TEXTUAL RESEARCH FOR LATIN NAMES AND MEDICINAL EFFECTS OF TOP GRADE DRUGS IN SHENNONGBENCAOJING

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Textual research for Shennongbencaojing was preceded in the study. The Top Grade Drugs in Shennongbencaojing were divided into 6 groups which were plant, mineral, animal, fish and shellfish, insect and other. Then the official botanical or zoological origin and pharmacological activities of them were studied. Each drug was arranged by order of formal Chinese name, pinyin, scientific name, common name, Latin name, pharmacological effects, other officinal medicinal origin and utilizing. The number of Top Grade Drugs in Sun's edition was summed up to 142. There were 135 drugs of which their official medicinal origins were confirmed and approximately 126 drugs were edible or could be used for treatment. The result showed that: Some drugs might have different medicinal names by various used parts in ancient and modern times, such as: Fructus Leonuri v.s. Chinese motherwort, herb of Gastrodia elata v.s. Rhizoma Gastrodiae, herb of seedling of Ligusticum chuanxiong v.s. Rhizoma Chuanxiong, Fructus Rosae Multiflorae v.s. a species of rose of Rosa multiflora, seedling of Sesamum indicum v.s. sesame, Cortex Lycii Chinensis v.s. Fructus Lycii Chinensis, young tender fruit v.s. kernel or leaf (narcotics) of Cannabis sativa. Also, it was found that Fangku was ever misnamed; some herbs such as Guhuo, Bieji, Qucao and Huaimu could not be defined for lacking medicinal material source or having insubstantial medicinal purpose in the past dynasties. Some were usually used as medicines or foods now such as Chrysanthemum, Ginseng, Licorice root, Radix Rehmanniae Exsiccata, Nagaimo, Job's Tears, Field Penny-cress, Rhizoma Chuanxiong, Radix Astragali Mongholici, Chinese Senna, Fructus Schisandrae Chinensis, Rougui, Poria, Cortex Acanthopanacis Gracilistyli, Chinese date, Mandarin orange, Indian Lotus, Jujube, Grape Vine, Foxnut, Sesame, Winter melon, Sowthistle, Cock, Snakeheads Fish and Honey. For some drug items, their shells were used in medicine such as oyster and sea clam. Some used calculus from cattle, took bile from carp or used colloid extracted by long-hour cooking from leather of deer and donkey. Cinnabar, a mineral medicine, was listed in forbidden drugs. The human hair carbides were rarely used nowadays.

Key words: Shennongbencaojing, top grade drug, scientific name, pharmacological effect, edible, textual research

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Introduction

For realizing traditional Chinese medicine (TCM), it is necessary to refer the various Classics of Materia Medica in previous dynasties. Translation into English about above classic editions can increase acceptability of Chinese medicine worldwide. Shennongbencaojing (神農本草經), Shennong's Classic of Materia Medica, is the first Chinese Pharmacy monograph compiled during the Eastern Han dynasty (25–220 A.D.). The drugs in it were divided into Top Grade Drugs (上品), Medium Grade Drugs (中品) and Low grade drugs ($\overline{\square}$). The English translation edition of Shennongbencaojing existed but it was only translated direct from ancient text. Their official botanical or zoological origins of the medicinal materials had not been examined and pharmacological effects had not been mentioned. The book Shennongbencaojing compiled by Sun Xing-Yan (孫星衍) and Sun Fengyi (孫馮翼) is the most popular and almost faultless¹. Top grade drugs were deemed by the ancestors that they were non-toxic, possessed a rejuvenating effect and could be taken frequently and for a long period of time without harm. Therefore it was selected for our advance study. This textual research for Top Grade Drugs in Shennongbencaojing was presented with simple English in the hope to help to promote traditional Chinese medicine internationally.

Materials and Methods

I. Materials

We referred following materials for this textual research.

(I) The Original Literatures of Classics of Materia Medica (本草)

- Shennongbencaojing, recompiled by Sun Xingyan and Sun Fengyi, published by Wuzhou Pub Co, Taipei, 1999.
- Jingshizhengleibeijibencao (經史證類備急 本草), written by Tang Shenwei (唐愼微) Published by Southern Materials Center Inc., Taipei, 1990;
- 3. Bencaogangmu (本草綱目), written by Li Shizhen (李時珍), Published by Da-Taipei Pub Co., Taipei, 1976.
- 4. Chinese Herbal Medicine (中華本草), edited by Editorial committee of National Administrative Bureau on Chinese Medicine, Published by Shanghai Science and Technology Pub Co., Shanghai, 1999.

(II) National Pharmacopoeia

- Zhonghua Chineses Herbal Pharmacopoeia (中 華中藥典), edited by Editorial committee of Zhonghua Pharmacopoeia on Chinese Medicine, Published by Department of Health, Executive Yuan, R.O.C. (TAIWAN), Taipei, 2004.
- China Pharmacopoeia (中國藥典), Volume 1, edited by the Pharmacopoeia Commission of the Ministry of Health, P.R.C., Published by China Medical Science Press, Beijing, 2010.

(III) Folk Publication

Encyclopedia of Medicinal Plants 1-4, chief editors are Zhao ZZ, and Xiao PG., Shanghai World Pub Co., Shanghai, 2009.

(IV) Popular Medicine Websites

Yibian.hopto.org, Pharmnet.com, Health.chinatimes.com, Zhong-yao, Hudong.com, Baike.baidu. com and Wikipedia-the free encyclopedia.

II. Methods

The Top Grade Drugs in Shennongbencaojing compiled by Sun Xing-Yanand Sun Fengyi were first chosen to use in the study for the original formal Chinese drug names. Then, the literatures documented in classics of ancient Materia Medica such as Bencaojingjizhu (本草經集注), Xinxiubencao (新修 本草), Daguan Jingshizhengleibeijibencao (大觀經史 證類備急本草), Zhenghe Jingshizhengleibeijibencao (政和經史證類備急本草), Bencaogangmu (本草 綱目) were studied to indentify the exact original formal Chinese drug names. Drug origins by its scientific names were identified through national pharmacopoeias such as Zhonghua Chineses Herbal Pharmacopoeia, China Pharmacopoeia and Chinese Herbal Medicine. With each scientific name, the pharmacological effects of the drug were searched via Academic Search Premier or MEDLINE in EBSCO data base. As regard to the drug utilizing, the original Chinese herbal name was used as the key word for searching on the internet via Google into some popular websites such as health.chinatimes.com, zhong-yao, yibian.hopto.org, pharmnet.com, hudong. com, baike.baidu.com and Wikipedia-the free encyclopedia. At the last, the Latin dictionary- babylon. com was used for translating Latin into English.

Besides, the literatures documented in classics of Materia Medica or publications in academic circles were also referred to and some combinations and comparisons were also involved to complete this study.

Results

Top Grade Drugs in Shennongbencaojing were divided into 6 groups, (I) Plant, (II) Mineral, (III) Animal, (IV) Fish and Shellfish, (V) Insect and (VI) Other. Then the serial numbers, formal Chinese name and pinyin were arranged as title of the drugs. In addition to the title, scientific name, family name, common name, medicinal parts and corresponding pharmacological effects, or chemical composition were presented. Another official botanical or zoological names would be shown if they existed. Lastly for the plant group, the utilizing levels i.e. from most commonly used to almost not used were pointed out in the study.

I. Plants (105 drugs) (I) 昌 (菖) 蒲 *Changpu*

Acorus tatarinowii Schott (Araceae)² Its dried rhizome, Rhizoma Acori Tatarinowii², has anti-thrombosis, anti-depressant and anti-hypoxic effects. *A. tararinowii* Schott of this species was also recorded as another official botanical origin of *Changpu*. They are commonly used in TCM.

