云南重要天然药物

云南省药物研究所 编著

（续一）

Yunnan Zhongyao Tianran Yaowu

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Preface

序

云南省中药材资源得天独厚，有6559种中草药资源，占全国总数的51%，其中药用植物6157种。云南药材在全国以及东南亚地区占有特殊的地位，素有“药材之乡”的美誉。

为了更好地发展云南的生物资源，造福于人民，将资源优势转化为经济优势，云南省科技厅第二次安排了由云南省药物研究所为主要承担单位，进行了“影响云南中药产业可持续发展的重要资源调查研究”项目。项目组从云南省已开发利用较多的近百种药物资源中，选择了其中对云南省和全国中药资源影响重要的珠子参、蜘蛛香、白及、龙血竭、肉桂、半夏、红花等35个品种进行了系统的调研，就每个品种的药用历史、资源情况、品种质量（包括品种鉴别和商品质量）、开发现状(包括现代研究、生产栽培和制剂开发)以及前景分析等作了较全面的调研和分析，将其丰富的资料撰写成图文并茂的《云南重要天然药物》续一一书。

该书内容丰富、新颖，重点突出，结构严谨，文字简明、流畅，是一本既有学术价值又有生产及商业指导意义的著作，对推动云南省中药资源的可持续利用和生物医药产业的发展将做出贡献。该书不仅可提供广大中医药工作者、中药材企业、生产单位和管理部门相关人员参考使用，亦可作为大学教师、相关专业研究生、本科生等的参考用书。

在该著作出版之际，谨作此序向各位读者推荐并向作者们致贺！

中国科学院院士
中国科学院昆明植物所研究员
孙汉董（药学博士）

Preface

Yunnan province is richly endowed by nature with its 6559 kinds of natural medicinal materials which account for 51 percent of the total in China. Yunnan medicinal materials have important status in the Chinese medicinal market and even in the Southeast Asia market and Yunnan has the reputation of "Hometown of Medicinal Materials".

To the better exploit of Yunnan's living resources, to the benefit to the people, and to turn resource advantage into economy advantage, Once more, Science and Technology Bureau of Yunnan province performed the program "Investigation on Important Medicinal Materials Influencing the Continuable Development of Yunnan's Chinese Traditional Medicine Industry" and arranged Yunnan Institute of Materia Medica as the leading undertaker to carried it out. The investment group chose 35 species of medicinal materials which most greatly influence the medicinal material market in Yunnan and even in the whole country from the scores of medicinal materials which were greatly exploited and utilized in Yunnan and compiled into the excellent book *Important Medicinal Materials in Yunnan Ⅱ*. They are *Panax japonicus var. major, Panax japonicus var. bipinnatifidus, Valeriana jatamansi, Bletilla striata, Dracaena cambodiana, Cinnamomum cassia, Pinellia ternate, Carthamus tinctorius* etc., each species with medicinal history, resource status, varietal quality (including varietal identification and product quality), exploit status (including modern research, cultivation and pharmaceutics exploit) and develop prospect analysis, etc..

It is full, accurate and novel in content, prominent in emphases, preciseness in structure, concise and fluent in wording. The value of the book is in its learning purpose, production and commerce guiding. It will

promote continuable exploit of Chinese traditional medicine resources and development of living medicines. It is a valuable reference book not only for traditional Chinese medicinal experts and personnel working at traditional Chinese medicinal materials enterprises, productive factories and administer departments, but also for college teachers and graduate and undergraduate students.

Sincerely preface to recommend to the readers and congratulate the authors on the occasion of the book published!

Chinese Academy of Science
Academician
Kunming Institute of Botany, Chinese Academy of Sciences
Professor

Sun Handong (Doctor of pharmacy)

前 言

历史以来，广泛流传着“云贵川广，道地药材”。由于云南得天独厚的自然环境及丰富多彩的药物资源，加上传统的精工细作，使云南药材在全国乃至东南亚市场上独具一格，享有“药材之乡”的美誉。

