes. Tiny teeth present in the mouth, located at the margin of the jaw, heteromorphic large tooth lacking. The snout semirounded at tip, rostral not contacting nostril, but in contact with nasal; 1 supranasal at each side, 12 to 14 pairs of upper labials, 21 lower labials mental included. The trunk ellip-

tic, the abdomen thin, the dorsum greyish-black or silver-grey with yellowish-white or greyish-green spots scattered or concentrated to indistinct patterns. The vertebrae and ribs of both sides projecting. Four limbs all having 5 digits, bearing scapors at the base, and trace of web between the digits. Tail narrow and strong, the caudal vertebrae barely visible. Ground colour of the tail similar to that of the dorsum, with 6–7 distinct silver-grey circular band. Whole body densely covered with rounded or polygonal, somewhat lustrous, tiny scales. Odour, stinking; taste, slightly salty.

Processing *Gecko* Eliminate the head, legs and scales, cut into small pieces.

Gecko (Processed with wine) Soak the pieces of Gecko with yellow rice wine, dry at a low temperature.

Action To reinforce the function of the lung and the kidney, to relieve asthma, and to promote virility and replenish vital essence.

Indications Dyspnea or asthma in deficiency syndromes; cough and hemoptysis in consumptive diseases; impotence, seminal emission.

Usage and dosage 3–6 g, used in making pills, powders or medicinal wines.

Storage Preserve in tightly closed wood boxes, usually mixed with *Pericarpium Zanthoxyli*, stored in a cool and dry place, protected from moth.

Gypsum Fibrosum

(石膏, Shigao)

Gypsum

Gypsum is a plaster stone of sulfate of plaster stone group, containing mainly hydrated calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$). The drug is collected, removed from foreign matter and soil.

Description Fibrous aggregate in long, plate-shape or irregular pieces; white, greyish-white or pale yellow, sometimes translucent; texture soft and heavy, longitudinally cut surface with silky lustre. Odourless; taste, weak.

Identification (1) Ignite a piece of the drug about 2 g in a test tube covered with a pored cork stopper; the moisture is produced on the tube wall, the small piece turns to opaque. (2) About 0.2 g of the powder, in 10 ml of dilute hydrochloric acid, the solution yields the reactions characteristic of calcium salts and sulfates (Appendix IV).

Heavy metals Boil 16 g in 4 ml of glacial acetic acid and 36 ml of water, for 10 minutes, cool, add water to the original volume, filter. Using 25 ml of the filtrate, carry out the limit test for heavy metals (Appendix IX E, method 1): not more than 10 ppm.

Arsenic To 1 g of the drug, add 5 ml of hydrochloric acid and water to 23 ml, heat to dissolve, carry out the limit test for arsenic (Appendix IX F), not more than 2 ppm.

Assay Weigh accurately about 0.2 g of the fine powder to a flask, add 10 ml of dilute hydrochloric acid, heat to dissolve, add 100 ml of water and 1 drop of methyl red IS, add dropwise potassium hydroxide TS until the solution turns to pale yellow, then add an excess of 5 ml. Add a small quantity of calcein indicator mixture, titrate with disodium edetate (0.05 mol/L) VS until the yellowish-green fluorescence disappears, and the colour turns to orange.

Each ml of disodium edetate (0.05 mol/L) VS is equivalent to 8.608 mg of $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. It contains not less than 95.0% of hydrous calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$).

Processing *Gypsum* Wash clean, dry, break to pieces and eliminate foreign matter, then grind to coarse powder.

Action To remove *heat*, quench *fire*, and relieve thirst.

Indications Febrile diseases due to *exogenous affection* with high fever and dire thirst; asthma and cough caused by *heat* in the *lung*; headache and toothache caused by exuberant *fire* in the stomach.

Usage and dosage 15–60 g, to be decocted before other ingredients.

Gypsum Fibrosum Preparatum

(煨石膏, Duanshigao)

Calcined Gypsum

Calcined Gypsum is the processed product of Gypsum.

Processing Calcine the clean Gypsum as described under the method for calcining openly (Appendix II D) to be porous.

Description White powders or porous masses, showing slightly red lustre on surface, opaque. Texture soft and relatively light, broken easily, powdered in kneading. Odour less; taste, weak.

Heavy metals Carry out the method as described under Gypsum: not more than 10 ppm.

Assay Weigh accurately 0.15 g of the fine powder, carry out the test method as described under Gypsum Fibrosum, beginning at "..." to a flask, add 10ml of dilute hydrochloric acid". Each ml of disodium edetate (0.05mol/L) VS is equivalent to 6.807 mg of CaSO_4 .

It contains not less than 92% of calcium sulfate (1 g of CaSO_4 is equivalent to 1.26 g of $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$).

Action To dispel dampness, to replenish muscle, curing sore, to stop bleeding.

Indications Chronic ulcer, eczema, itch, scalded by boiling water or fire, traumatic bleeding.

Usage and dosage Abrasive powder of external application.

Storage Preserve in a dry place.

Haematitum

(赭石, Zheshi)

Hematite

Hematite is a mineral of oxide of corundum group, containing mainly ferric oxide (Fe_2O_3). The drug is collected, removed from foreign matter.

Description Aggregates, fish-egg like, bean-shaped, reniform, frequently in irregularly flattened masses. Dark brownish-red or greyish-black; streak cherry red or reddish-brown, some with metal lustre. Many rounded bulges occurring on one surface, commonly known as "Ding-tou",

and hollows of the same size corresponding in position to "Ding-tou" occurring on the other surface. Texture hard, fracture showing stratification. Odour, slight; taste, weak.

Identification Place 0.1 g of the powder in a test tube, add 2 ml of hydrochloric acid, shake and allow to stand. To 2 drops of the supernatant, add 2 drops of ammonium thiocyanate TS, a blood-red colour is produced immediately, add 1–2 drops of potassium ferrocyanide TS. To another 2 drops of the supernatant, a blue precipitate is produced, which turns to brown on adding 5–6 drops of 25% sodium hydroxide solution.

Assay Weigh accurately about 0.25 g of the fine powder, carry out the Assay described under Magnetitum. It contains not less than 45.0% of Fe.

Processing *Haematitum* Eliminate foreign matter, break to pieces.

Haematitum (calcined) Calcine the clean Haematitum as described under the method for calcining and quenching (Appendix II D) to red thoroughly, quench with vinegar and then ground into coarse powder, using 30 kg of vinegar per 100 kg of Haematitum.

Action To subdue hyperactivity of the *liver*, to relieve vomiting, belching and hiccup, and to arrest bleeding.

Indications Vertigo, tinnitus, vomiting, belching, hiccup, dyspnea, spitting of blood, epistaxis, abnormal uterine bleeding.

Usage and dosage 9–30 g, to be decocted before other ingredients.

Precaution Used with caution in pregnancy.

Halloysitum Rubrum

(赤石脂, Chishizhi)

Red Halloysite

Red Halloysite is a mineral of silicate salt of polyhydrate kaolinite group, containing mainly hydrated aluminum silicate $[\text{Al}_2(\text{Si}_4\text{O}_{10})(\text{OH})_3] \cdot 4\text{H}_2\text{O}$. The drug is collected, removed from foreign matter.

Description Aggregates of masses, irregular, pink, red to purplish-red, with patterns alternated red with white. Texture soft, easily broken. Fracture with waxy lustre, highly hygroscopic. Odour, clay-like; taste, weak, no sandy sensation on chewing.

Processing *Halloysitum Rubrum* Eliminate foreign matter, break or grind to powder.

Halloysitum Rubrum (calcined) To the fine powder add vinegar, stir well and make strips cut into sections, dry, calcine as described under the method of calcining openly (Appendix II D) to red thoroughly. Break to pieces before use.

Action To astringe the intestines, to arrest bleeding, and to promote the growth of new tissues.

Indications Chronic diarrhea, chronic dysentery; hematochezia; abnormal uterine bleeding, excessive leukorrhea; external use for ulcers difficult to heal up, eczema with exudation.

Usage and dosage 9–12 g; appropriate quantity to be

chymatous cells containing minute needles of

The tissues outside the endodermis mostly
vessels in xylem well developed and evenly and
distributed. Pith absent.

Yellowish-brown.

Cells of exodermis spindle-shaped in surface
cell divided by transverse walls into several
angular cells. Cells of endodermis subrectangular
view, fairly large, periclinal walls showing
transverse striations, each cell divided by longitudi-
walls into several small palisade-like cells, mostly
septal beaded. Parenchymatous cells containing
needle crystals of calcium oxalate. Reticulate and
vessels up to about 45 μ m in diameter.

Exodermis absent. Cells of endodermis sub-
rectangular, transverse striations of the peri-
walls relatively thick and dense, some up to 3 μ m
each cell divided into several small palisade-like
septa slightly thickened or beaded.

Macerate 0.5 g of the powder in 5 ml of methanol for
2 hours, filter, concentrate the filtrate to about 2 ml and
use as the test solution. Dissolve gentiopicoside CRS in
ethanol to produce a solution containing 2 mg per ml used
as reference solution. Carry out the method for thin
layer chromatography (Appendix VI B), using silica gel
G as the coating substance and ethyl acetate-methanol-
water (20:2:1) as the mobile phase. Apply separately 5 μ l of
each of the above two solutions to the plate, develop twice
with the mobile phase. After developing and removal of the
solvent, dry it in air, examine under ultra-violet light (254
nm). A spot in the chromatogram obtained with the test so-
lution corresponds in position and colour to the spot in the
chromatogram obtained with the reference solution.

