

AN ILLUSTRATED MICROSCOPIC IDENTIFICATION OF
PRECIOUS CHINESE CRUDE DRUGS

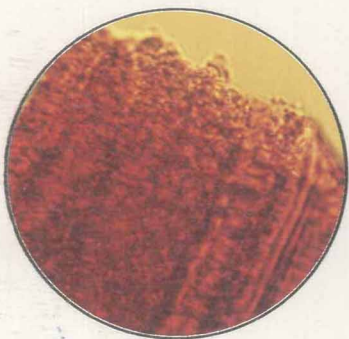
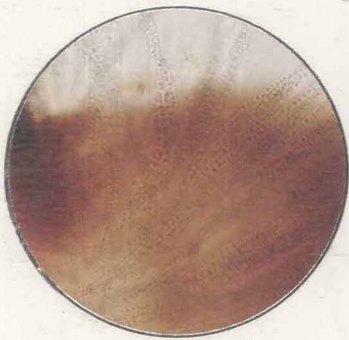
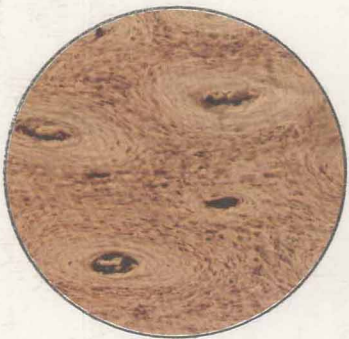
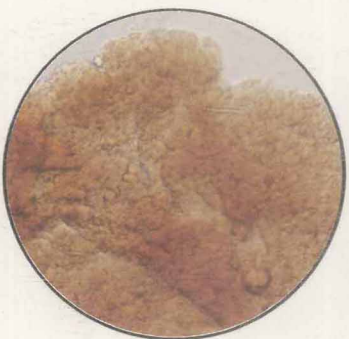
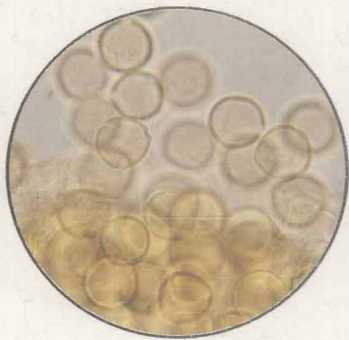
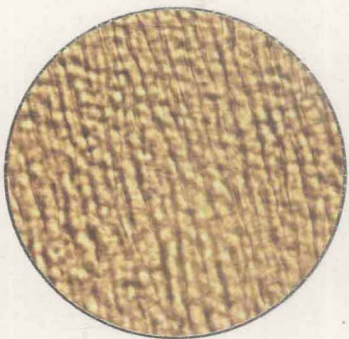
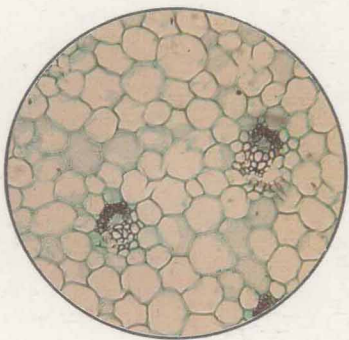
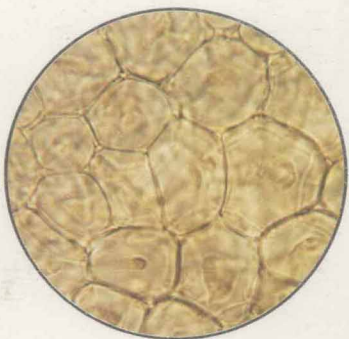
胡浩彬 著 Hu Haobin Editor in Chief