(II) 鞠華 (菊花) Juhua

Dendranthema morifolium (Ramat.) Tzvel. (Asteraceae),³ also known as chrysanthemum, mums or chrysanths. Its flower, Flos Dendranthemae Morifolii³, has anti-hypertensive, anti-bacterial and vasodilatation effects. It is commonly used in TCM.

(Ⅲ) 人參 Renshen

Panax ginseng C.A. Mey. (Araliaceae)⁴, also known as ginseng or nin-sin. Its root, Radix Ginseng,⁴ regulates central nervous system, improves learning

and memory, protects myocardial tissue, and has immunosuppressant and anti-bacterial effects. It is most commonly used in TCM.

(IV) 天門冬 Tianmendong

Asparagus cochinchinensis (Lour.) Merr. (Liliaceae)⁴ Its dried tuberous root, Radix Asparagi², has anti-asthmatic, anti-tussive, ant-bacteria, anti-tumor, and immunosuppressant effects. It is commonly used in TCM.

(V) 甘州 Gancao

Glycyrrhiza uralensis Fisch. (Fabaceae)⁴, also known as licorice root. Its root and rhizome, Radix seu Rhizoma Glycyrrhizae Uralensis³, have adrenocortical hormone-like effects and have multiple pharmacological effects on the digestive system, the immune system and cardiovascular system. *G. glabra* L. or *G. inflata* Bat. of this species was also recorded as another official botanical origin of *Gancao*. They are most commonly used in TCM.

(VI) 乾地黃 Gandihuang

Rehmannia glutinosa (Gaertn.) Libosch. ex Fisch. et Mey. (Scrophulariaceae)⁴ Its dried tuberous root, Radix Rehmanniae Exsiccata,³ stimulates the growth of bone marrow, inhibits platelet aggregation, and promotes the increase of erythrocytes and hemoglobin. It is most commonly used in TCM.

(M)(白) 朮 Zhu

Atractylodes macrocephala Koidz. (Asteraceae)⁴ Its dried rhizome, Rhizoma Atractylodis Macrocephalae,³ has diuretic, anti-tumor, anti-inflammatory, anti-hemagglutination, anti-spasmodic effects, and regulates the gastrointestinal system. It is commonly used in TCM.

(19) 兔 (菟) 絲子 Tusizi

Cuscuta chinensis Lam. (Convolvulaceae),² also known as Chinese Dodder. Its dried ripe seed, Semen Cuscutae Chinensis,² has immunoregulatory, hepatoprotective, and anti-aging effects. *C. australis* R. Br. or *C. japonica* Choisy of this species was also recorded as another official botanical origin of *Tusizi*. They are commonly used in TCM.

(IX) 牛膝 Niuxi

Achyranthes bidentata Bl. (Amaranthaceae),² also known as Ox Knee. Its dried root, Radix Achyranthis,² has analgesic, anti-inflammatory, immunostimulatory, and memory-improving effects. *A. bidentata* Blume or *Cyathula officinalis* Kuan of this family was also recorded as another official botanical origin of *Niuxi*. They are commonly used in TCM.

(X) 充 (茺) 蔚子 Chongweizi

Leonuri japonicus Houtt. (Laminaceae),² also known as Chinese motherwort. Its fruit, Fructus Leonuri,² has lowering blood pressure and CNS paralysis effects. *L. sibiricus* L. of this species was also recorded as another official botanical origin of *Chongweizi*. They are commonly used in TCM.

(XI) 女萎 Nuwei

Clematis apiifolia DC. (Ranunculaceae), Herba Clematidis Apiifoliae³ The whole plant has antimicrobial effect, and dispels wind and dampness, regulates qi movement, increases urine excretion, and aids digestion in folk. It is seldom used in TCM.

(XII)防葵 Fangkui

Heracleum moellendorffii Hance (Apiaceae)⁵ Its dried root, Radix Heraclei Moellendorffii, dispels wind, dissipates cold, relieves pain and headache, and cures common cold in folk. It is seldom used in TCM.

(III) 茈 (柴) 胡 Chaihu

Bupleurum chinense DC. (Apiaceae)⁴ Its dried root, Radix Bupleuri Chinensis,⁴ has anti-pyretic, anti-inflammatory, sedative, analgesic, anti-tussive, anti-viral, hepatoprotective, and choleretic effects. *B. scorzonerifolium* Willd. of this species was also recorded as another official botanical origin of *Chaihu*. They are commonly used in TCM.

(III) 麥門冬 Maimendong

Ophiopogon japonicus (L. f.) Ker Gawl. (Liliaceae)⁴, also known as Mondo grass, Fountain plant, monkey grass. Its dried tuberous root, Radix Ophiopogonis Japonici,³ has anti-arrhythmic, anti-myocardial-ischemic, cardiac function improving, immunityboosting, anti-inflammatory, anti-mutagenetic, antihyperglycemic, and age-delaying effects. *O. bodinieri* Levl. of this species was also recorded as another official botanical origin of *Maimendong*. They are commonly used in TCM.

(XV) 獨活 Duhuo

Angelica biserrata (Shan et Yuan) Yuan et Shan (Apiaceae)⁴ Its dried root, Radix Angelicae Biserratae,³ has analgesic, sedative, anti-inflammatory, anti-thrombotic and anti-arrhythmic effects. *A*. *Pubescens* Maxim. f. biserrata Shan et Yuan (doubleteeth pubescent angelica) or other of this species was also recorded as another official botanical origin of *Duhuo*. They are commonly used in TCM.

(M) 車前子 Cheqianzi

Plantago asiatica L. (Plantaginaceae),² also known as plantain seed. Its dries seed, Semen Plantginis Asiaticae,³ has expectorator and ant-tussive effects. *P. major* L. or *P. depressa* Willd. of this species was also recorded as another official botanical origin of *Cheqianzi*. They are commonly used in TCM.

(MM) 木香 Muxiang

Aucklandia lappa Decne (Asteraceae)⁴ Its dried root, Radix Aucklandiae,⁴ has stomachic, choleretic, anti-spasmodic, anti-hypertensive, and anti-bacterial effects. It is commonly used in TCM.

(III) 署預 Shuyu

Dioscorea opposita Thunb. (Dioscoreaceae),² also known as nagaimo, yamaimo, Chinese yam, Japanese mountain yam or Korean yam. Its dried rhizome, Rhizoma Dioscoreae Oppositae,³ has expectorant, desensitization, anti-hyperlipidemic, and antitumor effects. It is commonly used in TCM.

(III) 薏苡仁 Yiyiren

Coix lacryma-jobi L. var. *ma-yuen* (Roman) Stapf (Poaceae),² also known as Job's Tears, Coix seed, adlay, or adlai. Its dried ripe kernel, Semen Coicis,² has anti-tumor, anti-pyretic, anti-inflammatory, anti-hyperglycemic, and analgesic effects. It is commonly used in TCM.

(XX) 澤瀉 Zexie

Alisma orientalis (Sam.) Juzep. (Alismataceae)², also known as oriental water plantain. Its dried rhizome, Rhizoma Alismatis,² has protective effect against acute kidney injury, hepatoprotective, reduces blood cholesterol, and immunosuppressive effects. It is commonly used in TCM.

(XII) 遠志 Yuanzhi

Polygala tenuifolia Willd. (Polygalaceae)⁴ Its dried root, Radix Polygalae Tenuifoliae,³ has sedative, learning- and memory-improving, anti-tussive, expectorant, and hypotensive effects. It is commonly used in TCM.

(XII) 龍膽 Longdan

Gentiana scabra Bunge (Gentianaceae),² also known as Gentiana, Japanese gentian. Its dried root and rhizome, Radix seu Rhizoma Gentianae,² have hepatoprotective and choleretic effects. *G. manshurica* Kitag., *G. triflora* Pall. or *G. rigescens* Franch. ex Hemsl. of this species was also recorded as another official botanical origin of *Longdan*. They are commonly used in TCM.