Total ash Not more than 7% (Appendix IX K).

Processing Eliminate foreign matter, wash clean, soften
thoroughly, cut into sections, and dry.

Action To eliminate damp-heat and quench the fire of the
liver and gall bladder.

Indications Jaundice caused by damp-heat; swelling and
itching of the vulva with excessive leukorrhea; prolonged
erection of the penis with spontaneous emission; eczema
accompanied by itching; blood-shot eyes, impairment of
hearing, pain in the costal regions and bitter taste in the
mouth; convulsion.

Usage and dosage 3-6 g.

Storage Preserve in a dry place.

Radix Gentianae Macrophyllae

(秦艽, Qinjiao)

Largeleaf Gentian Root

Largeleaf Gentian Root is the dried root of *Gentiana macrophylla* Pall., *Gentiana straminea* Maxim., *Gentiana crassicaulis* Duthie ex Burk. or *Gentiana dahurica* Fisch. (Fam. Gentianaceae). According to the description the former three species are known as "Qinjiao" and "Mahujiao", respectively. The latter is known as "Xiaoqinjiao". The drug is collected in spring and

autumn, removed from soil; "Qinjiao" and "Mahujiao" are softened in the sun, either piled up until the drug becomes reddish-yellow or greyish-yellow on the surface, spread out and dried in the sun, or dried in the sun directly after collecting; as for "Xiaoqinjiao", the black bark is rubbed off while fresh and dried in the sun.

Description *Qinjiao* Subcylindrical, the upper part thick and the lower part thin, twisted, 10-30 cm long, 1-3 cm in diameter. Externally yellowish-brown or greyish-yellow, with longitudinal or twisted wrinkles. Remains of stem bases and fibrous pericladium occurring at the apex. Texture hard and fragile, easily broken, fracture soft, bark yellow or brownish-yellow, wood yellow. Odour, characteristic; taste, bitter and slightly astringent.

Mahujiao Subconical, frequently expanded by some small roots gathered, up to 7 cm in diameter. Externally dark brown, rough, with fissures, showing reticulated pits. Texture lax and fragile, easily broken, fracture frequently rotten-wood-shaped.

Xiaoqinjiao Subconical or subcylindrical, 8-15 cm long, 0.2-1 cm in diameter. Externally brownish-yellow. Main root frequently 1, having fibrous pericladia on the remains of stem bases, often branched at the lower part. Fracture yellowish-white.

Identification (1) Macerate 2 g of the coarse powder in 30 ml of chloroform-methanol-concentrated ammonia TS (75:25:5) for 2 hours and filter. Concentrate the filtrate on a water bath to about 1 ml, add 2 ml of hydrochloric acid solution (1 mol/L) and continue to evaporate the chloroform, cool and filter. Transfer the filtrate to two test tubes, to one tube add mercuric potassium iodide TS, a pale yellowish-white precipitate is produced; to another tube add potassium iodobismuthate TS, a brownish-red precipitate is produced.

(2) Examine the fracture under an ultra-violet light (365 nm), a yellowish-white or golden yellow fluorescence is shown.

Extractives Carry out the hot maceration method as described under the determination of ethanol-soluble extractives (Appendix X A), using ethanol as the solvent, not less than 24.0%.

Processing Eliminate foreign matter, wash clean, soften thoroughly, cut into thick slices, and dried in the sun.

Action To relieve rheumatic conditions, and to remove damp-heat.

Indications Rheumatic or rheumatoid arthritis with muscular contracture and severe joint pain; fever recurring daily in the afternoon, fever in infants with malnutrition.

Usage and dosage 3-9 g.

Storage Preserve in a ventilated and dry place.

Radix Ginseng

(人參, Renshen)

Ginseng

Ginseng is the dried root of *Panax ginseng* C. A. Mey. (Fam. Araliaceae). The drug derived from the cultivated form is known as "Yuanshen" (Garden Ginseng) and the drug derived from the

wild origin is known as "Shanshen" (Wild Ginseng). The drug is collected in autumn and washed clean. Sun-dried or bake-dried Yuanshen is known as "Shengshaishen" (Sun-dried Ginseng). Sun-dried Shanshen is known as "Shengshaishanshen" (Sun-dried Wild Ginseng).

Description *Sun-dried Ginseng* Main roots fusiform or cylindrical, 3–15 cm long, 1–2 cm in diameter; externally greyish-yellow, upper part or entire root exhibiting sparse, shallow, interrupted and coarse transverse striations and distinct longitudinal wrinkles; lower part bearing 2–3 branch roots and numerous slender rootlets with inconspicuous minute tubercles. Rhizomes (Lutou) 1–4 cm long, 0.3–1.5 cm in diameter, mostly constricted and curved, bearing adventitious roots (Ding) and showing sparse depressed-circular stem scars (Luan). Texture relatively hard, fracture yellowish-white, starchy, cambium ring brownish-yellow, bark exhibiting yellow-brown dotted resin canals and radial clefts. Odour, characteristic; taste, slightly bitter and sweet.

Sun-dried Wild Ginseng Main roots as long as or shorter than rhizome, V-shaped, rhomboid or cylindrical, 2–10 cm long; externally greyish-yellow, longitudinally wrinkled, upper end with dense deep depressed annulations, branch roots mostly 2, rootlets slender, orderly arranged and showing some distinct warts, known as "pearl-like knot" (Zhenzhugeda). Rhizomes slender, the upper part exhibiting dense stem scars, adventitious roots relatively thick, like a kernel of Chinese date.

Identification (1) Transverse section: Cork consisting of several rows of cells. Cortex narrow. Phloem showing clefts in the outer part, and parenchymatous cells densely arranged and scattered with resin canals containing yellow secretions in the inner part. Cambium in a ring. Xylem rays broad, vessels singly scattered, or grouped, interruptedly arranged radially, occasionally accompanied by non-lignified fibres. Parenchymatous cells containing clusters of calcium oxalate.

Powder of Sun-dried Ginseng: Yellowish-white. Fragments of resin canals containing yellow masses of secretion. Clusters of calcium oxalate 20–68 μm in diameter, with acute angles. Cork cells subsquare or polygonal, with thin and sinuous walls. Reticulate and scalariform vessels 10–56 μm in diameter. Starch granules fairly abundant, simple granules subspheroidal, semi-circular or irregular polygonal, 4–20 μm in diameter, hilum pointed or slit-shaped; compound granules of 2–6 components.

(2) To 0.5 g of the powder add 5 ml of ethanol, shake for 5 minutes, filter. Evaporate a small quantity of the filtrate to dryness in an evaporating dish, add dropwise a saturated solution of antimony trichloride in chloroform, evaporate to dryness again; a violet colour is produced.

(3) To 1 g of the powder add 40 ml of chloroform, heat under reflux on a water bath for 1 hour, discard the chloroform layer, evaporate the residue to dryness. Moisten the residue with 0.5 ml of water, add 10 ml of *n*-butanol saturated with water, ultrasonicate for 30 minutes. To the supernatant liquid add 3 volumes of ammonia TS, mix well, allow to stand. Evaporate the supernatant liquid to dryness, dissolve the residue in 1 ml of methanol as the test solution. Prepare a solution of 1 g of Radix Ginseng reference drug in the same manner as the reference drug solution. Dissolve ginsenosides R_{b1} , R_e , R_g in methanol to produce a solution containing each of 2 mg per ml as the reference solution. Carry out the method for thin layer chromatography (Appendix VI B), using silica gel G as the coating substance (500 μm thick) and chloroform-ethyl ac-

etate-methanol-water (15:40:22:10) as the mobile phase. Apply separately to the plate 1–2 μl of each of the three solutions. After developing and removal of the plate, dry it in air, spray with 10% solution of sulfuric acid in ethanol, heat at 105°C for several minutes. Examine under sun-light and ultra-violet light (365 nm). The spots or fluorescent spots in the chromatogram obtained with the test solution correspond in position and colour to the spots in the chromatogram obtained with the reference drug solution. The three purplish-red spots in the chromatogram obtained with the test solution under sun-light correspond in position and colour to the spots in the chromatogram obtained with the reference solution. A yellow and two orange fluorescent spots in the chromatogram obtained with the test solution under ultra-violet light (365 nm) correspond in position and colour to the spots in the chromatogram obtained with the reference solution.

Processing *Sun-dried Ginseng* Soften thoroughly, cut into slices, and dry.

Sun-dried Wild Ginseng Pulverize or break to pieces before use.

Action To reinforce the vital energy, to remedy collapse and restore the normal pulse, to benefit the *spleen* and *lung*, to promote the production of body fluid, and to calm the nerves.

Indications Prostration with impending collapse marked by cold limbs and faint pulse; diminished function of the *spleen* with loss of appetite; cough and dyspnea due to diminished function of the *lung*; thirst due to impairment of body fluid, of diabetes caused by *internal heat*; general weakness with irritability and insomnia in chronic diseases; impotence or frigidity; heart failure, cardiogenic shock.

Usage and dosage 3–9 g.

Precaution Incompatible with Rhizoma et Radix Veratri.

Storage Preserve in well closed containers, stored in a cool and dry place, protected from moth.

Radix Ginseng Rubra

(红参, Hongshen)

Red Ginseng

Red Ginseng is the steamed and dried root of the cultivar (known as "Yuansheng") of *Panax ginseng* C. A. Mey. (Fam. Araliaceae). The drug is collected in autumn, washed clean, steamed, and dried.