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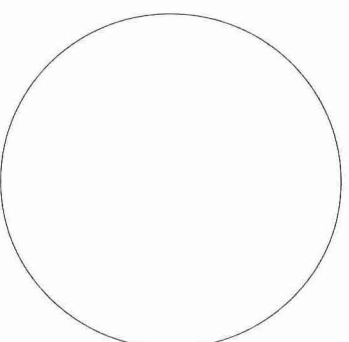
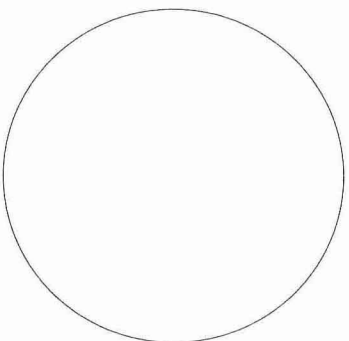
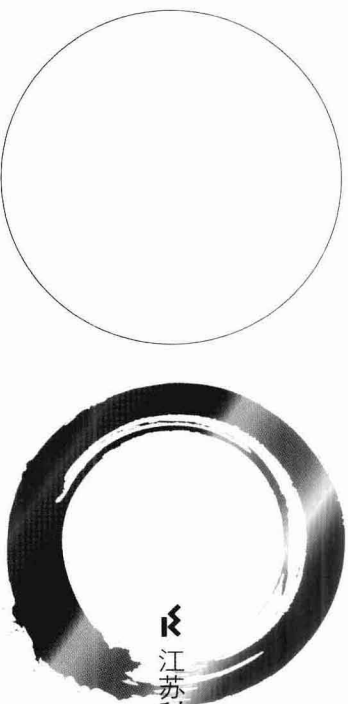
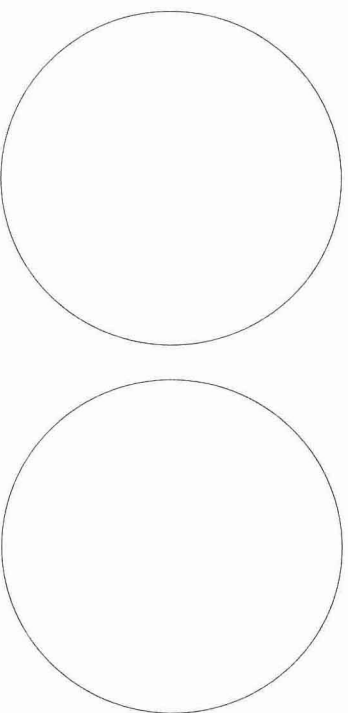
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作者简介

Editor in Chief



胡浩彬, 男, 江苏省食品药品检验所主任中药师, 南京中医药大学客座教授、硕导, 国家药监局培训中心授课专家。从事中药检验和科研工作近三十年, 起草和修订九十余种中药材和中成药质量标准, 尤其擅长对常用药材和贵重稀有药材的鉴定。先后在国家级专业杂志上发表论文三十余篇, 参加《中国药典 2010 年版》、《中国药典 2005 年版中药材显微图鉴》以及《江苏省中药饮片炮制规范》等标准的编写工作。并多次在全国中药鉴定培训班上讲学授课。

HU Hao Bin is currently the Director of the Division of Chinese Materia Medica (CMM), Jiangsu Institute for Food and Drug Control; the Visiting Professor of College of Pharmacy of Nanjing University of Chinese Medicine and the supervisor of master degree students. He graduated from Nanjing University of Chinese Medicine in 1985 and joined Jiangsu Institute for Food and Drug Control, Division of CMM to conduct quality assessment and research activities in relation to CMM thereafter. He engaged in drafting and revising over 90 types of quality standards of CMM and proprietary Chinese Medicines, and specifically on the authentication of commonly used as well as valuable and rare CMM. He has published over 30 papers in national type professional journals and he also participated in editing the standards of "Chinese Pharmacopoeia 2010 edition", "Chinese Pharmacopoeia 2005 edition - Microscopic assessment on CMM" and "Guidelines on processing of CMM for decoction, Jiangsu province". With his expertise and extensive experience, he also provided national and provincial training classes for the authentication of CMM.