(XIII) 細辛 Xixin

Asarum heterotropides Fr. Schmidt var. mandshuricum (Maxim.) Kitag. (Aristolochiaceae)² The whole plant, Herba Asari Heterotropidis,³ has anti-convulsant, anti-pyretic, anti-inflammatory, antibacterial, immunosuppressant, local anesthetic, and smooth muscle relaxant effects. *A. sieboldii* Miq. or *A. sieboldii* Miq. f. *seoulense* (Nakai) C.Y. Cheng et C. S. Yang of this species was also recorded as another official botanical origin of *Xixin*. They are commonly used in TCM.

(XIII) 石斛 Shihu

Dendrobium nobile Lindl. (Orchidaceae)⁴, also known as Noble Dendrobium. Its stem and leaf, Herba Dendrobii Nobilis,³ has immunostimulatory, antitumor effects, and can bi-directionally regulate the digestive system. It is most commonly used in TCM.

(XIV) 巴戟天 Bajitian

Morinda officinalis How (Rubiaceae)⁴, also known as Indian Mulberry. Its dried root, Radix Morindae Officinalis,³ has anti-depressant, immuno-stimulatory, organic function improving effects, and can promote bone development. It is commonly used in TCM.

(IIII) 白英 Baying

Solanum lyratum Thunb. (Solanaceae)² The whole plant, Herba Solani Lyrati,³ clears heat, resolves toxicity, eliminates dampness, and reduces swelling in folk. It is seldom used in TCM.

(XMI) 白蒿 Bahao

Artemisia sieversiana Ehrhart ex Willd. (Compositae)³ The whole plant, Herba Artemisiae Sieversianae,³ has anti-inflammatory and thelmintic, and activity hypothalamic pituitary adrenocortical system effects. It is seldom used in TCM.

(IIII) 赤箭 Chijian (天麻 Tianma)

Gastrodia elata Bl. (Orchidaceae)⁴ Its rhizome, Rhizoma Gastrodiae,² improves memory, and has immunostimulatory, anti-convulsive, sedative, antianxiety, and hypnosis effects. It is commonly used in TCM.

(IIII) 奄閭子 Yanluzi

Artemisia keiskeana Miq. (Compositae)³ Its seed, Semen Artemisiae Keiskeanae,³ activates blood and resolves stasis; dispels wind and dampness in folk. It is almost not used in TCM.

(IIII) 析蓂子 Ximingzi

Thlaspi arvense L. (Brassicaceae),² also known as Field Penny-cress, French weed, fan weed, penny grass, stinkweed, mithridate mustard. Its seed, Semen Thlaspi,³ can brighten eye vision; dispel wind and dampness in folk. It is almost not used in TCM.

(xxx) 著實 Shishi

Achillea alpina L. (Asteraceae),² also known as Chinese yarrow. Its fruit, Fructus Achilleae Alpinae,³ can boost qi and brighten eye vision in folk. It is almost not used in TCM.

(IIII) 赤芝 Chizhi

Ganoderma lucidum (Leyss. ex Fr.) Karst. (Ganodermataceae)², also known as Lingzhi mushroom, reishi mushroom. Its dried fruit, Ganodermae Lucidi,³ has sedative, analgesic, anti-tussive, expectorant, anti-asthmatic, immunomodulatory, and antitumor effects. It is commonly used in TCM.

(XXIII) 卷柏 Juanbo

Selaginella tamariscina (Beauv.) Spring (Selaginellaceae).² Its dried whole plant, Herba Selaginellae Tamariscinae,³ has hemostatic, anti-tumor, and anti-hyperglycemic effects. *S. pulvinata* (Hook. et Grev.) Maxim. of this species was also recorded as another official botanical origin of *Juanbo*. They are commonly used in TCM.

(XXX) 藍實 Lanshi

Polygonum tinctorium Ait. (Polygonaceae),² also known as Indingoplant. Its dried fruit, Fructus Polygoni Tinctorii,³ can clear heat, cool blood and detoxify in folk. It is seldom used in TCM.

(IIII) 芎藭 Xiongxiong

Ligusticum chuanxiong Hort. (Umbelliferae),⁴ also known as chuanxiong or Szechuan lovage. Its root, Rhizoma Chuanxiong,⁴ has anti-myocardial ischemic, anti-thrombotic, vasorelaxant, anti-tumor, sedative, and analgesic effects. It is most commonly used in TCM.

(XXXI) 蘼蕪 Miwu

The seedling of *Ligusticum chuanxiong* Hort. (Umbelliferae) ⁴ Its tender stems and leaves, Herba Chuanxiong, ³ dispel wind and dampness, and relieve headache in folk. It is seldom used in TCM.

(XXIII) 黃連 Huanglian

Coptic chinensis Franch. (Ranunculaceae)⁴, also known as Chinese goldthread. Its dried rhizome, Rhizoma Coptidis Chinensis,³ has anti-bacterial, anti-inflammatory, anti-hyperglycemic, and anti-tumor effects. *C. deltoidea* C.Y. Cheng et Hsiao or *C. teetoides* C.Y. Cheng of this species was also recorded as another official botanical origin of *Huanglian*. They are most commonly used in TCM.

(IIIII) 絡石(藤) Luoshi

Trachelospermum jasminoides (Lindl.) Lem.² (Apocynaceae), also known as Star Jasmine, Confederate Jasmine, or Trader's Compass. The dried lianoid stem with leaves, Caulis Trachelospermi,³ has analgesic, anti-oxidative, anti-inflammatory, and antigout effects. It is commonly used in TCM.

(XXXI) 蒺藜子 Jilizi

Tribulus terrestris L. (Zygophyllaceae),² also known as puncture vine, caltrop, cat's head, yellow vine, goathead, devil's thorn, devil's weed, devil's

eyelashes, burra gokharu or bindii. Its dried ripe fruit, Fructus Tribuli Terrestris,³ has anti-allergic, antitumor, hepatoprotective, anti-hyperglycemic, and myocardial ischemia-inhibiting effects. *T. cistoides* L. or *T. cistoides* L. of this species was also recorded as another official botanical origin of *Jilizi*. They are seldom used in TCM.

(III) 黃耆 Huangqi

Astragalus membranaceus Bunge var. *mongholicus* (Bunge) P. K. Hsiao (Fabaceae)⁴. Its dried root, Radix Astragali Mongholici,³ has anti-virus, immunityboosting, anti-tumor, hematopoietic, and cardio- and cerebra-protective effects. *A. membranaceus* (Fisch.) Bunge of this species was also recorded as another official botanical origin of *Huangqi*. They are commonly used in TCM.

(III) 肉鬆容 (肉蓯蓉) Roucongrong

Cistanche deserticola Y. C. Ma (Orobanchaceae),² also known as Desertliving or Desertliving Cistanche. Its dried fleshy stem, which is covered by scale leaves, Herba Cistanches Deserticolae,³ has neuroendocrine system regulating, immunomodulatory, analgesic, anti-aging, and anti-inflammatory effects. It is commonly used in TCM.

(XIII) 防風 Fangfeng

Saposhnikovia divaricata (Turez.) Schischk. (Apiaceae)⁴ Its dried root, Radix Saposhnikoviae,⁴ has anti-allergic, anti-inflammatory, anti-pyretic, analgesic, anti- convulsionary, immunity-boosting, anti-thrombotic, and anti-bacterial effects. It is commonly used in TCM.

(IIII) 蒲黃 Puhuang

Typha angustifolia L. (Typhaceae)² also known as lesser bullrush, narrow-leaf cattail, narrow-leaved reed mace, soft flag. Its dried pollen,² Pollen Typhae Angustifoliae,³ increases coronary blood flow, lowers blood lipids, acts against thrombosis, and promotes resolution blood coagulation. *T. latifolia* L., *T. orientalis* Presl or *T. angustata* Bory et Chaub of this species was also recorded as another official botanical origin of *Puhuang*.² It is seldom used in TCM.