Description Main roots fusiform or cylindrical, 3–10 cm long 1–2 cm in diameter. Externally translucent, reddish-brown, occasionally exhibiting a few dark yellowish-brown patches; furrowed longitudinally, wrinkled and rootlet scars, upper part exhibiting interrupted indistinct annulations, lower part bearing 2–3 twisted intersected branch root and numerous curved rootlets or just showing depressed-circular stem scars (Luan), some bearing 1–2 entire or broken adventitious roots (Ding). Texture hard and fragile, fracture even, horny. Odour delicate fragrant and characteristic; taste, sweet and slight bitter.

Identification (1) Carry out the method for Identification test(1) in the monograph of Radix Ginseng. It shows the same characteristics except the starch granule.

(2) Carry out the method for Identification test(2) and (3) in the monograph of Radix Ginseng. It shows the same result.

monia TS, then macerate 10 ml of chloroform for 30 minutes and ultrasonicate for 30 minutes, filter. Evaporate the filtrate to dryness, dissolve the residue in 1 ml methanol. Take 3-4 drops of the methanol solution into a 10 ml stoppered test tube. Add 0.5 ml of chromotropic acid and 3 ml of sulfuric acid and heat the test tube on a water bath for 10 minutes, a deep purple colour appears.

(3) Add 15 ml of ethanol to 1 g of the reference drug of *Radix Zanthoxyli*, warm macerate for 30 minutes then ultra-sonicate for 30 minutes, filter. Evaporate the filtrate to dryness, dissolve the residue in 1 ml of ethanol and use it as the reference drug solution. Carry out the method for thin layer chromatography (Appendix VI B) using silica gel G as the coating substance and benzene-ethyl acetate-methanol-isopropanol-concentrated ammonia TS (20:5:3:1:0.12) as the mobile phase. Apply separately to the plate 2 μ l of each of the test solution, the reference drug solution, and the reference solution used for assay. After developing in a chamber pre-equilibrated with mobile phase for 10 minutes and removal of the plate, dry it in air and examine under ultra-violet light (365 nm). A fluorescent spot in the chromatogram obtained from the test solution corresponds in colour and position to the spot in the chromatogram obtained from the solution of reference drug, and a light yellow fluorescent spot corresponds in colour and position to the spot in the chromatogram obtained from the reference solution used for assay.

(4) Dissolve ethoxychelerythine CRS in methanol to produce a solution containing 1 mg per ml used as the reference solution. Carry out the method for thin layer chromatography (Appendix VI B) using silica gel G as the coating substance and toluene-ethyl acetate-methanol (25:2:0.1) as the mobile phase. Apply separately to the plate 2 μ l of the reference solution, 2 μ l of each of the solution of reference drug and test solution used in identification (3). After developing in a chamber pre-equilibrated with mobile phase for 10 minutes and removal of the plate, dry it in air, examine under ultra-violet light. A fluorescent spot in the chromatogram obtained from the test solution corresponds in colour and position to the spot in the chromatogram obtained from the reference drug, and orange-yellow fluorescent spot corresponds in colour and position to the spot in the chromatogram obtained from reference solution.

Assay To 1 g coarse powder, weighed accurately, in a Soxhlet's extractor, extract by heating under reflux until the reflux fluid becomes colourless. Concentrate the extract on a water bath to about 2 ml, transfer it into a 10 ml volumetric flask, add methanol to volume, mix well and use it as the test solution. Dissolve nitidine chloride CRS, weighed accurately, in methanol to produce a solution containing 0.5 mg per ml as the reference solution. Carry out the method for thin layer chromatography (Appendix VI B) using silica gel G containing sodium carboxymethyl cellulose as the coating substance and, weighed accurately, benzene-ethyl acetate-methanol-isopropanol-concentrated ammonia TS (20:5:3:1:0.12) as the mobile phase. Apply alternatively 4 μ l of test solution, 1 μ l and 4 μ l of reference solution to the plate. After developing and removal of the plate, dry it in air, examine under ultra-violet light (365 nm), carry out the thin layer chromatography (thin layer chromatographic scanning method) (Appendix VI B), scan the chromatogram at wavelength of $\lambda = 300$ nm, measure the integration values of absorbance for test solution and reference solution, calculate. It contains not less than 0.25% of nitidine chloride ($C_{21}H_{19}NO_2$), calculated on the dried basis.

Action To promote the flow of qi, relieve pain, to eliminate blood stasis, to promote blood circulation and dispel wind.

Indications Traumatic injury, rheumatic arthralgia, stomach-ache, teeth-ache, bitten by venomous snake, applied for burn caused by hot liquid or fire.

Usage and dosage 5-10 g; appropriate quantity for external use. Abrasive powder for application or simmer in water for washing the affected part of body.

Precaution Overdose is avoided, incompatible with food of sour flavour.

Storage Preserve in a dry place, protected from moisture and moth.

Ramulus Cinnamomi (桂枝, Guizhi)

Cassia Twig

Cassia Twig is the dried young stem of *Cinnamomum cassia* Presl (Fam. Lauraceae). The drug is collected in spring and summer, removed from leaf, dried in the sun or dried in the sun after sliced.

Description Long cylindrical, much-branched, 30-75 cm long, the thick end 0.3-1 cm in diameter. Externally brown to reddish-brown, with longitudinal lines, fine wrinkles, dotted leaf-scars, branch-scars and bud-scars, lenticels dotted or dotted elliptic. Texture hard and fragile, easily broken. Slices 2-4 mm thick, cut surface showing reddish-brown in bark, yellowish-white to pale yellowish-brown in wood, pith subsquare. Odour characteristic aromatic; taste, sweet and slightly pungent, relatively strong in bark.

Identification (1) Transverse section: Epidermis consisting of 1 layer of cells, non-glandular hairs unicellular, visible in young branches. Cork consisting of 3-5 layers of cells, the inner cells with thickened outer walls. Oil cells and stone cells scattered in cortex. Stone cells groups in pericycle interruptedly arranged in a ring, accompanied by fibre bundles. Secretory cells and fibres scattered in phloem. Cambium distinct. Xylem rays 1-2 cells wide, containing brown contents; vessels scattered singly or 2 to several aggregated; wood fibres with relatively thin walls, and differentiated uneasily from wood parenchymatous cells. In pith the walls of cells slightly thickened and lignified. Cells of rays containing fine needle crystals of calcium oxalate.

(2) To 0.5 g of the powder add 10 ml of ethanol, stopped tightly, macerate for 20 minutes with constant shaking, and filter, use the filtrate as the test solution. Dissolve cinnamic aldehyde CRS in ethanol to produce a solution containing 1 μ l per ml as the reference solution. Carry out the method for thin layer chromatography (Appendix VI B), using silica gel G as the coating substance and petroleum ether (boiling range 60-90°C)-ethyl acetate (85:15) as the mobile phase. Apply separately to the plate 10-15 μ l of the test solution and 2 μ l of the reference solution. After developing and removal of the plate, dry it in air, and spray with 0.1% 2,4-dinitrophenyl-hydrazine solution. The orange-red spot in the chromatogram obtained with the test solution corresponds in position and colour to the spot in the chromatogram obtained with the reference solution.

Processing Eliminate foreign matter, soak briefly, wash clean, soften thoroughly, cut into thin slices, and dry in air.

Slices subrounded, elliptic or sections irregular, externally some with dotted lenticels and longitudinal lines, bark red-

dish brown, wood yellowish-white or pale yellowish-brown, pith subrounded or slightly square.

Action To induce perspiration, to warm the channels and stimulate menstrual discharge, to reinforce yang, to relieve palpitation, and to promote the descending of qi.

Indications Common cold; epigastric pain with cold feeling; amenorrhea due to cold in blood; arthralgia; edema; cardiac palpitation; gastro-intestinal neurosis with a feeling of masses of gas rushing up through the chest to the throat from the lower abdomen.

Usage and dosage 3-9 g.

Storage Preserve in a cool and dry place.

Ramulus et Folium Picrasmae

(苦木, Kumu)

Indian Quassia-wood

Indian Quassia-wood is the dried stem and leaf of *Picrasma quassioides* (D. Don) Benn. (Fam. Simarubaceae). The drug is collected in summer and autumn, and dried.

Description Stems Cylindrical, varying in length, 0.5-2cm in diameter; externally greyish-green or brownish-green, with fine and dense longitudinal striations and numerous dotted lenticels; texture fragile, easily broken, fracture uneven, pale yellow, the young branches pale-coloured and large medullated, compound, leaves odd-pinnate easily falling off; leaflets ovate-elongated elliptical or ovate-lanceolate, subsessile, 4-16 cm long, 1.5-6 cm wide, apex acute, base oblique or slightly rounded, margins crenate, both surfaces usually green, sometimes the lower surface pale purplish-red, pubescent along the midrib. Odour, slight; taste, extremely bitter.

Identification (1) Powder: Yellowish-green. Upper epidermal cells of the leaf polygonal; stomata anomocytic, usually visible on the lower epidermal. Mesophyll cells frequently containing clusters of calcium oxalate, fibre bundles surrounded by parenchymatous cells containing clusters or prisms of calcium oxalate, forming crystal fibres.