序

中医药是我国的国粹之一，为中华民族的繁荣昌盛作出了巨大贡献。中药是中医防治疾病的主要物质基础，中药的质量好坏，直接影响到中医的疗效，尤其是名贵中药，不但价值昂贵，而且还与人民健康息息相关。

中药鉴定是中药标准化与国际化的基础。为了保证人民的身体健康，体现“以人为本”，国家十分重视中药材的质量及其研究。

对照《名贵中药显微图鉴》，根据显微镜下的微观特征，可对名贵中药进行快速、简便和准确的鉴别。

胡浩彬主任中药师长期从事中药鉴定工作，多年来潜心研究中药鉴别，具有扎实的理论功底和丰富的实践经验，在中药性状和显微鉴别方面颇有造诣，这部专著即是他多年来深入全国各地药材市场收集、整理、实验编著而成，所有图像均为实验研究的第一手资料，许多内容还是首次发表，因而该书也是一部反映名贵中药的最新科研成果专著。

本书中英双语对照，文字说明扼要，便于国际交流，对促进中医药发展具有重要意义。

本书对从事中药检验、教学、科研、生产、流通等方面的机构和人员均是一部很好的参考工具书。乐为之序。

中国工程院院士
中国医学科学院 肖培根教授
药用植物研究所名誉所长

二〇一〇年七月



FOREWORD

Chinese Medicine is one of the national heritage of ancient China wisdom and has contributed much to promote health and overall well-being for Chinese people. Chinese Materia Medica (CMM) is the basic substances for the prevention and treatment of diseases. There is a direct relationship with the application of good quality of CMM and treatment efficacy, especially, the valuable CMM which are high-priced commercial products aimed to promote people's health.

Authentication of CMM is essential for the standardization and internationalization of Chinese Medicines. In order to promote "people-based" policy and ensure good health of people, more focuses on enhancing the quality of CMM and its related research activities are being supported by the Chinese government.

"An Illustrated Microscopic Identification of Valuable Chinese Materia Medica" is a Chinese-English edition reference book that provides rapid, easy and specific method in accordance with the microscopic features for the authentication.

HU Hao Bin, the Director of the Division of CMM, has extensive work experiences on the authentication of CMM for the past years. He has solid academic background and practical experiences in the description and microscopic identification of CMM. With his efforts in visiting various major markets in China and collecting raw herbal materials, he compiled his first hand and novel experimental data into this book. Therefore, this is a professional reference book published with up-to-date research findings regarding to authentication of valuable CMM.

The contents are correspondingly referenced in English and Chinese. The descriptions are concise. It is for the ease of international communication, hoping to enhance the development of Chinese medicine.

This reference book is highly recommended for readers or professionals working in drug control of CMM, research institutes, education, manufacturing and trading sectors, etc.

Professor Xiao Peigen
Academician, Chinese Academy of Engineering
Honorary President of Chinese Academy of Medicinal Sciences, Institute of Medicinal Plant Development

July 2010



前言

中药的真伪鉴定，直接关系到临床疗效和人民生命安全、关系到实验研究的科学性和准确性，是中药标准化及国际化的前提，而中药显微鉴别则是中药鉴定重要的一环。尤其对名贵中药而言，由于其本身具有稀缺、昂贵或不可再生性，市场上混用品和伪品层出不穷，单凭外观性状往往很难鉴别。而显微鉴定具有快速、简便、直观、准确的特点，不但适用于完整中药材，同时也适用于粉末药材和部分中成药制品，在实践中得到广泛应用。这一检测方法被《中国药典》和一些发达国家如美国、欧洲一些国家和日本等的药典收载。在化学分析飞速发展的今天，显微鉴别仍然是一项不可忽视并有待发展的重要检测技术。

笔者长期从事中药鉴定工作，经常接触到医药界、考古界、收藏界及公安、海关等部门和行业送检的名贵药材，深感名贵药材鉴定资料尤其是显微鉴别资料的匮乏，因此有志出版一部准确可靠、图文并茂的名贵中药及混用品的显微鉴别书籍，提高并促进对名贵中药材真伪优劣的鉴别能力。