(IIII) 香蒲 Xiangpu

Typha angustifolia L. $(Typhaceae)^2$ has the same official botanical origin of *Puhuang* (No. XIII). Its stem and leaf, Herba Typhae Angustifoliae,³ can delete pathogen, strengthen teeth and improve vision in folk. It is seldom used in TCM.

(XLV) 續斷 Xuduan

Dipsacus aperoides C. Y. Cheng et T. M. Ai (Dipsacaceae),³ also known as asper-like teasel. Its dried root, Radix Dipsaci Asperoidis,³ has hemostatic, analgesic and deletes pus effects, and improves tissue regeneration. *D. atropureus* C. Y. Cheng et T. T. Yin of this species was also recorded as another official botanical origin of *Xuduan*. They are commonly used in TCM.

(XIVI) 漏蘆 Loulu

Stemmacantha uniflorum (L.) Dittrich (Asteraceae)³ Its root, Radix Stemmacanthae Uniflori,³ has hypolipidemic, anti-arteriosclerotic and anti-aging effects. *Echinops latifolius* Tausch of this family was also recorded as another official botanical origin of *Loulu*. They are commonly used in TCM.

(IIII) 營實 Yingshi

Rosa multiflora Thunb. (Rosaceae)³ also known as Multiflora, Multiflora Rose, Baby Rose, Rambler Rose, Japanese Rose, Baby Rose. Its dried fruit, Fructus Rosae Multiflorae,³ has purgative and diuretic effects. It is seldom used in TCM.

(IIII) 天名精 Tianmingjing

Carpesium abrotanoides L. (Asteraceae).² The whole plant, Herba Carpesii Abrotanoidis,³ has antibacterial effect. It is seldom used in TCM.

(III) 決明子 Juemingzi

Cassia obtusifolia L. (Fabaceae),² also known as Chinese Senna or Sicklepod. Its dried ripe seed, Semen Cassiae Obtusifoliae,³ has hypotensive, blood lipid regulating, hepatoprotective, and immunomodulatory effects. *C. tora* L. of this species was also recorded as another official botanical origin of *Juemingzi*. They are commonly used in TCM.

(L) 丹參 Dansen

Salvia miltiorrhiza Bunge (Lamaceae)⁴. Its dried root, Radix Salviae Miltiorrhizae,⁴ improves microcirculation, protects tissues, inhibits platelet aggregation, and has anti-oxidative effects. S. przewalskii Maxim of this species was also recorded as another official botanical origin of Dansen. They are commonly used in TCM.

(LI) 茜根 Qiangen

Rubia cordifolia L. (Rubiaceae)⁴. Its dried root, Radix Rubiae Cordifoliae,³ has hemostatic, antitumor, anti-bacterial, anti-viral, anti-oxidative, and anti-aging effects. It is commonly used in TCM.

(LII) 飛廉 Feilian

Carduus crispus L. (Asteraceae),³ also known as welted thistle. The whole plant, Herba Cardui Crispi,³ has anti-cancer properties. *C. acanthoides* L. of this species was also recorded as another official botanical origin of *Feilian*. They are seldom used in TCM.

(III) 五味子 Wuweizi

Schisandra chinensis (Turcz.) Baill. (Magnoliaceae)⁴. Its dried ripe fruit, Fructus Schisandrae Chinensis,³ has hepatoprotective, anti-oxidant, sedative, and adaptogenic effects. *S. sphenanthera* Rehd. et Wils. of this species was also recorded as another official botanical origin of *Wuweizi*. They are most commonly used in TCM.

(LIV) 旋華 (花) Xuanhua

Calystegia sepium (L.) R. Br. (Convolvulaceae),³ also known as Larger Bindweed, Hedge Bindweed, or Rutland beauty. Its flower, Flos Calystegiae Sepii,³ has vasodilatation, anti-bacterial, anti-fungi and anti-pyretic effects. It is almost not used in TCM.

(LV) 蘭艸 (草) Lancao

Eupatorium fortunei Turcz. (Asteraceae),² also known as *peilan* ($\mbox{m${\rm \vec{m}}$}$).³ Its dried aerial part, Herba Eupatorii Fortunei,³ has expectorant, sedative, and anti-inflammatory effect, and regulates the gastrointestinal motility. It is almost not used in TCM.

(LVI) 蛇床子 Shechuangzi

Cnidium monnieri (L.) Cuss. (Apiaceae),² also known as Common Cnidium. Its dried ripe fruit, Fructus Cnidii,² has anti-viral, anti-trichomoniasis, anti-aging, anti-histaminic, anti-fungal, anti-allergic and anti-tumor effects. It is commonly used in TCM.

(IVII) 地膚子 Difuzi

Kochia scoparia (L.) Schrad. (Chenopodiaceae)⁴, also known as burningbush, ragweed, summer cypress, fireball, and Mexican fireweed. Its dried ripe fruit, Fructus Kochiae Scopariae,³ has anti-microbial, anti-inflammatory and anti-hyperglycemic effects, and counteracts the damage to gastric mucosa. It is commonly used in TCM.

(IVIII) 景天 Jingtian

Hylotelephium erythrostictum (Miq.) H. Ohba (Crassulaceae).³ The whole plant, Herba Hylotelephii Erythrosticti,³ is a common domestic remedy in eruptions as well as an application to burns. It is seldom used in TCM

(LIX) 因(茵)陳 Yinchen

Artemisia scoparia Wald. et Kit. (Asteraceae),⁴ also known as Redstem Wormwood. Its dried aerial part, Herba Artemisiae Scopariae,⁴ has choleretic, hepatoprotective, anti-inflammatory, analgesic, diuretic, and anti-hypertensive effects. *A. capillaris* Thunb. of this species was also recorded as another official botanical origin of *Yinchen*. They are commonly used in TCM.

(LX) 杜若 Duruo

The official botanical origin of *Duruo* has not been defined yet. Its functions are similar to the plant *Alpinia officinarum* Hance (高良畫) or *A. galangal* (L.) Willd. (紅豆寇) of family Zingiberaceae. It is commonly used in TCM.

(LXI) 沙參 Shashen

Adenophora stricta Miq. (Campanulaceae).² Its dried root, Radix Adenophorae Strictae,² has immu-

noregulatory, anti-radiation, and anti-tumor effects, and improves learning and memory. *A. hunanensis* Nannf., *A. tetraphylla* (Thunb.) Fisch., *A. khasiana* (Hook. F. et Thoms.) Coll. Et Hemsl. or *A. potaninii* Korsh.³ of this species was also recorded as another official botanical origin of *Shasheni*. They are commonly used in TCM.

(IXII) 白兔藿 Baituhuo

The official botanical origin of *Baituhuo* has not been defined yet.

(LXIII) 徐長卿 Xuzhangqing

Cynanchum paniculatum (Bunge) Kitag. (Asclepiadaceae),³ also known as Paniculate Swallowworf Root. Its dried root, rhizome or whole herb, Radix seu Herba Cynanchi Paniculati, ³ has anti-inflammatory, analgesic, diuretic, sedation, anti-tumor, immunostimulatory, and hepatoprotective effects. It is seldom used in TCM.

(LXIV) 石龍芻 Shilongchu

Juncus setchuensis Buchen. (Juncaceae).³ The whole plant, Herba Junci Setchuensis,³ has tranquilizing, haemostatic, water-draining, stranguryrelieving, heat discharging, and blood-cooling effects in folk. It is almost not used in TCM.

(LXV) 薇銜 Weixian

Its official botanical origin has not been defined yet.

(IIII) 雲實 Yunshi

Caesalpinia decapetala (Roth) Alston (Fabaceae),³ also known as Mauritius, Mysore thorn or the cat's claw. Its seed, Semen Caesalpiniae Decapetalae,³ can detoxify, eliminate dampness, suppress cough and kill worms in folk. It is almost not used in TCM.