(2) Macerate 1 g of the powder in 10 ml methanol over night, filter, evaporate the filtrate to dryness, dissolve the residue in 10 ml of methanol and use it as the test solution. Prepare a solution of Ramulus et Folium Picrasmae reference drug in the same manner as the reference drug solution. Carry out the method for thin layer chromatography (Appendix VI B) using silica gel G containing sodium carboxymethyl cellulose as the coating substance and a mixture of chloroform-methanol (85:15) as the mobile phase. Apply separately 10 µl of each of the above two solutions to the plate. After developing and removal of the plate, dry it in air, spray with modified potassium iodobismuthate TS. A spot in the chromatogram obtained from the test solution corresponds in colour and position to the spot in the chromatogram obtained from the reference drug solution.

Processing Eliminate foreign matter, wash the stems clean, soften thoroughly, cut into slices, and dry in the sun; spray the leaves with clean water, moisten briefly, cut into slivers, and dry in the sun.

Action To act against bacteria and relieve inflammation, to remove damp, and to counteract toxicity.

Indications Colds, acute tonsillitis, pharyngitis, colitis, bacillary dysentery, eczema, boils, venomous snake bite.

Usage and dosage 3-4.5 g of its branches or 1-3 g of its leaves; appropriate quantity for external use.

Storage Preserve in a dry place.

Ramulus Mori

(桑枝, Sangzhi)

Mulberry Twig

Mulberry Twig is the dried young branch of *Morus alba* L. (Fam. Moraceae). The drug is collected at the end of spring and the beginning of summer, removed from leaf, and dried in the sun, or cut into slice while fresh, and dried in the sun.

Description Long cylindrical, branched occasionally, varying in length, 0.5-1.5 cm in diameter. Externally greyish-yellow or yellowish-brown, with numerous yellowish-brown dotted lenticels and fine longitudinal striations, and with greyish-white slightly semiorbicular leaf scars and yellowish-brown axillary buds. Texture hard and tenacious, uneasily broken, fracture fibrous. Slices 0.2-0.5 cm thick, bark slightly thin, wood yellowish-white, medullary rays radiate, pith white or yellowish-white. Odour, slight; taste, weak.

Identification Powder: Pale greyish-yellow. Fibres numerous, scattered singly or in bundles, pale yellow or colourless, slightly sinuous, 10-30 µm in diameter, walls thickened, 5-15 µm, pit-canals indistinct, lamina small. Stone cells pale yellow, subrounded or subsquare, 15-40 µm in diameter, walls thickened, 5-20 µm, lamina small. Sclerenchymatous cells grouped or scattered singly, similar to the stone cell in the shape and size, lumina containing 1-2 prisms of calcium oxalate, square, rhombic, polyhedral or biconelike, 5-20 µm in diameter.

Extractives Carry out the hot extraction method as described under the determination of ethanol-soluble extractives (Appendix X A), using ethanol as the solvent, not less than 3.0%.

Processing *Ramulus Mori* Wash the whole ones clean and soften thoroughly, cut into thick slices, and dry in the sun.

Ramulus Mori (Stir-fried) Stir-fry the slices of *Ramulus Mori* as described under the method for simple stir-frying (Appendix II D) to a yellowish colour.

Action To relieve rheumatic arthralgia.

Indications Aching and numbness of joints, particularly of the shoulders and arms.

Usage and dosage 9-15 g.

Storage Preserve in a dry place.

Ramulus Uncariae cum Uncis

(钩藤, Gouteng)

Gambir Plant

Gambir Plant is the dried hook-bearing stem branch of *Uncaria rhynchophylla* (Miq.) Jacks., *Uncaria macrophylla* Wall., *Uncaria hirsuta*

Indications Ascariasis, oxyuriasis, abdominal pain due to intestinal parasitosis. External use for scabies and tinea.

Usage and dosage 4.5–9 g; for external use, appropriate quantity to be ground into powder and applied topically after mixed with lard.

Precaution Used with caution in patients with hepatitis or nephritis.

Storage Preserve in a ventilated dry place, protected from moisture.

Cortex Mori

(桑白皮, Sangbaipi)

White Mulberry Root-bark

White Mulberry Root-bark is the dried root bark of *Morus alba* L. (Fam. Moraceae). The root is collected in late autumn while the leaves are falling off and in early spring before germination, removed from the yellowish-brown cork, cut longitudinally. The root bark is stripped off, and dried in the sun.

Description Quilled, channelled or flat pieced, varying in length and width, 1–4 mm thick. Outer surface white or pale yellowish-white, relatively even, some with orange-yellow or brownish-yellow remains of scaly barks; inner surface yellowish-white or greyish-yellow, with fine longitudinal striations. Texture light and tenacious, strongly fibrous, uneasily broken, but easily stripped longitudinally and dusting on stripping. Odour, slight; taste, slightly sweet.

Identification Transverse section: Phloem rays 2–6 cells wide; laticiferous tubes scattered; fibres scattered singly or in bundles, unligified or slightly lignified; parenchymatous cells containing starch granules, some cells containing prisms of calcium oxalate. The groups of sclerenchymatous cells mixed with stone cells, scattered in older root bark, most lumina containing prisms.

Powder: Pale greyish-yellow. Fibres numerous, most broken, 13–26 μm in diameter, walls thickened, unligified to slightly lignified, pit-canals indistinct. Prisms of calcium oxalate 11–32 μm in diameter. Stone cells subrounded, subsquare or irregular, 22–52 μm in diameter, walls relatively thick or very thick, with distinct pits and pit-canals, lumina containing prisms. Sclerenchymatous cells containing crystals, pits indistinct. Starch granules numerous, subrounded, 4–16 μm in diameter.

Processing *Cortex Mori* Wash clean, soften briefly, cut into slivers, and dry.

Cortex Mori (processed with honey) Stir-fry the slivers of *Cortex Mori* as described under the method for stir-frying with honey (Appendix II D) until it is no more sticky to fingers.

Action To remove heat from the lung, to relieve asthma, and to induce diuresis.

Indications Cough and asthma caused by heat in the lung; anasarca with oliguria.

Usage and dosage 6–12 g.

Storage Preserve in a ventilated and dry place, protected from moisture and moth.

Cortex Moutan

(牡丹皮, Mudanpi)

Tree Peony Bark

Tree Peony Bark is the dried root bark of *Paeonia suffruticosa* Andr. (Fam. Ranunculaceae). The root is collected in autumn, removed from rootlets, the root bark is stripped off, and dried in the sun.

Description Quilled or semiquilled, longitudinally fissured, somewhat involute or opened, 5–20 cm long, 5–12 mm in diameter, 1–4 mm thick. The outer surface greyish-brown or yellowish-brown, showing numerous transverse lenticels and rootlet scars, the exposed layer where cork fallen off appearing pink; the inner surface greyish-yellow or brownish, with obvious fine longitudinal striations, usually showing bright crystals. Texture hard and fragile, easily broken, fracture relatively even, starchy, pale pink. Odour, aromatic; taste, slightly bitter and astringent.

Identification (1) Powder: Pale reddish-brown. Starch granules fairly abundant, simple granules subrounded or polygonal, 3–16 μm in diameter, hilum pointed, cleft or V-shaped, compound granules of 2–6 components. Clusters of calcium oxalate 9–45 μm in diameter, sometimes crystal cells jointed, arranged in rows, or several clusters in one cell. Cork cells rectangular, slightly thick-walled, pale red.

(2) Shake 0.15 g of the powder with 25 ml of dehydrated ethanol for several minutes and filter. Dilute 1 ml of the filtrate to 25 ml with dehydrated ethanol. Carry out the method for spectrophotometry (Appendix V A). The light absorption exhibits a maximum at 274 nm.

(3) Shake 1 g of the powder with 10 ml of ether for 10 minutes and filter. Evaporate the filtrate to dryness, to the residue add 2 ml of acetone as the test solution. Dissolve paeonol CRS in acetone to produce a solution containing 5 mg per ml as the reference solution. Carry out the method for thin layer chromatography (Appendix VI B), using silica gel G as the coating substance and cyclohexane-ethyl acetate (3:1) as the mobile phase. Apply separately to the plate 10 μl of each of the two solutions. After developing and removal of the plate, dry it in air, and spray with a 5% solution of ferric chloride in ethanol acidified with hydrochloric acid. Dry the plate with a current of hot air until the spots are observed clearly. A bluish-brown spot is shown in the chromatogram obtained with the test solution corresponds in position and colour with the spot in the chromatogram obtained with the reference solution.

Water Carry out the determination of water (Appendix IX H, method 2). Not more than 13.0%.

Total ash Not more than 5.0% (Appendix IX K).

Assay Distill 0.2 g of the powder, accurately weighed, with steam, collect about 450 ml of the distillate, dilute to 500 ml with water and shake well. Carry out the method for spectrophotometry (Appendix V A), measure the absorbance of the solution at 274 nm and calculate the content of $\text{C}_9\text{H}_{10}\text{O}_3$, taking 862 as the value of $A(1\%, 1\text{ cm})$. It contains not less than 1.20% of paeonol ($\text{C}_9\text{H}_{10}\text{O}_3$) calculated on the dried basis.

Processing Wash rapidly, soften, cut into slices, and dry in the sun.

Action To remove *heat* from blood, to activate blood circulation and eliminate *blood stasis*.

Indications Eruptions in epidemic diseases; spitting of blood, epistaxis; consumptive fever occurring at night and subsiding in the morning without sweating; amenorrhoea, dysmenorrhoea; carbuncles and sores; traumatic injuries.

Usage and dosage 6-12 g.

Storage Preserve in a cool and dry place.