近年来，笔者足迹遍布全国各地药材市场，花费大量时间、精力和财力，收集研究各种名贵药材及混用品、伪品百余种，本书收录106种，药材外形照片106幅，应用先进的数码显微摄影技术采集大量显微特征图，从中精选出药材组织特征图64幅，粉末特征图800余幅，分门别类，汇集编著成此书。全书样品来源真实可靠、图像逼真清晰、显微特征典型齐全。这是迄今为止首部关于名贵中药材显微特征原创彩色图谱，又是一部名贵中药材显微鉴定科研成果的专著，弥补了现有名贵中药显微鉴定工作的不足，对准确鉴定名贵中药，提高中药质量，保障人民用药安全，必将产生深远的影响。

本专著以中英双语作详尽的图注说明，便于国际交流，同时对中药显微鉴定技术的标准化以及推动中药国际化起着重大作用。

该书除具备重要学术价值外，对从事药品检验、教学、科研、药材、饮片、中成药生产、供应、使用以及国际贸易、考古、收藏等方面的机构和有关人员、动植物研究者和中药学爱好者都是一部珍贵而实用的参考工具书。

全书承蒙中国药科大学学生药学家李萍教授主审，张勉博士英文翻译，谨此特别致谢。

享誉国内外的药用植物学资深专家、中国工程院院士、中国医学科学院药用植物研究所肖培根教授对本书的隆重出版十分关注，给予高度评价，并欣然为本书提笔作序，在此表示衷心的感谢。

由于笔者水平有限，而且很多品种显微鉴别图是首次收载，有些图片和文字说明可能有欠妥和失误之处，敬请广大读者批评指正，以使其日臻完善，更好地服务社会。

胡浩彬

2011年7月23日



PREFACE

Authentication of Chinese Materia Medica (CMM) is a crucial step to ensure efficacy of treatment, safety of patients and accuracy of scientific research; and it is also essential for the standardization and internationalization of Chinese Medicines. Of which, microscopic identification on CMM is one of the important steps in the authentication. Regarding to the valuable CMM, because of their shortage of supplies, high prices and non-renewability, there are many adulterants and fake products appeared in the market and it is very complicated to distinguish the genuine one with the adulterants using traditional methods focusing on description only. Microscopic identification is a rapid, easy, direct and specific method which has been extensively used in the assessment of raw herbal materials, powder form of CMM and even the proprietary Chinese Medicines. This method has been incorporated in the Chinese Pharmacopoeia, US Pharmacopoeia, European Pharmacopoeia and Japanese Pharmacopoeia etc. Although the chemical analytical methods have been well developed these days, microscopic identification is still one of the important testing methods and has potentials for further development.

I have extensive work experiences in the authentication of CMM over the decades. Through my daily work with medical professionals, collectors and government officials in the authentication for their specimens, I found that there is insufficient information on the authentication of valuable CMM. Therefore, in order to enhance and advance the ability of authentication of CMM, I determined to compile and publish a reliable and illustrated reference book using microscopic identification method to authenticate valuable CMM and its adulterants.

In recent years, I have visited various major markets in China to collect and study over a hundred types of CMM, adulterants and fake products. Using the advanced digital microscopic photographic techniques, images of microscopic features have been captured. In which, 106 pictures of the CMM; 64 selected characteristic photos of microscopic transverse section and over 800 characteristic photos of powder form of CMM are illustrated and categorized in this book. This is a comprehensive book with authentic specimens, sharp photos and well characterized microscopic features of CMM. On top of that, this is the first book and a professional research output in relation to the microscopic identification of valuable CMM with colored diagrams. It is believed that it could enhance the ability on the authentication of valuable CMM, awareness of the safety of patients and it may also have great impact on the quality control of Chinese Medicine in future.

This Chinese-English edition reference book, with detailed specifications, aims to facilitate international exchange for the advancement, standardization and internationalization of Chinese Medicines.

Apart from its important academic value, this is a practical reference book designed for government officials, academics, researchers, students, traders, manufacturers, etc. working in related fields.

I would like to express my deepest gratitude towards Professor LI Ping, a renowned pharmacognosist from China Pharmaceutical University for her technical proof reading and Dr. ZHANG Mian for her English translation of this book.

This book is highly appraised and has attracted Professor XIAO Pei Gen's attention, who is the senior international expert in medicinal plant, Academician of Chinese Academy of Engineering and Honorary President of Chinese Academy of Medicinal Sciences, Institute of Medicinal Plant Development. It is very much appreciated to receive his personal comment that also listed in the foreword section of this book.