(IIII) 王不留行 Wangbuliuxing

Vaccaria segetalis (Neck.) Garcke (Caryophyllaceae)⁴. Its dried ripe seed, Semen Vaccariae,⁴ improves blood microcirculation and reduces blood stagnancy and aggregation. It is commonly used in TCM.

(INIII) 升麻 Shengma

Cimicifuga foetida L. (Ranunculaceae),² also known as fetid bugbane. Its dried rhizome, Rhizoma Cimicifugae Foetidae,³ has anti-bacterial, analgesia and anti-inflammatory effects. It is commonly used in TCM.

(IIII) 青蘘 Qingxiang

Sesamum indicum L. (Pedaliaceae),² also known as sesame or benne. Its seedling can treat windcold-dampness and boost qi in folk. But the seedling and its dried leaves are seldom used in TCM at the present.

(IXX) 姑活 Guhuo, IXXI 別羈 Bieji, IXXI 屈艸 Qucao, IXXII 淮木 Huaimu

The official botanical origin of the above 4, *Guhuo*, *Bieji*, *Qucao*, and *Huaimu* could not be defined as they were withdrawn from Jingshizhengleibeijibencao by Tang Shenwei, 1082 A.D.

(LXXIV) 牡桂 Mugui

Cinnamomum cassia Presl (Lauraceae),² also known as *Rougui* (肉桂), cassia or Chinese cinnamon. Its dried bark, Cortex Cinnamomi,² has anti-bacterial, anti-tumor, anti-oxidant, and myocardial tissues protective effects. *C. cassia* Presl var. *macrophyllum* Chu of this species was also recorded as another official botanical origin of *Rougui*.³ They are most commonly used in TCM.

(IXX) 菌桂 Jungui

The Jungui and Mugui (the drug above) were first recorded as the same medicine as Rougui by Chen Cangqi (陳藏器) in Tang Dynasty. Therefore they have the same official botanical origin with Rougui.

(IIII) 松脂 Songzhi

Pinus massoniana Lamb. (Pinaceae),² also known as Masson's Pine, Chinese Red Pine, Horsetail Pine. Its rosin, Nodi Pini Lignum, has anti-bacterial and insect repellent effects. *P. tabulaeformis* Carr., *P. densiflora* Sieb. et Zucc. or *P. thunbergii* Parl. of this species was also recorded as another official botanical origin of *Songzhi*.³ They are commonly used in TCM.

(LXXVII) 槐實 Huaishi

Sophora japonica L. (Fabaceae),² also known as Pagoda Tree, Japanese pagoda tree, Chinese scholar tree, Sophora sinensis. Its dried ripe fruit, Fructus Sophorae,³ has hemosyatic, anti-hypertensive, antiinflammatory, anti-oxidative, and anti-tumor effects. It is commonly used in TCM.

(IXXVIII) 枸杞 Gouqi

Lycium chinense Mill. (Solanaceae)⁴ Its rootbark, Cortex Lycii Chinensis,³ has the functions of reducing fever, relieving pain, lowering blood pressure and blood sugar, regulating blood lipid and acting against pathogenic microbes. It is commonly used in TCM.

(IXXX) 柏實 (柏子仁) Boshi

Platycladus orientalis (L.) Franco (Cupressaceae),² also known as Oriental arborvitae, Thuja orientalis. Its dried ripe kernel, Semen Platycladi,³ has hyponotic, hemostatic, sedative, anti-oxidative, antiinflammatory and learning- and memory-improving effects. It is commonly used in TCM.

(IXXX) 茯苓 Fuling

Poria cocos (Schw.) Wolf (Polyporaceae)⁴ Its dried sclerotium, Poria,⁴ has diuretic, anti-bacterial, anti-inflammatory, anti-tumor, and diuretic effects. It is commonly used in TCM.

(IIII) 榆 (白) 皮 Yupi

Ulmus pumila L. (Ulmaceae),³ also known as Asiatic Elm, Dwarf Elm or Chinese Elm. Its stemor root-bark, Cortex Ulmi Pumilae,³ increases urine excretion, relieves strangury, induces detumescence, and removes toxicity in folk. It is commonly used in TCM.

(IIIII)酸棗 (仁) Suanzao

Ziziphus jujuba Mill. var. *spinosa* (Bunge) (Rhamnaceae)⁴, also known as Jujube, Red date, or Chinese date. Its dried ripe seed, Semen Ziziphi Spinosae,⁴ has sedative, hypnotic, anti-ulcer, and anti-tumor effects. It is commonly used in TCM.

(IIIII) 檗 (柏;栢) 木 Bomu

Phellodendron amurense Rupr. (Rutaceae),⁴ also known as Amur cork tree. Its dried bark, Cortex Phellodendri Amurensis,³ has anti-bacterial, antifungi, anti-inflammatory, anti-oxidative, and antitumor effects. *P. chinense* Schneid. of this species was also recorded as another official botanical origin of *Bomu*. They are commonly used in TCM.

(XXXII) 乾漆 Ganqi

Toxicodendron vernicifluum (Stokes) F. A. Barkl. (Anacardiaceae),³ also known as Lacquer Tree, Varnish Tree, Japanese lacquer Tree, Japanese Varnish Tree and Japanese Sumac. Its dried resin, Resina Toxicodendri,³ has antioxidative, aldose reductase, and advanced glycation endproducts inhibitory effects. It is seldom used in TCM.

(IXXV) 五加皮 Wujiapi

Acanthopanax gracilistylus W. W. Smith. (Araliaceae)² Its dried root bark, Cortex Acanthopanacis Gracilistyli,³ has anti-fatigue, anti-inflammatory, analgesic, immunoregulatory and anti-neoplastic effects. *A. sessiliflorus* (Rupr. et Maxim.) Seem. of this species was also recorded as another official botanical origin of *Wujiapi*. They are most commonly used in TCM.

(IIIII) 蔓荊實 (子) Manjingshi

Vitex trifolia L. var. *simplicifolia* Cham. (Verbenaceae),² also known as shrub chastetree. Its dried ripe fruit, Fructus Viticis Simplicifoliae,³ has anti-pyretic, analgesic, anti-inflammatory, expectorant, anti-asthmatic, anti-hypertensive, anti-microbial, and anti-tumor effects. *V. trifolia* L. of this species was also recorded as another official botanical origin of *Manjingshi*. They are commonly used in TCM.

(XXXII) 辛夷 Xinyi

Magnolia biondii Pamp. (Magnoliaceae)⁴, also known as magnolia flower. Its dried flower, Flos

Magnoliae Biondii,³ has anti-allergic, anti-hypertensive, anti-bacterial, analgesic and anesthetic effects. *M. denudate* Desr. or *M. sprengeri* Pamp. of this species is also recorded as another official botanical origin of *Xinyi*. They are commonly used in TCM.

(IIIII) 桑 (上) 寄生 Sangshangjisheng

Taxillus chinensis (DC.) Danser (Loranthaceae)⁴, also known as Chinese taxillus. Its dried branch with leaf, Herba Taxilli Chinensis,³ dilates the coronary artery, lowers the blood pressure, and has diuretic and anti-tumor effects. *T. sutchuenensis* (Lecomte) Danser, *Scurrula parasitica* L. or *T. nigrans* (Hance) Danser is also recorded as another official botanical origin of *Sangshangjisheng*. They are commonly used in TCM.

(LXXXX) 杜仲 Duzhong

Eucommia ulmoides Oliv. (Eucommiaceae)⁴, also known as eucommia. Its dried bark, Cortex Eucommiae,⁴ regulates the bone metabolism, and has anti-aging, anti-hypertensive, sedative, and immunodulatory effects. It is most commonly used in TCM.

(XC) 女貞實 Nuzhenshi

Ligustrum lucidum Ait. (Oleiaceae)⁴, also known as Glossy Privet, Chinese Privet or Broad-leaf Privet. Its dried fruit, Fructus Ligustri Lucidi,⁴ has immunostimulatory anti-aging, anti-oxidative, anti-tumor, and hepatoprotective effects. It is commonly used in TCM.