Cortex Periplocae (香加皮, Xiangjiapi)

Chinese Silkvine Root-bark

Chinese Silkvine Root-bark is the dried root bark of *Periploca sepium* Bge. (Fam. Araliaceae). The root is collected in spring and autumn, the root bark is stripped off, and dried in the sun.

Description Quilled, channelled, a few pieces irregularly, 3-10 cm long, 1-2 cm in diameter, 2-4 mm thick. Outer surface greyish-brown or yellowish-brown, cork soft and loose, often scaly, easily exfoliated; inner surface pale yellow or pale yellowish-brown, relatively smooth, with fine longitudinal striations. Texture light and fragile, easily broken, fracture uneven, yellowish-white. Odour, characteristic and aromatic; taste, bitter.

Identification (1) Powder: Pale brown. Prisms of calcium oxalate rare, 9-20 μm in diameter. Stone cells rectangular or subpolygonal, 24-70 μm in diameter. Laticiferous tubes containing colourless oily granules. Cork cells brownish-yellow, polygonal. Starch granules numerous, simple granules subrounded or oblong, 3-11 μm in diameter; compound granules composed of 2-6 components.

(2) Distill 10 g of the powder with 150 ml of water in a 250 ml flask, the odour of distillate characteristic and aromatic. Transfer 10 ml of the distillate to two test tubes. To one test tube add 1 drop of 1% ferric chloride solution, a brownish-red colour is produced. To another one add 5 ml of saturated solution of hydrazine sulfate and a few crystals of sodium acetate, warm gently and cool, a pale yellowish-green precipitate is produced. Examine under ultra-violet light (365 nm), the precipitate shows a strong yellow fluorescence.

(3) Heat under reflux 1 g of the powder with 10 ml of ethanol for 1 hour, filter. Transfer the filtrate to a 25 ml volumetric flask, and dilute with ethanol to volume. Transfer 1 ml of the ethanol solution to a 20 ml volumetric flask, dilute with ethanol to volume. Carry out the method for spectrophotometry (Appendix V A), the light absorption exhibits a maximum at 278 nm.

(4) To 2 g of the powder add 30 ml of methanol, heat under reflux on a water bath for 1 hour, and filter. Evaporate the filtrate to dryness, and dissolve the residue in 2 ml of methanol as the test solution. Dissolve 4-methoxy salicylic aldehyde CRS in methanol to produce a solution containing 1 mg per ml as the reference solution. Carry out the method for thin-layer chromatography (Appendix VI B), using silica gel G as the coating substance and petroleum ether (60-90°C) : ethyl acetate-glacial acetic acid (20:3:0.5) as the mobile phase. Apply separately 2 μl of each of the two solutions to the plate. After developing and removal of the plate, dry it in air. Spray with dinitrophenylhydrazine TS. The spot in the chromatogram obtained with the test solution corresponds in position and colour to the spot in the chromatogram obtained with the reference solution.

Assay Carry out the method for high performance liquid chromatography (Appendix VI D).

Chromatographic system and system suitability Use octadecylsilane bonded silica gel as the stationary phase and methanol-water-acetic acid (70:30:2) as the mobile phase. The wavelength of the detector is 278 nm. The number of theoretical plates of the column is not less than 1000, calculated with the reference to the peak of 4-methoxy salicylic aldehyde. The resolution factor between the peaks of 4-methoxy salicylic aldehyde and internal standard complies with the related requirements.

Internal standard solution Dissolve a quantity of *n*-butyl-*p*-hydroxybenzoate, accurately weighed, in 60% methanol to produce a solution containing 6 mg per ml as the internal standard solution.

Procedure Weigh accurately a quantity of 4-methoxy salicylic aldehyde CRS in an amber volumetric flask, dissolve and dilute with 60% methanol to produce a solution containing 1 mg per ml. Accurately measure 4 ml of the solution and 2 ml of the internal standard solution in a 25 ml volumetric flask, dilute with 60% methanol to volume, and mix well. Inject 20 μl into the column and plot the chromatogram. Accurately weigh 250-500 mg of the coarse powder, dried at 60°C for 4 hours, in a 50 ml flask. Add 15 ml of 60% methanol, heat under reflux on a water bath for 1.5 hours, and filter. Transfer filtrate to a 25 ml volumetric flask, wash the container with 60% methanol, filter the washings to the same flask, add accurately 2 ml of the internal standard solution, dilute with 60% methanol to volume, and mix well. Filter through a membrane filter (0.5 μm in pore size), and use the filtrate as the test solution. Inject 20 μl into the column, measure the peak area and calculate the content with corrected internal standard method. It contains not less than 0.20% of 4-methoxy salicylic aldehyde ($\text{C}_9\text{H}_8\text{O}_3$) on the dried basis at 60°C for 4 hours.

Processing Eliminate foreign matter, wash clean, soften thoroughly, cut into thick slices and dry in the sun.

Action To relieve rheumatic conditions and to strengthen tendons and bones.

Indications Rheumatic arthritis with aching and weakness of the loins and knees, cardiac palpitation, shortness of breath and edema of the lower extremities.

Usage and dosage 3-6 g.

Precaution Overdosage should be avoided because of its toxicity.

Storage Preserve in a cool and dry place.

Cortex Phellodendri (黄柏, Huangbo)

Amur Cork-tree

Amur Cork-tree is the dried bark of *Phellodendron chinense* Schneid. or *Phellodendron amurense* Rupr. (Fam. Rutaceae). The former is commonly called "Chuan huangbo" and the latter "Guan huangbo". The drug is collected, removed from coarse bark, and dried in the sun.

Description *Chuan huangbo* Tabular or shallowly channelled, varying in length and width, 3-6 mm thick. Outer surface yellowish-brown, even or longitudinally furrowed, some showing scars of lenticels, and remains of greyish-

5–20 cm long, 2–6 cm wide, upper surface dark greyish-green, sometimes small deeper coloured prominences being visible; apex obtuse, margins entire or slightly undulate, base attenuate and decurrent into the petiole appearing wing-shaped; petioles 4–10 cm long, pale brownish-yellow. Texture fragile. Odour, slight; taste, slightly sour, bitter and astringent.

Identification (1) Powder: Greenish-brown. Anticlinal walls of lower epidermal cells slightly sinuous and somewhat beaded; stomata anomocytic, with 3–4 subsidiary cells. Transverse section of mesophyll indistinctly differentiated into palisade tissue and spongy tissue.

(2) To 0.5 g of the powder add 20 ml of chloroform, heat under reflux on a water bath for 1 hour, filter and evaporate the filtrate to 1 ml as the test solution. Dissolve indigotin CRS and indirubin CRS in chloroform to produce a solution containing 1 mg of each per ml as the reference solution. Carry out the method for thin layer chromatography (Appendix VI B), using silica gel G as the coating substance and benzene-chloroform-acetone (5:4:1) as mobile phase. Apply separately to the plate 5 μ l of the two solutions. After developing and removal of the plate, dry it in air. The blue spot and pale purplish-red spot due to indigotin and indirubin in the chromatogram obtained with the test solution correspond in position and colour to the spots in the chromatogram obtained with the reference solution.

Processing Eliminate foreign matter, wash rapidly, cut into pieces and dry.

Action To remove toxic *heat*, reduce *heat* in blood, and promote subsidence of eruptions.

Indications High fever with impairment of consciousness and skin eruptions in epidemic diseases; jaundice; acute dysentery; mumps; inflammation of the throat, erysipelas, carbuncle.

Usage and dosage 9–15 g.

Storage Preserve in a ventilated dry place, protected from mould.

Folium Mori

(桑叶, Sangye) ✓

Mulberry Leaf

Mulberry Leaf is the dried leaf of *Morus alba* L. (Fam. Moraceae). The drug is collected at the early frost season, removed from foreign matter and dried in the sun.

Description Mostly crumpled and broken. When whole, petioled, ovate or broadly ovate, 8–15 cm long, 7–13 cm wide; apex acuminate, base truncate, round or cordate, margins dentate or obtuse-dentate, some irregularly partite. Upper surface yellowish-green or pale yellowish-brown, some with small warty protrudings; lower surface relatively light in colour, veins prominent, lateral veins reticulated, sparsely pubescent on the veins, cluster of hairs occurring at the base. Texture fragile. Odour, slight; taste, weak, slightly bitter and astringent.

Identification Powder: Yellowish-green or yellowish-brown. The upper epidermis having large crystal cells, containing cystolith, 47–77 μ m in diameter. Stomata anomocytic in lower epidermis, with 4–6 subsidiary cells. Nonglandular hairs unicellular, 50–230 μ m long. Clusters of calcium oxalate 5–16 μ m in diameter; prisms occasionally

visible.

Processing Eliminate foreign matter, rub to break, remove the petioles, sift off the dust.

Action To dispel *wind-heat* and to remove *heat* from the *lung*, to subdue hyperactivity of the *liver* and improve eyesight.

Indications Upper respiratory infection, *heat* in the *lung* with dry cough; dizziness, headache, inflammation of the eye, blurred vision.

Usage and dosage 5–9 g.

Storage Preserve in a dry place.

Folium Nelumbinis

(荷叶, Heye) ✓

Lotus Leaf

Lotus Leaf is the dried leaf of *Nelumbo nucifera* Gaertn. (Fam. Nymphaeaceae). The drug is collected in summer and autumn, dried in the sun to remove most of water, removed from the petioles, folded to semi-rounded or plicate, and dried again.