I look forward to hearing any comment and feedback from all of you, especially on the diagrams and specifications for microscopic identifications that documented in first time in order to improve and correct the content if applicable for better advancement of Chinese Medicines.

Hu Haobin / 23 July 2011



编写说明

1. 本书共收载名贵中药及混用品106种。其中正品73种，混用品33种。每品种均附显微特征照片，其中54种药材显微特征照片为首次收录。部分名贵药材属于国际保护的濒危物种，现已不再作为中药使用，但为了满足今后科研、文物考证及公安、海关检查等需要，作为一份资料，也收录保存于此书。

2. 药材名称主要依据《中华人民共和国药典》（2010年版一部）及有关权威资料，目录编排顺序按照药材名称的汉语拼音字母编制，便于查找。同类药材及其混用品或相关品种的图片归于一类，便于比较鉴别。书后附有药材中文名称索引、药材汉语拼音索引、药材拉丁名索引及原植物拉丁名索引，便于搜索。

3. 每品种项下收载的主要内容包括有：药材名（包括汉语拼音名、药材拉丁名）；别名（包括习用名、地方名、规格名等）；来源（包括动植物科名、学名及药用部位）；效用（包括性味归经，功能主治，用法用量）；药材性状图及描述；药材显微特征图（包括横切面组织图或药材粉末特征图）及描述；英文显微特征描述；附注说明。

4. 本书显微特征图以实验观察发现的显微特征为主，收录了鉴别意义较大的组织、细胞及后含物，常见的普通细胞或较难观察到的组织，视情况有所简略。有的品种显微特征在药典中没有描述但经实验观察发现的有关内容，则在编著本书过程中加以补充。

5. 本书收录的所有照片，均来源于准确鉴定的药材，以及中国药品生物制品检定所标定的对照药材。照片中均附有比例尺及测定数据，准确翔实。

6. 本书实验样品全部由作者收集、鉴定，所有药材照片均为作者拍摄，并应用数码显微摄影技术采集显微照片，显微特征图全部是作者制片的原图，视需要只对亮度或对比度进行适当调节，未经任何修补、移动、挖贴等编辑处理，真实可靠。所有实验用药材样品均保存于作者实验室。

7. 本书摄像所用制片依据显微鉴别实验方法，以水合氯醛装片所得，个别特殊装片在具体品种[附注]项下说明。所用仪器为日本OLYMPUS DP70显微摄像仪。

8. 本书所用的计量单位为法定计量单位，组织图与粉末图均以 μm 表示，药材性状图以 cm 表示。



EDITORIAL NOTES

1. 106 types of valuable Chinese Materia Medica (CMM) and adulterants are collected in this book. Of which, 73 genuine specimens and 33 adulterants are specified. The microscopic features of 54 species are reported for the first time. Some of the valuable CMM are categorized as endangered species under the “Convention on International Trade in Endangered Species of Wild Fauna and Flora” (CITES) and should no longer be used as CMM thereafter. In order to facilitate research and archaeological activities as well as inspection by Customs, the information regarding to those specimens under the protection by CITES is also listed in this book for reference.

2. The names of CMM are recorded in accordance with the “Chinese Pharmacopoeia” and related literatures. To facilitate information search, the contents order of this book is sorted according to the Chinese “Pinyin” of the names of CMM. Specimens under the same species and its related adulterants or related species are categorized under the same chapter for easy comparison. Chinese names, Latin names, Chinese “Pinyin” of CMM and original herbs are listed in the Index for easy reference.

3. The contents of each type of specimens consist of the followings: names of CMM (including Chinese “Pinyin”, Latin names); other names (including traditional names, names used in specific location, names used in commodities); source (including names of animals or plants, scientific names and specific used sections); functions (including characteristic and channel tropism of taste, functions, indications); photographs and explanatory of the CMM; microscopic features and explanatory of CMM (including transverse section and powder characteristics diagrams); microscopic explanatory of CMM in English; and additional notes.