(XCI) 木蘭 Mulan

It may be the plant *Magnolia biondii* Pamp. (Magnoliaceae).³ Its flowers and cortex were used as Flos Magnoliae Biondii and Cortex Magnoliae Officinalis respectively in TCM.

(XIII) 蕤核 (仁) Ruihe

Prinsepia uniflora Batal. (Rosaceae)³ Its dried nut, Nux Prinsepiae Uniflorae,³ disperses wind and discharges heat, emolliates the liver, improves vision, calms the mind and relieves mental tension in folk. It is commonly used in TCM.

(IIII) 橘柚 Juyou

Citrus reticulate Blanco (Rutaceae)⁴, also known as Mandarin orange, mandarin or mandarine. Its dried ripe pericarp, Pericarpium Citri Reticulatae,⁴ has anti-asthmatic, anti-tussive, expectorant, anti-oxidant and anti-microbial effects. It is commonly used in TCM.

(XIII) 藕實莖 Oushijing

Nelumbo nucifera Gaertn. (Nymphaeaceae)⁴, also known as Indian Lotus, Sacred Lotus, Bean of India, or Lotus. Its dried ripe seed, Semen Nelumbinis,⁴ has anti-aging, hepatoprotective, and antimutation effects. Its dried receptacle, Receptaculum Nelumbinis,³ has blood pressure lowering and antiarrhythmic effects. Its rhizome, Rhizoma Nelumbinis Nuciferae,³ has anti-pyretic, anti-inflammatory, and anti-diarrheal effects. It is commonly used in TCM.

(XII) 大棗 Dazao

Ziziphus jujuba Mill. (Rhamnaceae),⁴ also known as jujube, jujuba, red date, or Chinese date. Its dried ripe fruit, Fructus Ziziphi Jujubae,³ has immunity-boosting, hematopoietic function improving, hepatoprotective, anti-aging, and anti-tumor effects. It is commonly used in TCM.

(XXII) 葡萄 Putao

Vitis vinifera L. (Vitaceae),² also known as Grape Vine. Its ripe fruit, Fructus Vitis Viniferae,³ has anti-oxidative effect and shows potential benefits against cancer, platelet aggregation and other risk factors of atherosclerosis. It is an edible fruit.

(XXII) 蓬藟 Penglei

Rubus tephrodes Hance (Rosaceae)³ Its fruit can tonify kidney, secure essence and reduce urination in folk. It is seldom used in TCM.

(IIIII) 雞頭實 Jitoushi (芡實 qianshi)

Euryale ferox Salisb. (Nymphaeaceae)⁴, also known as fox nut, foxnut, makhana, or gorgon plant. Its kernel of the ripe seed, Semen Euryales,⁴ has cardioprotective immunostimulatory, and anti-oxidant effects. It is commonly used in TCM.

(XCIX) 胡麻 (芝麻) Huma

Sesamum indicum L. (Pedaliaceae),² also known as Sesame. Its dried ripe seed, Semen Sesami,³ has anti-inflammatory, anti-hyperlipidemic, antihypertensive, anti-oxidant and anti-tumor effects. It is edible and commonly used in TCM

(C) 麻蕡 Mafen

Cannabis sativa L. (Moraceae),² also known as cannabis or hemp. Its young tender fruit was documented in the ancient medicinal book. Its dried ripe fruit, Fructus Cannabis,³ has sedative, analgesic, antispasmodic, anti-emetic, and anti-tumor effects, and is seldom used in TCM.

(CI) 冬葵子 Dongkuizi

Malva verticillata L. (Malvaceae)² Its fruit,

Fructus Malvae Verticillatae,³ promotes intestine movement, relaxes the bowels, increases urine excretion and relieves strangury in folk. *M. crispa* L. of this species was also recorded as another official botanical origin of *Dongkuizi*. They are seldom used in TCM.

(CII) 莧實 Xianshi

Amaranthus tricolors L. (Amaranthaceae).³ Its dried ripe seed, Semen Amaranthi,³ purges liver, improves vision, relaxes the bowel and urine in folk. It is seldom used in TCM[°]

(CIII) 瓜蒂 Guadi

Cucumis melo L. (Cucurbitaceae),² also known as Muskmelon, Cucumis melo. Its peduncle, Pedicellus Melo,³ has strong purgative activity, antitumor, hepatoprotective, and anti-inflammatory effects. It is seldom used in TCM.

(CIV) 瓜子 Guazi

Benincasa hispida (thumb.) Cogn. (Cucurbitaceae),² also known as winter melon, white gourd, ash gourd, fuzzy melon or Chinese date. Its dried ripe seed, Semen Benincasae,³ purges the lung and resolves phlegm, disperses abscesses and expels pus, and increases urine excretion in folk. It is seldom used in TCM.

(CV)苦(苣)菜Kucai

Sonchus oleraceus L. (Asteraceae),³ also known as Common sowthistle, Sow thistle, Smooth Sow Thistle, Annual Sow Thistle, Hare's Colwort, Hare's Thistle, Milky Tassel, Swinies. The whole plant, Herba Sonchi Oleracei, has anxiolytic, anti-oxidative, anti-nociceptive, and anti-inflammatory effects. It is seldom used in TCM.

II. Minerals (18 drugs)

Nowadays all the mineral drugs are seldom used due to higher risks to human health.

(I) 丹沙 (砂) Dansha

Cinnabar (Cinnabaris),³ also known as one of mercury, has disintoxicating and antiseptic function. One of its compositions is mercuric sulfide, HgS. It was listed in the forbidden drug.

(II) 雲母 Yunmu

Muscovite (Muscovitum),³ also known as Mica or white mica, has sedative, tranquilizative, and hemostatic, and ulcers promoting effects. One of its compositions is potassium aluminium silicate, $KAl_2(AlSi_3)O_{10}(OH)_2$.

(III) 玉泉 Yuquan

The jade *Yuquan* that exists in two forms: one is *Nephrite* and another is *Lapis Sapo. Nephrite* (Nephritum), also called kidney stone, is a form of jade consisting of calcium magnesium silicate, $Ca_2Mg_5Si_8O_{22}(OH)_2$. *Lapis Sapo*, also known as asbestos or amiantus, is a form of jade of silicate minerals, $Mg_6(SiO_{10})(OH)_8$. They have sedative effect, and can improve vision, moisten lung, clean stomach, remove vexation, and treat wasting-thirst in folk.

(IV) 石鍾 (鐘) 乳 Shizhongru

Stalactite,³ a cylinder hanging from the roof of a limestone, can dispel phlegm, suppress cough and calm panting in folk. It is the deposition of calcium carbonate CaCO₃ and other minerals.

(V) 涅石 Nieshi

Alunite (Alumen),³ a white, grey, or reddish

mineral, can dispel phlegm, dry dampness, detoxify and kill worms, check diarrhea and arrest bleeding in folk. One of its compositions is hydrated aluminium sulphate KAl₃(SO₄)₂(OH)₆.

(VI) 硝石 Xiaoshi.

Nitrokalite (Sal Nitri),³ also known as saltpeter or India saltpeter, can treat hardness, accumulation, increases urine excretion, reduces accumulated fluid, detoxifies and disperses swelling in folk. One of its main components is potassium nitrate, KNO₃.

(W) 樸硝 Poxiao

Mirabilite (Natrii Sulfas)³ has anti-inflectional effect, and can promote defecation, soften hardness, discharge heat, detoxify, alleviate edema, and dissipate binds in folk. It is a widespread sulfate mineral, hydrated sodium sulfate, $Na_2SO_4 \cdot 10H_2O$.

(回) 滑石 Huashi

Talc (Talcum),³ also known as talcum powder, can adsorb chemical or poison and has protective skin and mucous membrane effects. One of its compositions is hydrous magnesium silicate, Mg_3 (Si₄O₁₀) (OH)₂.