Description Semi-rounded or fan-shaped, subrounded, when spread, 20–50 cm in diameter, margins entire or slightly sinuous. Upper surface dark green or yellowish-green, relatively rough, lower surface pale greyish-brown, relatively smooth, with 21–22 thick veins, radiating from the centre to the border, with convex remains of petiole in the centre. Texture fragile, easily broken. Odour, slightly aromatic; taste, slightly bitter.

Identification Powder: Greyish-green. Upper epidermal cells polygonal, with papilla or short tomentose convexes; stomata, anomocytic, subsidiary cells 5–8. Anticlinal walls of lower epidermal cells slightly sinuous, sometimes beaded. Clusters of calcium oxalate numerous up to 40 μ m in diameter.

Processing *Folium Nelumbinis* Spray with water, moisten briefly, cut into slivers and dry.

Folium Nelumbinis (carbonized) Carbonize the clean *Folium Nelumbinis* as described under the method for carbonizing by calcining (Appendix II D).

Action To relieve *summer-heat*, to invigorate the *spleen* function of the *spleen* and arrest bleeding by reducing *heat* in blood.

Folium Nelumbinis (carbonized): To arrest bleeding, remove *blood stasis*.

Indications *Summer-heat* with dire thirst; diarrhea caused by *summer-damp* or hypofunction of the *spleen*; spitting of blood, epistaxis, hematochezia and abnormal uterine bleeding caused by *heat* in blood.

Folium Nelumbinis (carbonized): Various kind of bleeding and massive postpartum hemorrhage.

Usage and dosage 3–9 g: fresh *Folium Nelumbinis*: 15–30 g.

Folium Nelumbinis (carbonized): 3–6 g.

Storage Preserve in a ventilated dry place, protected from moth.

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Wichtl M (Hrsg.), Teedrogen, 4. Aufl., Wiss. Verlagsges. Stuttgart 1997.

Pagoda Tree

See *Sophora Japonica*

Panax Ginseng

Ginseng

DESCRIPTION

Medicinal Parts: The medicinal part is the dried root.

Flower and Fruit: The inflorescence is simple or branched with 1 to 3 umbels of 15 to 30 flowers. The flowers are androgynous and have greenish-yellow corollas. The ovary is inferior. The fruit is a pea-sized, globose to reniform, scarlet, smooth and glossy drupe, which contains 2 seeds.

Leaves, Stem and Root: The plant is perennial, erect and 30 to 80 cm high. It has a glabrous, round stem and bears terminal whorls of 3 to 5 palmate leaves. The leaflets are thin, finely serrate, gradually acuminate, 7 to 20 cm long and 2 to 5 cm wide. The plant has a fusiform rhizome, which is often palmate at the tip giving it a human-like form.

Habitat: *Panax ginseng* is indigenous to China. It is cultivated in China, Korea, Japan and Russia. *Panax quinquefolius* grows in the U.S.

Production: Ginseng root consists of the dried main and lateral root and root hairs of *Panax ginseng*.

Other Names: American Ginseng, Chinese Ginseng, Korean Ginseng

ACTIONS AND PHARMACOLOGY

COMPOUNDS

Triterpene saponins

Aglycone (20S)-protopanaxadiol: including ginsenoside Ra1, Ra2, Ra3, Rb1, Rb2, Rb3, notoginsenoside R4, Rs1, Rs2, malonylginsenoside Rb1, Rc, Rd

Aglycone (20S)-protopanaxatriol: including ginsenoside Re, Rf, Rg1, notoginsenoside R1

Aglycone oleanolic acid: including ginsenoside Ro, chikusetsusaponin-V

Water-soluble polysaccharides: panaxane A to C

Polyynes: including falcarinol (panaxynol), falcarintriol (panaxytriol), examples esterified with acetic acid or linolenic acid

EFFECTS

The main active agent is ginsenoside. In various stress models, (immobilization test and the coldness test), the resistance of laboratory rodents was increased.

INDICATIONS AND USAGE

■ Lack of stamina

Ginseng is also used as a tonic for invigoration and fortification in times of fatigue and debility and for declining capacity to work and concentrate. It is also used during convalescence.

PRECAUTIONS AND ADVERSE REACTIONS

Health risks or side effects following the proper administration of designated therapeutic dosages are not recorded.

OVERDOSAGE

Massive overdoses can bring about Ginseng Abuse Syndrome, which is characterized by sleeplessness, hypotonia and edema.

DOSAGE

Mode of Administration: Comminuted drug infusions, powder and galenic preparations for internal use. Various standardized preparations containing ginseng root are available.

Preparation: To make an infusion, pour boiling water over 3 gm comminuted drug and strain after 5 to 10 minutes.

Daily Dosage: The average daily dosage is 1 to 2 gm root. The infusion may be taken 3 to 4 times a day over 3 to 4 weeks.

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Papaver Rhoëas

Corn Poppy

DESCRIPTION

Medicinal Parts: The medicinal parts are the flowers and seeds.

Flower and Fruit: The flowers are solitary and terminal or axillary and have a diameter of 10 cm. The pedicels are bristly and irregularly curved. The two sepals are green, bristly and fall off. The 4 petals are orbicular, scarlet or crimson, rarely white or violet with a round, shiny, often white-bordered deep-black mark at the base. The fruit capsule is broad-elliptical, dark brown and reticulate-pitted.

Leaves, Stem and Root: Poppy is an annual, occasionally biennial, multiple-stemmed plant 25 to 90 cm high. The stems are erect to semi-erect, simple or branched with stiff, protruding hairs. They have basal rosette lanceolate leaves that are deeply indented cauline. The foliage leaves are oblong-lanceolate, pinnatifid to pinnatesect and very bristly.

Habitat: The plant is indigenous to Europe, northern Africa and temperate regions in Asia. It is established in North and South America.

Production: Corn Poppy flower consists of the dried petals of *Papaver rhoëas* as well as its preparations.

Other Names: Copperrose, Corn Rose, Cup-Puppy, Headache, Headwark, Red Poppy

ACTIONS AND PHARMACOLOGY

COMPOUNDS

Isoquinoline alkaloids (0.1%): chief alkaloids rhoëadine, isorhoëadine, rhoëagenine

Anthocyanins: including among others mecocyanin (cyanidin-3-isosophroroside), cyanin- mucilage

EFFECTS

No information is available.

*Catechin tannins***EFFECTS**

Stimulation of the secretion of saliva and gastric juices.

INDICATIONS AND USAGE

- Loss of appetite
- Dyspeptic complaints

Cinchona bark is used to correct loss of appetite, dyspepsia and flatulence with a sense fullness. In folk medicine, the bark is used for malaria, flu, enlarged spleen, muscle cramps, cancer, and gastric disorders. Externally it is used for scrapes and leg ulcers.

PRECAUTIONS AND ADVERSE REACTIONS

General: Sensitization to quinine and quinidine have been observed (eczema, itching). Even with therapeutic dosages, an enhanced pseudothrombophilia can occur by the drug triggering thrombocytopenia.

Drug Interactions: Because of the possibility of thrombocytopenia, care must be taken when Cinchona preparations are administered along with other drugs that are known to precipitate thrombocytopenia.

OVERDOSAGE

In cases of overdosage (over 3 g quinine) or of long-term administration of the drug or its alkaloids, nausea, summer cholera, headache, fall of body temperature, intravascular hemolysis, cardiac arrhythmias, buzzing in the ears, hearing and visual disorders (all the way to complete deafness and blindness) may occur. Death comes with dosages of 10 to 15 g of quinine through heart failure and asphyxiation. Following gastric lavage, the symptomatic therapy for acute poisonings includes atropine for bradycardia and phenytoin in the presence of tachycardic heart rhythm disorders. Forced diuresis and hemodialysis are not suitable as therapeutic measures.

DOSEAGE

Mode of Administration: Comminuted drug and other bitter-tasting galenic preparations to be taken internally.

Preparation: An infusion is prepared by pouring boiling water over 1/2 teaspoonful of the drug and allowing to draw for 10 minutes. A decoction is prepared by adding 0.5 g to 1 teacup of water. A tincture in the proportion of 1:5 in 75% ethanol is also used.

Other preparations involve various complicated extraction processes.

Daily Dosage: Total daily dose is 1 to 3 g of drug. The liquid extract daily dose is 0.6 to 3 g of cinchona liquid extract, which contains 4 to 5% total alkaloids. A daily dose of 0.15 to 0.6 g cinchona extract with 15 to 20% total alkaloids may also be used.

The standard single dose of the extract is 0.2 g. The liquid extract single dose is 0.5 to 1 g.

Storage: Keep protected from light and moisture.

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Cinnamomum Aromaticum

Chinese Cinnamon

DESCRIPTION

Medicinal Parts: The medicinal parts are the flowers collected and dried after they have finished blossoming, the

young twigs and whole or partly peeled, dried bark of thin branches as well the oil extracted from them and the young dried branches.

Flower and Fruit: The flowers are small and are on short, slender, silky pedicels. They are arranged in threes in cymous panicles in the leaf axils and in larger panicles at the end of the branches. The perianth is slightly silky, about 3 mm long, with oblong-lanceolate petals. The fruit is a juicy, pea-sized, ellipsoid, smooth drupe.

Leaves, Stem and Root: Evergreen tree up to 7 m tall with aromatic bark and angular branches. The bark is brown, in quilled pieces, sometimes with the remains of the outer layer present. The 7.5 to 10 cm long leaves are oblanceolate and are on 6 to 8 cm long petioles and are pubescent and more or less tapered towards the base. They are coriaceous, alternate and are brown underneath.