4. The microscopic features of this book are recorded in accordance with the observation throughout the experiment. Outstanding characteristic findings in tissues, cells and ergastic substances are recorded and discussed. Descriptions on normal cells or other tissues that are not easily to observe are simplified in this book. Supplementary notes have been added to the microscopic features on some of the specimens that are not documented in the pharmacopoeia.

5. All the photos of this book are captured from authentic CMM or reference materials purchased from National Institute for the Control of Pharmaceutical and Biological Products. During microscopic assessment, photos are captured together with an image scale for actual dimension calculation.

6. All the specimens are collected and authenticated by the author. All pictures were taken by the author. Using the digital photographic technique, original photos with microscopic features are captured by the author with minor adjustment on brightness or contrast only. No further editing on photos including “amend”, “move”, “cut and paste” etc has been done. All the voucher specimens are kept in author’s laboratory.

7. In accordance with conventional method for microscopic identification, chloralhydrate is used to pre-treat the materials for mounting the slides. Those specimens with special pre-treatment have been indicated with “additional notes” in related chapters. All the images in this book are captured using Digital Microscope Camera OLYMPUS DP70 (Japan).

8. All the quantitative scale of this book is documented according to regulatory quantitative scale. All microscopic features on tissues and powders are indicated with scale μm , photographs of the CMM are indicated with scale cm.



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阿 胶

Ejiao
ASINI CORII COLLA



1cm

【别名】驴胶、乌胶、驴皮胶、东阿胶、贡阿胶、陈阿胶、药料胶、阿胶珠。

【来源】本品为马科动物驴*Equus asinus* L. 的干燥皮或鲜皮经煎煮、浓缩制成的固体胶。

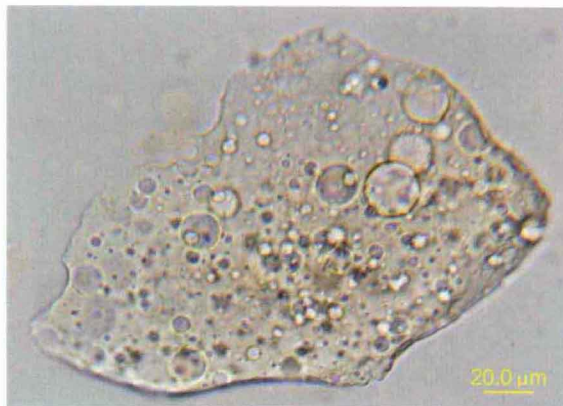
【效用】甘、平。归肺、肝、肾经。补血滋阴，润燥，止血。用于血虚萎黄，眩晕心悸，肌痿无力，心烦不眠，虚风内动，肺燥咳嗽，劳嗽咯血，吐血尿血，便血崩漏，妊娠胎漏。用量3~10 g，烊化兑服。

【药材性状】本品呈长方形块、方形块或丁状。棕色至黑褐色或乌黑色。对光照射略透明。质坚韧，易碎，断面棕黑色或乌黑色，平滑，有光泽。气微弱，味微甜。

【显微特征】本品粉末黄棕色。多呈类圆形或多边形团块，浅黄色至黄棕色；密布大小不一的圆球形空隙。表面及边缘有众多圆球形油滴，黄棕色。

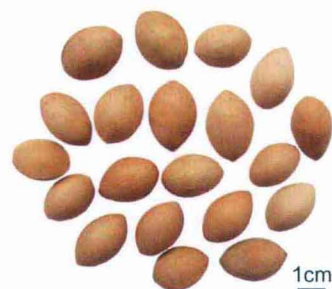
Microscopic Powder sellowish-brown (Mounted with chloral hydrate and unheated) . Mostly in subrounded or polygonal masses, light yellow to yellowish-brown, densely covering spheroidal lacunae varying in size; numerous spheroidal oil drops at the surface and edges, yellowish-brown.