(IX) 石膽 Shidan

Chalcanthite (Chalcanthitum),³ also known as blue vitriol, blue copperas, blue stone, can stimulate gastric mucosa and lead to vomit. It is a hydrated blue crystalline form of copper sulfate, $CuSO_4 \cdot 5H_2O$.

(X) 空青 Kongqing

Azurite (Azuritum),³ also known as ore of copper, can expellee or dissipate phlegm, improve vision, and detoxify toxic property of poison in folk.

One of its compositions is hydrous copper carbonate, $Cu_3 (CO_3)_2(OH)_2$.

(XI) 曾青 Zengqing

Zengqing is the same mineral of Azurite as Kongqing (No. X) but with layered shape. It has another medicinal name called Zengqing.

(XII) 禹餘糧 Yuyuliang

Limonite (Limonitum)³ can astringe the intestines and check diarrhea in folk. One of its compositions is hydrated ferric oxide, FeO(OH).

(III) 太一餘糧 Taiyiyuliang

Taiyiyuliang is the same medicine as *Yuyuliang* (No. 12). It was first recorded by Tao Hongjing (陶弘 景) on Bencaojingjizhu (502 A.D. – 536 A.D.).

(III) 白石英 Baishiying

Quartz (Quartz Album),³ also known as quartz glass, vitreous silica, lechatelierite or crystal, can tranquilize measures, increase urine excretion, and treat deficiency cold cough and pant in folk. One of its compositions is silicon dioxide, SiO₂.

(III) 紫石英 Zishiying

Fluorite (Fluoritum),³ also known as fluorspar or fluor, can stimulate central nerve system and increase secretion of ovary. It is a soft mineral, composited of calcium fluoride, CaF₂.

(XVI) 五色石脂 Wuseshizhi

Five color minerals, blue, red, yellow, white and black, which have soft, elastic and jellify property, are showed as follow,

1. 青石脂 Qingshizhi

Its official mineral origin has not been defined yet.

2. 赤石脂 Chishizhi

Halloysite (Halloysitum Rubrum),³ also known as red Kaolinite, can adsorb poisons, toxins and enzyme, and has protective alimentary canal effect. It is composed of refractory clay mineral similar in composition to kaolinite aggregated with iron oxide, Fe_2O_3 .

3. 黃石脂 Huangshizhi

Hydromica, also called hydrous mica, hydromuscovite or illite, can fortify the spleen, astringe the intestines, arrest bleeding, and constrain sore and ulcer in folk. It is less elastic than ordinary muscovite and is a micaceous phyllosilicate mineral with components of KAl(Si₄O₁₀)(OH)₈ · 4H₂O and Fe(OH)₃ · nH₂O.

4. 白石脂 Baishizhi

Kaolinite (Kaolinitum),³ also known as (white) Kaolinite, has adsorptive, ion exchange and astringent effects. It is a white or grey clay mineral consisting of hydrated aluminum silicate, Al₂Si₂O₅(OH)₄.

5. 黑石脂 Heishizhi

Its official mineral origin has not been defined yet.

(XVII) 白青 Baiqing

Baiqing is the same mineral of *Azurite* as *Kongqing* (No. X) but with light blue color. It has another medicinal name called *Baiqing*.

(XVIII) 扁青 Bianqing

Bianqing is the same mineral of *Azurite* as *Kongqing* (No. X) but with flat shape. It has another medicinal name called *Bianqing*.

III. Animals (9 drugs)

Nowadays some animal drugs are seldom used in TCM except *Os Draconis*, Colla Corii Asini, and cock due to wildlife conservation or animal rights.

(I) 龍骨 Longgu

*Os Draconis*³ is the fossil of the skeleton of ancient large mammals such as elephant, rhinoceros, hipparion, cattle or deer. It constitutes mineral of apatite, calcite and clay, and has sedative, tranquilizative and hemo-agglutinative effects. It is commonly used in TCM.

(II) 麝香 Shexiang

Moschus berezovskii Flerov (Moschidae),² also known as Dwarf Musk Deer or Chinese Forest Musk Deer. Its dried secretion of scrotum, Moschus,² improves blood pressure and respiratory system, and has hypertensive, anti-inflammatory, anti-antibiotic anti-tumor effects. *M. sifanicus* Przewalski or *M. moschiferus* L. of this species was also recorded as another official zoological origin of *Shexiang*. It is seldom used in TCM.

(Ⅲ) 牛黃 Niuhuang

Bos Taurus domesticus Gmelin (Bovidae)⁴, also known as cattle. Its calculus of gall bladder and bile duct, Calculus Bovis,⁴ has sedative, anti-convulsive, analgesic, and anti-inflammatory effects. It is seldom used in TCM.

(IV) 熊脂 Xiongzhi

Selenarctos thibetanus G. Cuvier (Ursidae),³ also known as the Asian black bear, Moon bear or White-chested bear. Its fatty oil, Adeps Selenarcti et Ursi,³ can treat skin ulcer and tinea, moisten skin and kill insect in folk. *Ursus arctos* Linnaeus (Ursidae), also known as brown bear, is also recorded as another official zoological origin of *Xiongzhi*. It is almost not used in TCM.

(V) 白膠 Baijiao

Cervus nippon Temminck (Cervidae),³ also known as the Sika Deer, Spotted Deer or the Japanese Deer. Its colloid extracted from its horn by long-hour cooking, Colla Cornus Cervi,³ has hematogenic, antiinflammatory, anti-edema and anti-allergic effects. *C. elaphus* Linnaeus of this species was also recorded as another official zoological origin of *Baijiao*. It is seldom used in TCM.

(VI) 阿膠 Ajiao

Equus asinus Linnaeus (Equidae),³ also known as donkey or ass, its colloid extracted from its leather by long-hour cooking, Colla Corii Asini,³ has hematopoietic effect, and improves microcirculation, lowers uterine arterial resistance, and recovers and stabilizes blood pressure. It is commonly used in TCM.

(m) 龜甲 Guijia

Chinemys reevesii Gray (Geoemydidae),² also known as Chinese Pond Turtle, Reeves' (or Reeves's) Turtle, Chinese Three-keeled Pond Turtle, Golden Turtle. Its shell, Carapax et Plastrum Testudinis,² can inhibit connective tissue growing, increases plasma albumin and has sedative effect. It is commonly used in TCM.

(m) 丹雄雞 Danxiongji

Gallus gallus domesticus Brisson (Phasianidae),³ also known as cock. It is edible.

(IX) 雁肪 Yanfang

Anser albifrons Scopoli (Anserinae),³ also known as white-fronted goose or greater whitefronted goose. Its fatty oil can treat wind spasm and contracture, hemiplegia, and qi stagnation in folk. *A. cygnoides* Linnaeus of this species is also recorded as another official zoological origin of *Yanfang*. It is almost not used in TCM.

IV. Fish and Shellfish (5 drugs)

(I) 牡蠣 Muli

Ostrea rivularis Gould (Ostreidae)⁴, also known as Oyster. Its shell, Concha Ostreae,⁴ can treat gastric or duodenal ulcer, and calcium deficiency. O. gigas Thunberg, O. talienwhanensis Grosse or O. denselamellosa Lischke of this species is also recorded as another official zoological origin of Muli. It is commonly used in TCM.

(II) 海蛤 Haige

Meretrix meretrix L. (Veneridae),² also known as sea clam. Its shell, Concha Meretricis,² contains calcium carbonate CaCO₃, can treat gastric or duodenal ulcer. *Cyclina sinensis* Gmelin of this family is also recorded as another official zoological origin of *Haige*. It is seldom used in TCM.

(Ⅲ) 文蛤 Wenge

It has the same official zoological origin and function of *Haige* (No. II) with another name called *Wenge*. It is seldom used in TCM.

(IV) 螽 (鱧) 魚 Liyu

Ophiocephalus argus Cantor (Channidae),³ also known as snakeheads fish. Its meat is an excellent protein source. It is an edible fish.