Habitat: Indigenous and cultivated in southern China, Vietnam and Burma.

Production: Chinese cinnamon consists of the completely or partly peeled, dried stem bark from the above ground axis of *Cinnamomum aromaticum*. The drug comes from 2 to 3 cm thick branches; it is peeled with horn knives and freed from cork and outer rind and dried in the sun within 24 hours.

Not To Be Confused With: Waste products from the production process or other barks and materials.

Other Names: Cassia, False Cinnamon, Bastard Cinnamon, Cassia Lignea, Cassia Bark, Cassia aromaticum, Canton Cassia

ACTION AND PHARMACOLOGY

COMPOUNDS

Volatile oil: chief components cinnamaldehyde, weterhin cinnamylacetate, cinnamyl alcohol, o-methoxycinnamaldehyde, cinnamic acid, coumarin

Diterpenes

Tannins

Oligomere proanthocyanidins

Mucilages

EFFECTS

Antibacterial, fungistatic, improves immunity in animal tests, promotes motility, inhibits ulcers.

INDICATIONS AND USAGE

- Loss of appetite
- Dyspeptic complaints
- Fevers and colds
- Cough/bronchitis
- Tendency to infection

- Inflammation of the mouth and pharynx
- Common cold

Loss of appetite, dyspeptic complaints such as mild, colicky upsets of the gastrointestinal tract, bloating, flatulence; used in the symptomatic treatment of gastrointestinal disorders, temporary states of exhaustion and to increase weight.

Used in Chinese medicine for impotence, diarrhea, enuresis, rheumatic conditions, testicle hernia, menopause syndrome, amenorrhoea, abortion and to stabilize immunity.

PRECAUTIONS AND ADVERSE REACTIONS

General: No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages. The drug possesses a medium potential for sensitization. Sensitizations to cinnamaldehyde occur frequently.

Pregnancy: The drug is not to be administered in time of pregnancy.

DOSAGE

Mode of Administration: Comminuted bark for infusions; essential oil, as well as other galenic preparations for internal use.

Preparation: Tincture of cinnamon: moisten 200 parts cinnamon bark evenly with ethanol and percolate to produce 1000 parts tincture.

Daily Dosage: 2 to 4 g drug; 0.05 to 0.2 g essential oil; Average single dose: 1 g.

Storage: Cool, dry conditions in well-sealed containers.

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Cinnamomum Camphora

Camphor Tree

DESCRIPTION

Medicinal Parts: The medicinal part is camphor oil extracted from the tree.

Flower and Fruit: The flowers are small and white and are on 1 to 1.5 mm long pedicels. The petals are pubescent on the inside. The flowers are in long-peduncled axillary panicles. The stamens form 3 circles, are 1.5 mm long, pubescent with broad, sessile-cordate glands. The fruit is a purple-black, 1-seeded, 10 to 12 mm oval drupe.

Leaves, Stem and Root: The plant is an evergreen tree growing up to 50 m tall and 5 m in diameter. The trunk is erect at the lower part and is knottily branched above. The leaves are 5 to 11 cm long by 5 cm across, oval-lanceolate, alternate, acuminate, grooved, glossy and light yellowish green above, paler beneath.

Habitat: Found from Vietnam to southern China as far as southern Japan.

Production: Purified camphor is obtained from the wood of the camphor tree *Cinnamomum camphora* using steam distillation followed by sublimation.

Other Names: Gum Camphor, Laurel Camphor, Camphire.

ACTION AND PHARMACOLOGY

COMPOUNDS

Camphora is a single substance: D(+)-camphor ((1R,4R)-1,7,7-Trimethyl-bicyclo[2.2.1]heptan-2-on), extracted from the volatile oil of the trunk of the camphor tree, *Cinnamomum camphora*. L(-)-camphor also occurs in nature. Synthetic camphor is DL-camphor.

EFFECTS

External: bronchial secretolytic, hyperemic.

Internal: circulatory tonic, respiratory analeptic, bronchial antispasmodic.

INDICATIONS

- Cardiac insufficiency NYHA I and II
- Arrhythmia
- Cough/bronchitis

- Hypertension
- Hypotension
- Nervous heart complaints
- Rheumatism

External: muscular rheumatism, catarrhal diseases of the respiratory tract, cardiac symptoms.

Internal: hypotonic circulatory regulation disorders, catarrhal diseases of the respiratory tract.

PRECAUTIONS AND ADVERSE REACTIONS

General: Local administration can lead to skin irritation, as well as to resorbent and/or airborne poisonings. Contact eczema occasionally appears following the application of oily salves containing camphor.

Pediatric Use: Camphor salves should not be administered to infants.

OVERDOSAGE

Symptoms of poisonings that have been seen particularly in children, include intoxicated states, delirium, spasms and respiratory control disturbances. Treatment proceeds symptomatically. The lethal dosage for children is approximately 1 g, for adults approximately 20 g (toxic dosage of camphor is 2 g).

DOSAGE

Mode of Administration: Locally or for inhalation; in liquid or semisolid form. Internally, in liquid or solid preparations.

Daily Dosage: Internal average daily dosage: 30 to 300 mg. For external use, depending on prescribed application, generally in concentrations of not higher than 25%, for small children not higher than 5%.

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Cinnamomum Verum

Cinnamon

DESCRIPTION

Medicinal Parts: The medicinal parts are the cinnamon oil extracted from the bark, the cinnamon bark of younger branches and the cinnamon leaf oil.

Flower and Fruit: The flowers are whitish green, inconspicuous and have an unpleasant smell. They are arranged in loose, axillary or terminal panicles; they are about 0.5 cm long and are covered in silky hairs. The fruit is berry-like, ovoid-oblong, short-thorned and half-enclosed by the epicalyx.

Leaves, Stem and Root: The plant is a heavily foliated evergreen tree 6.5 to 12 m tall with a pale brown bark in thin quills, several rolled inside one another. The branches are cylindrical with a gray-brown bark. The leaves are opposite, splayed horizontally to leaning, initially red, later green, tough. They are about 12 cm by 5 cm, roundish-ovate or ovate-lanceolate to oblong, more or less acuminate and entire-margined. The leaves smell like cloves.

Habitat: Indigenous to Sri Lanka and southwest India.

Production: The thin bark without the cork or outer rind is dried in the shade.

Not To Be Confused With: Other powdered cinnamon varieties

Other Names: Ceylon Cinnamon

ACTION AND PHARMACOLOGY

COMPOUNDS

Volatile oil: chief components - cinnamaldehyde, weiterhin eugenol, cinnamylacetate, cinnamyl alcohol, o-methoxycinnamaldehyde, cinnamic acid

Diterpenes

Oligomeric proanthocyanidins

Mucilages

EFFECTS

Antibacterial, fungistatic, promotes motility; mildly positive estrogen reactions on the genital system of animals in tests; increases gastric secretions and is an insecticide.

INDICATIONS AND USAGE

- Loss of appetite
- Dyspeptic complaints
- Fevers and colds
- Cough/bronchitis
- Tendency to infection
- Inflammation of the mouth and pharynx
- Common cold

Loss of appetite, dyspepsia.

Folk medicine: infantile diarrhea, chills, influenza and worm infestation; externally for cleaning wounds.

PRECAUTIONS AND ADVERSE REACTIONS

General: No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages. The drug possesses a medium potential for sensitization. Sensitizations to cinnamaldehyde occur frequently.

Pregnancy: The drug is not to be administered in time of pregnancy.

DOSEAGE

Mode of Administration: Comminuted drug for infusions; essential oil, as well as other galenic preparations for internal use.

Daily Dosage: 2 to 4 g drug, 0.05 to 0.2 g essential oil;

Infusion: 1 cup 2 to 3 times daily at mealtimes

Liquid extract: 0.5 to 1 ml 3 times daily

Tincture: up to 4 ml 3 times daily

Storage: Protect from light and moisture in non-synthetic containers.

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Cinnamon

See *Cinnamomum Verum*

Citronella

See *Cymbopogon Species*

Citrullus Colocynthis

Bitter Apple

DESCRIPTION

Medicinal Parts: The medicinal part is the dried pulp.

Flower and Fruit: The flowers are yellow and appear singly in the leaf axils. The fruit is as large as an apple. It is yellow, smooth, dry, and very bitter. When it is ripe it contains white spongy flesh within the coriaceous peel with numerous ovate, white or brownish seeds which are 0.75 cm long and 0.5 cm wide, ovate, compressed, with an edge and oily.

Leaves, Stem and Root: The annual plant is similar to a normal watermelon. The stems are leafy and rough-haired. The leaves are alternate on long petioles. They are triangular, divided, variously indented, obtuse and pubescent. The upper surface is delicate green, the lower one rough and pale.

Habitat: Indigenous to Turkey found also in Sri Lanka, Egypt, Syria, and the Arabian Gulf.

Production: Bitter Apples are the ripe fruits of *Citrullus colocynthis* which have been removed from the harder outer layer.

Other Names: Colocynth Pulp, Bitter Cucumber

ACTION AND PHARMACOLOGY

COMPOUNDS

Cucurbitacins: including cucurbitacin E-, J-, L-glucosides

Caffeic acid derivatives: chlorogenic acid

EFFECTS

Increases liquid in the intestine. Irritates the intestinal mucous membrane.