【附注】水合氯醛装片，不加热透化。



白果

Baiguo
GINKGO SEMEN



【别名】银杏、白果仁。

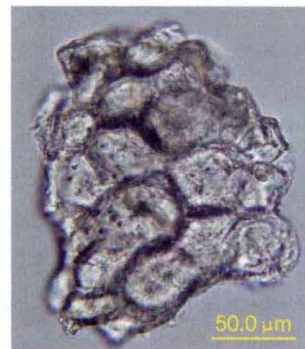
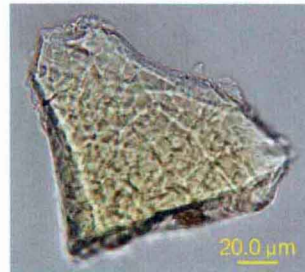
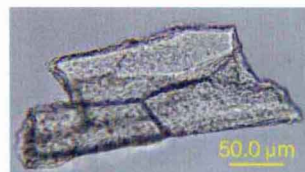
【来源】银杏科植物银杏 *Ginkgo biloba* L. 的干燥成熟种子。

【效用】甘、苦、涩，平；有毒。归肺经。敛肺定喘，止带缩尿。用于痰多喘咳，带下白浊，遗尿尿频。用量5~10 g。

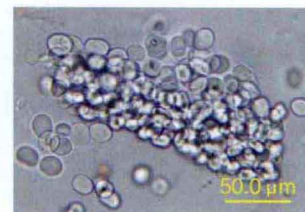
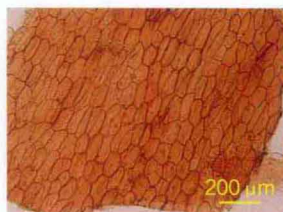
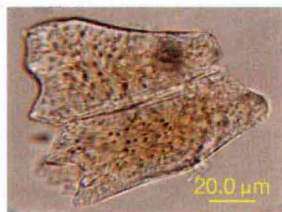
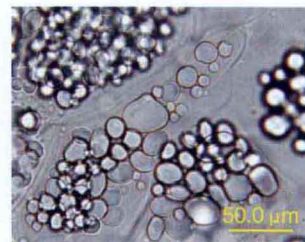
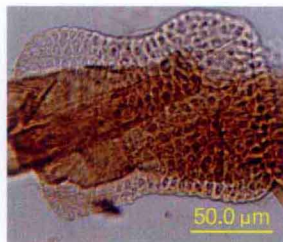
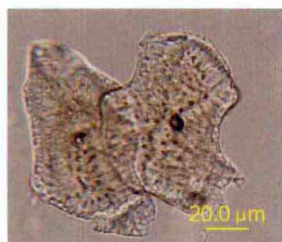
【药材性状】本品略呈椭圆形，一端稍尖，另端钝，长1.5~2.5 cm，宽1~2 cm，厚约1 cm。表面黄白色或淡棕黄色，平滑，具2~3条棱线。中种皮（壳）骨质，坚硬。内种皮膜质，种仁宽卵球形或椭圆形，一端淡棕色，另一端金黄色，横断面外层黄色，胶质样，内层淡黄色或淡绿色，粉性，中间有空隙。气微，味甘、微苦。

【显微特征】本品粉末浅黄棕色。石细胞单个散在或数个成群，类圆形、长圆形、类长方形或不规则形，有的具突起，长60~322 μm ，直径27~125 μm ，壁厚，孔沟较细密。内种皮薄壁细胞浅黄棕色至红棕色，类方形、长方形或类多角形。胚乳薄壁细胞类长方形，内充满糊化淀粉粒，淀粉粒单粒，直径13~18 μm ，层纹及脐点不明显。具缘纹孔管胞多破碎，直径33~72 μm 。

Microscopic Powder pale yellowish-brown. Stone cells singly scattered or several grouped, subrounded, oblong or irregular, some with projections, 60~322 μm long, 27~125 μm in diameter, thickened walls with fine and dense pit canals. Endotesta parenchymatous cells light yellowish-brown to reddish-brown, subsquared, rectangular or polygonal. Endosperm parenchymatous cells subrectangular, filled with gelatinated starch granules; starch granules simple, 13~18 μm in diameter, striations and hila faintly visible. Bordered pitted tracheids mostly broken, 33~72 μm in diameter.