(V) 鯉魚膽 Liyudan

Cyprinus carpio L. (Cyprinidae),³ also known as common carp, its dried or fresh gallbladder contains bile, Grass carp gallbladder, has anti-bacterial, anti-allergic, anti-inflammatory and hypotensive effects. It is almost not used in TCM.

V. Insects (4 drugs) (1) 石蜜 Shimi

Apis cerana Fabr. (Apidae),³ also known as Asiatic honey bee or the Eastern honey bee. Its honey, Mel, has anti-bacterial, hypoglycemic, and detoxifies effects. *A. mellifera* L. of this species is also recorded as another official zoological origin of *Shimi*.³ It is edible.

(II) 蜂子 Fengzi

Apis cerana Fabr. (Apidae)³ Its larva, Larva Apis, is used as protein source. It has the same official zoological origin as medicine *Shimi* (No. I). It is edible.

(III) 蜜臘 (蠟) Mila

Apis cerana Fabr. (Apidae) Its yellow wax, Cera Flava, has anti-bacterial, antiseptic and lipid oxygen inhibitor effects. It has the same official zoological origin as medicine *Shimi* (No. I). It is seldom used in TCM.

(IV) 桑螵蛸 Sangpiaoshao

Paratenodera sinensis Sauaaure (Mantidae),³ also known as giant Asian mantis. Its egg case, Oötheca Mantidis, contains protein and fat. *Tenadera* aridifolia Stoll or *Hierodula patellifera* Saville of this family is also recorded as another official zoological origin of *Sangpiaoshao*. It is seldom used in TCM.

VI. Other (1 drug)

(I) 髮髲 Fapi

Homo sapiens sapiens (Hss)(Hominidae),³ also known as Humans, wise man or knowing man; the human hair carbides, Crinis Carbonisatus, constitute excellent protein and have hemostatic, anti-bacterial and diuretic effects. It is rarely used now.

Discussion

There are at least 7 different publications of Shennongbencaojing during Ching and Ming Dynasty⁶. One of these editions compiled by Sun Xingyan and Sun Fengyi is the most popular and considered almost faultless. Therefore we selected it for advanced textual research. In Shennongbencaojing 365 drugs were documented including 120 of Top Grade Drugs, 120 of medium grade drugs and 125 of low grade drugs which was gathered by Tao Hongjing $(502-536 \text{ A.D.})^7$. In our study, there were 142 Top Grade Drugs and not 120. The reason was that the parts of some plants i.e. root, leaf or seed... etc. have their unique effects. They were given different names by Sun Xingyan and Sun Fengyi therefore increased the total drugs number.⁸ The plants group with the sum total of 105 is the largest group in Top Grade Drugs. Statistics show that 11 of the plants are most commonly used, 58 are commonly used, 25 are seldom used and 11 are almost not used.

Fangkui's (防葵) official botanical origin is still not defined yet. It was ever misnamed to *Peucedanum japonicum* Thunb. (Apiaceae) by Japans scholar. This name was questioned by Chinese specialists. It has another scientific name defined as *Heracleum moellendorffii* Hance by Tao et al., 1997.⁵

Miwu (蘼蕪), the seedling with tender stem and

leaves of *Ligusticum chuanxiong* Hort. is seldom used in TCM. But its coarse root has another name called *Xiongxiong* (芎藭), is most commonly used in TCM.

Qingxiang (青囊) is the name of the seedling of *Sesamum indicum* L. Its dried leaf was never used in medicine. Tao Hongjing said that "As the seed was taken, people never used its seedling." Its seed is known as sesame, named *Huma* (胡麻) in Chinese, and is a common food ingredient. The seed and oil extracted from the seed were commonly used in TCM.

Gouqi (枸杞) the original name is Lycium chinense Mill. In TCM, its two parts are used. The root-bark is named Digupi (地骨皮). The fruit is called Gouqizi (枸杞子).

The official botanical origin of *Mulan* (木蘭) has not been defined. It may be the plant *Magnolia biondii* Pamp. (Magnoliaceae), also known as magnolia flower. Its dried bark like that of Cortex Magnoliae Officinalis is used and called *Houpo* (厚 朴). This suggests that it might have the same official botanical origin as medicine *Xiny* (辛夷).

The kernel peeled off from ripe fruit of *Cannabis sativa* L. used in TCM was named *Huomaren* (火麻仁). And its young tender fruit has another name called *Mafen* (麻蕡) in ancient text.

The official botanical origins of *Baituhuo* (白 兔藿), *Weixian* (薇銜), *Guhuo* (姑活), *Bieji* (別 羈), *Qucao* (屈艸) and *Huaimu* (淮木) could not be defined now for lacking enough medicinal material source or insubstantial medicinal purpose in the past dynasties. Therefore the latter 4 drugs were with-drawn from Jingshizhengleibeijibencao and listed in the type of *You-Ming-Wei-Yong* (有名未用), which means that the drug only has its name but never been used in medicine, by Tang Shenwei 1082 A.D.

Heavy metals are considered to be poisonous to many living organisms like humans⁹⁻¹¹. The limit of heavy metal quantity under 30 ppm in herbal remedies was issued by Committee on Chinese Medicine and Pharmacy, Department of Health, Executive Yuan in 2010. The strict value of arsenic, mercury and lead could not over 3 ppm in traditional Chinese medicine concentrate preparation¹². Cinnabaris as a homeopathic remedy was forbidden in August 2010 by Department of Health, Executive Yuan¹³. For human health, the mineral medicines, contain arsenic, mercury or lead in Shennongbencaojing, are rarely used as medicines now.

Yuyuliang (禹餘糧) and Taiyiyuliang (太一餘 糧) are identical minerals- Limonite, a mixture of goethite iron compound. This was earliest written by Tao Hongjing (502-536 A.D.)¹⁴.

Kongqing (空青), Zengqing (曾青), Baiqing (白青) and Bianqing (扁青) were grouped as one mineral, blue carbonate of copper, "Azurite" documented in the book Chinese Herbal Medicine (1999 A.D.)¹⁵. They were ever fitted in no toxin drugs by Li Shizhen¹⁶. It was known that copper toxicity refers to the consequences of an excess of copper in the body. The toxicity will occur when body can not precede metabolizing copper. His non-toxic theory was doubted by people. Nowadays the toxicant minerals were controlled by government.

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《神農本草經》上品藥拉丁名與藥效之本草考證

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本文擬進行《神農本草經》本草考證,首以「上品藥」,將其分為植物、礦石、動物、魚 貝、昆蟲及其他6大類。並依中文名稱、英文拼音、學名、拉丁藥名、藥效、基原考證、使用 情形等方式分別書寫。統計孫星衍、孫馮翼所輯上品藥收載有142種藥物,其中135種藥物基 原已確定,126種可藥用或食用。考證結果簡述如下:防葵基原曾被誤植。一物數名者:茺蔚 子與益母草;赤箭與天麻;蘼蕪與芎藭;青蘘與胡麻;營實是野薔薇的果實;枸杞的根皮為地 骨皮,果實為枸杞子;大麻幼嫩的果實為麻黃。有名未用者:姑活、別羈、屈艸、淮木。現可 藥用或食用者:菊華、人參、甘草、地黃、署預、薏苡仁、析蓂子、芎藭、黃者、決明子、五 味子、肉桂、枸杞子、茯苓、五加皮、酸棗仁、橘柚、藕實莖、大棗、葡萄、芡實、胡麻、瓜 子、苦菜、雞、鱧魚、蜂蜜等。使用外殼者:牡蠣、海蛤、文蛤;牛黃取膽結石;鯉魚用膽 汁;白膠、阿膠為鹿皮與驢皮;礦物類中丹沙已被禁用;發髮碳化物為罕用。

關鍵字:神農本草經、上品藥、學名、藥效、食用、本草考證

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