INDICATIONS AND USAGE

Preparations of Bitter Apples are used exclusively in fixed combinations in the treatment of acute and chronic constipation with various causes as well as in pregnancy, also in the treatment of liver and gallbladder disorders. Bitter Apple preparations act as drastic laxatives. Efficacy in other claimed areas of use has not been proven.

PRECAUTIONS AND ADVERSE REACTIONS

The drug is severely poisonous. It has a strongly irritating effect on mucus membranes due to its cucurbitacin glycoside content, out of which cucurbitacins are released in watery environments.

OVERDOSAGE

Vomiting, bloody diarrhea, colic, kidney irritation follow the intake of toxic dosages (0.6 - 1 g), and then increased diuresis, leading on to anuria. Lethal dosages (starting at 2 g) lead to convulsions, paralyzes, and, if untreated, to death through circulatory collapse.

The treatment for poisonings should proceed symptomatically following gastric lavage. Administration in allopathic dosages is no longer defensible.

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Not To Be Confused With: *Berula erecta* or *Cardamine amara*.

Other Names: Indian Cress

ACTIONS AND PHARMACOLOGY

COMPOUNDS

Glucosinolates in the fresh, unbruised plant: chief components gluconasturtiin, releasing mustard oil through destruction of cells, releasing phenylethylisothiocyanate, additionally including among others, glucotropaeolin (producing benzyl isothiocyanat)

Flavonoids

Vitamin C (80 mg/100 gm)

EFFECTS

Watercress has antibiotic and diuretic actions. The diuretic effect is probably due to the mustard oil content.

INDICATIONS AND USAGE

■ Cough/bronchitis

The plant is used for catarrh of the respiratory tract. In folk medicine, it is used as an appetite stimulant and for digestion complaints because of its bitter taste. Because of its Vitamin C content, it is used as a spring tonic. A decoction of the leaves in poultices and compresses for arthritis and rheumatoid arthritis is used in the folk medicine of northeastern Italy.

CONTRAINDICATIONS

Contraindications include stomach or intestinal ulcers and inflammatory renal diseases.

PRECAUTIONS AND ADVERSE REACTIONS

General: No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages. The intake of large quantities of the freshly-harvested plant, for example in salad, could lead to gastrointestinal complaints due to the mucous membrane-irritating effect of the mustard oil.

Pediatric Use: The drug should not be administered to children under 4 years old.

DOSAGE

Mode of Administration: The comminuted herb, freshly-pressed juice, as well as other galenic preparations of the plant are for internal use.

Preparation: In folk medicine, the comminuted drug can be taken directly. To make an infusion, pour 150 ml boiling water over 2 gm drug (1 to 2 teaspoonfuls), cover for 10 minutes and strain.

Daily Dosage: The daily dosage is 2 to 3 cups of the infusion before meals, 4 to 6 gm of the dried herb, 20 to 30 gm of the

fresh herb, or 60 to 150 gm of freshly-pressed juice. Externally, the drug is applied as a poultice or a compress.

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Nelumbo Nucifera

Lotus

DESCRIPTION

Medicinal Parts: The medicinal parts are the roots, the seeds, and the aerial parts of the flowering plant.

Flower and Fruit: The solitary flowers are 16 to 23 cm across, pink and scented. They grow above the leaves. The seeds are 1.7 by 1.3 cm and ovoid.

Leaves, Stem and Root: The rhizome is 10 to 20 cm long, stout, and branching. It bears numerous scale-like leaves as well as foliage leaves. The foliage leaves are peltate and have no sinuses. The petioles are 1 to 2 cm long, the lamina are 30 to 100 cm in diameter and are almost circular, glossy, and unwettable.

Habitat: The plant is indigenous to India.

ACTIONS AND PHARMACOLOGY

COMPOUNDS

Isoquinoline alkaloids: including, among others, roemerin, nuciferin, normuciferin, liensinine, isoliensinine, neferine, lotusine, arnepavin, liriodenine, asimilobin

Flavonoids: including, among others, hyperoside, isoquercitrin, quercetin glucuronide, camphor glucuronide

Tannins

EFFECTS

Active agents are the alkaloids "nelumbin" and roemerin, in the leaves. The drug is an astringent.

INDICATIONS AND USAGE

The powdered beans are used in the treatment of digestive disorders, particularly diarrhea. The flowers are used as an astringent for bleeding.

PRECAUTIONS AND ADVERSE REACTIONS

No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages.

DOSAGE

Mode of Administration: Preparations of the plant are available in powder and liquid extract form.

LITERATURE

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Nepeta Cataria

Catnip

DESCRIPTION

Medicinal Parts: The medicinal parts are aerial parts of the plant collected during the flowering season.

Flower and Fruit: The inflorescence is spike-like and the lower verticillasters distant from each other. The small individual flowers are on short pedicles. The bracts are 1.5 to 3 mm and linear-awl-shaped. The sepals are 5 to 6.5 mm long and ovate. The tips are 1.5 to 2.5 mm long, linear-lanceolate and patent. The corolla is 7 to 10 mm long, is slightly longer than the calyx and is white with small purple spots.

Leaves, Stem and Root: The root of the plant is perennial. The stems are up to 1 m high, angular, erect and branched. They are leafy gray-pubescent to tomentose giving the whole plant a whitish gray appearance. The leaves are 2 to 8 cm, ovate, cordate at the base, crenate or serrate and gray-tomentose beneath. The petiole is 0.5 to 4 cm in length.

Characteristics: Aromatic, characteristic smell, reminiscent of Mint and Pennyroyal.

Habitat: Indigenous to Europe and naturalized in the U.S.

Production: Catnip is the aerial part of *Nepeta cataria*. The harvesting takes place in uncultivated regions. The drug is manually cut in dry and sunny weather conditions. The woodless parts of the plant are sorted out and the material is then left to dry in the shade.

Other Names: Catnep, Catrup, Catmint, Catswort, Field Balm

ACTIONS AND PHARMACOLOGY**COMPOUNDS**

Volatile oil (0.2-0.7%): chief components are nepetalactone (share 80-95%), additionally including among others epinepentalactone, caryophyllene, camphor, thymol, carvacrol

EFFECTS

Active agents are bitter and tannin substances, as well as essential oil. Antipyretic, refrigerant, relieves cramps, sedative, diaphoretic. The tea has a diuretic effect and increases gallbladder activity.

INDICATIONS AND USAGE

Colds, colic, also for the treatment of nervous disorders and migraine, since preparations from the mint have a calming effect. It is also used in the treatment of gynecological disorders. *Nepeta cataria* has a long tradition in England and France as a kitchen and medicinal herb and was used occasionally as stimulating drink until the introduction of black tea.

PRECAUTIONS AND ADVERSE REACTIONS

No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages.

DOSAGE

Mode of Administration: Orally in ground and dried forms.

Preparation: To prepare an infusion (tea), add 10 teaspoons per liter of water, leave this to stand and draw for 10 minutes.

Daily Dosage: Drink 2 to 3 cups of the tea daily.

LITERATURE

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The Tan Sheet

Vol. 7; No. 5; Pg. 11

February 1, 1999

SECTION: THE NEWS THIS WEEK

LENGTH: 32 words

TITLE: DIETARY SUPPLEMENT STRUCTURE/FUNCTION CLAIMS: PROGENIX

TEXT:

Company..... Progenix
Product/Ingredient.. AmeriSeng Ginseng with Garlic
Date..... 11/4/98
Description..... "Promotes cardiovascular health."

LOAD-DATE: February 8, 1999



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The Tan Sheet

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February 1, 1999

SECTION: THE NEWS THIS WEEK

LENGTH: 58 words

TITLE: DIETARY SUPPLEMENT STRUCTURE/FUNCTION CLAIMS: SINOMEDICAL DEVELOPMENT

TEXT:

Company..... Sinomedical Development
 Product/Ingredient.. Tong Ren Tang **Ginseng**-Peony Extract
 Date..... 11/1/98
 Description..... "Herbal dietary supplement for
cardiovascular health"; "Studies indicate
 that consumption of this product may help
 maintain **cardiovascular** health."

LOAD-DATE: February 8, 1999



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The Tan Sheet

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April 19, 1999

SECTION: THE NEWS THIS WEEK

LENGTH: 228 words

TITLE: DIETARY SUPPLEMENT STRUCTURE/FUNCTION CLAIMS: PERFORMANCE LABS

TEXT:

Company..... Performance Labs
 Product/Ingredient.. **CardioMax**
 Date..... 2/9/99
 Description..... "Cholesterol control program, diet, exercise, **CardioMax**"; "Healthy cholesterol, naturally"; "Clinically supported to: Reduce triglycerides, reduce total cholesterol, reduce LDL 'bad' cholesterol, increase HDL 'good' cholesterol"; "Safe, effective **cardiovascular** health formula"; "**CardioMax** is a dietary supplement designed to help you safely balance your cholesterol and improve your **cardiovascular** health - without the side effects of some prescription drugs. As part of a complete cholesterol control program, **CardioMax** stabilizes the metabolic imbalance at the root of elevated cholesterol through a unique blend of natural vitamins, minerals and herbs that combine the centuries-old power of Chinese naturopathy with modern scientific research"; "World-class botanicals provide natural benefits"; "Garlic & hawthorn berry widely prescribed in Europe to strengthen and regulate **cardiovascular** function"; "**Cassia see**, alisma, ho shou wu, lotus leaf used for centuries in China to help moderate metabolic imbalances associated with the heart."

LOAD-DATE: April 26, 1999



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