胚乳薄壁细胞
endosperm parenchymatous cells



石细胞 stone cells

内种皮薄壁细胞
endotesta parenchymatous cells

淀粉粒 starch granules



川 贝 母

Chuanbeimu
FRITILLARIAE CIRRHOSAE BULBUS



【别名】贝母、川贝、松贝、尖贝、正松贝。

【来源】本品为百合科植物川贝母 *Fritillaria cirrhosa* D. Don、暗紫贝母 *Fritillaria unibracteata* Hsiao et K.C. Hsia、甘肃贝母 *Fritillaria przewalskii* Maxim.、梭砂贝母 *Fritillaria delavayi* Franch.、太白贝母 *Fritillaria taipaiensis* P.Y. Li 或瓦布贝母 *Fritillaria unibracteata* Hsiao et K.C. Hsia var. *wabuensis* (S.Y. Tang et S.C. Yue) Z.D. Liu, S. Wang et S.C. Chen 的干燥鳞茎。按性状不同分别习称“松贝”、“青贝”、“炉贝”和“栽培品”。

【效用】苦、甘，微寒。归肺、心经。清热润肺，化痰止咳，散结消痈。用于肺热燥咳，干咳少痰，阴虚劳嗽，痰中带血，瘰癧，乳痈，肺痈。用量 3~10 g；研粉冲服，一次 1~2 g。

【药材性状】松贝 呈类圆锥形或近球形，高 0.3~0.8 cm，直径 0.3~0.9 cm。表面类白色。外层鳞叶 2 瓣，大小悬殊，大瓣紧抱小瓣，未抱部分呈新月形，习称“怀中抱月”；顶部闭合，内有类圆柱形、顶端稍尖的心芽和小鳞叶 1~2 枚；先端钝圆或稍尖，底部平，微凹入，中心有 1 灰褐色的鳞茎盘，偶有残存须根。质硬而脆，断面白色，富粉性。气微，味微苦。

青贝 呈类扁球形，高 0.4~1.4 cm，直径 0.4~1.6 cm。外层鳞叶 2 瓣，大小相近，相对抱合，顶部开裂，内有小鳞叶 2~3 枚及细圆柱形的残茎。

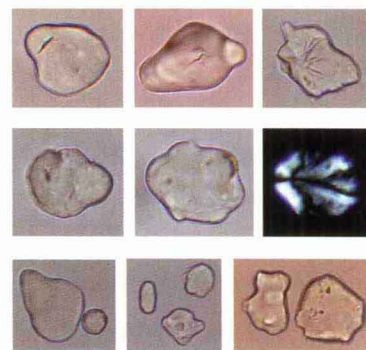
炉贝 呈长圆锥形，高 0.7~2.5 cm，直径 0.5~2.5 cm。表面类白色或浅棕黄色，有的具棕色斑点。外层鳞叶 2 瓣，大小相近，顶部开裂而略尖，基部稍尖或较钝。

栽培品 呈类扁球形或短圆柱形，高 0.5~2 cm，直径 1~2.5 cm。表面类白色或浅棕黄色，稍粗糙，有的具浅黄色斑点。外层鳞叶 2 瓣，大小相近，顶部多开裂而较平。

【显微特征】本品粉末类白色或浅黄色。

松贝、青贝及栽培品淀粉粒甚多，广卵形、长圆形或不规则圆形，有的边缘不平整或略作分枝状，直径 5~64 μm ，脐点短缝状、点状、人字状或马蹄状，层纹隐约可见。表皮细胞类长方形，偶见细小方晶或柱晶。

Microscopic Powder whitish or yellowish. Songbei and Qingbei: Starch granules fairly abundant, simple granules ovate, subsquared, broadly ovoid, long-spheroidal or irregularly spheroidal, mostly with uneven or slightly branch-like edges, or extremely extruding on one side, 5~64 μm in diameter, hilum short slit-shaped, pointed, V-shaped or U-shaped, and striations faintly visible. Epidermal cells subrectangular, fine prism or column crystals occasionally found.



淀粉粒 starch granules



表皮细胞 epidermal cells