地处祖国西南边陲的云南省，位于北纬 21°8′~29°15′ 和东经 97°31′~106°11′ 之间，东西距离 861.9 千米，南北相距 990 千米，总面积 38.3 万平方千米。东部与贵州省、广西壮族自治区为邻，北连四川，西北与西藏自治区接壤，南部与越南、老挝接壤，西部和西南部与缅甸接壤。云南为高原山区省份，是青藏高原与云贵高原的过渡地带，地势由西北向东南成阶梯状倾斜。西北部的梅里雪山卡格博峰海拔 6740 米，东南部河口海拔 76.4 米，相对高差达 6664 米，形成南北之间的气候差异。垂直差异也十分复杂，一个地区有着“一山分四季，十里不同天”的立体气候特点。因此，全省境内可划分为北热带、南亚热带、中亚热带、北亚热带、南温带、中温带和高原气候区共 7 个气候类型。如此典型多样的自然条件，使云南成为全国药物资源最多的省份。通过 20 世纪 80 年代中药资源普查，云南境内共有天然药物资源 6559 种，占全国总数的 51%。其中药用植物 315 科，1814 属，6157 种；药用动物 148 科，266 属，372 种；药用矿物 30 种。在这众多的药物资源中，已开发利用较多的重要药物资源有几十至上百种。

为了发展云药，根据有关专家的建议，云南省科技厅第二次安排了“影响云南中药产业可持续发展的重要资源调查研究”项目，并由云南省药物研究所作为主要承担单位进行实施，项目组从 2008~2010 年，历时两年，对云南和全国影响重要的珠子参、蜘蛛香、白及、龙血竭、肉桂、半夏、红花等 35 个品种进行了调查研究。项目组成员首先查清 35 种重要品种的主次产地（栽培种基地）、花果期、采收期等，制订出切实可行的考察路线，考察区

域，考察季节和时机的实作方案，交替对滇西地区：云南红豆杉、升麻、功劳木、红花、灵芝、诃子、附子、昆明山海棠、珠子参、雪茶、黄精、紫金龙、滇鸡血藤、滇紫草、臭灵丹草等；滇东北地区：天南星、半夏、白及、鞘蕊苏；滇南和滇西南地区：儿茶、云山楂、天冬、木蝴蝶、叶下珠、豆蔻、龙血竭、肉桂、芦荟、苏木、南板蓝根、蜘蛛香等；滇中地区：小红参、竹叶防风、金荞麦、黄草乌等重点取向考察。根据对药材主产地实考和跟踪，可测样方实地估测推算，现场观察记录等，提供了品种专著及调研报告的第一手资料，对现存资源分布、生态状况等作出分析判断。同时完成了实境、实地生态资源的实拍图像，采集、制作了腊叶标本和药材标本，并进行了组织显微研究等工作。

经过两年来对35种云南重要天然药物资源的系统调研及资料汇集整理后，撰写出图文并茂的《云南重要天然药物》续一，本书共收载影响云药发展的35种重要天然药物资源，每个品种包括：药用历史、资源情况、品种质量（包括品种鉴别和商品质量）、开发现状(包括现代研究、生产栽培和制剂开发)及发展前景分析等。该书的出版对政府决策、农村扶贫、科研、教学将有所帮助，对于宣传、开发利用及保护云南重要天然药物资源具有实用价值。

该书在编写过程中，得到云南省科技厅、云南白药集团的大力支持，并承蒙中国科学院院士孙汉董研究员为本书作序。得到了张人伟、张荣平、赵荣华、冯德强、韦群辉等专家的指导。在此表示衷心感谢。

由于我们水平有限，错漏和不足之处在所难免，敬请赐教。

编　者

Introduction

Long time ago, there is a popular saying "Yunnan, Guizhou, Sichuan and Guangdong are famous-regions in natural medicinal materials". Yunnan has the reputation of "Hometown of Medicinal Materials" for its unique natural conditions, its abundant natural medicinal material resources and its traditional processing. Yunnan's medicinal materials have important status in the Chinese market and even in the Southeast Asia market.

Yunnan is located in the southwest frontier region of China and is situated at 21° 8′ ~ 29° 15′ N and 97° 31′ ~ 106° 11′ E. It is about 861.9km across from the east to the west, and about 990 km from the south to the north with an area of 383000 km2. Yunnan province is adjoined by Guizhou and Guangxi provinces on the east, Sichuan province on the north, Tibet autonomous region on the northwest, and is linked by Vietnam and Laos on the south border and Burma on the west and southwest. Yunnan is a province with many mountains and is the transition terrain of the plateaus of Yungui and Qingzang. Yunnan's varied terrain is generally sloping from northwest to southeast and slanting table. The Kagerbro Mountain Peak of Meilixueshan Mountain at the northwest end has an altitude of 6740m above sea level while Hekou at the southeast has 76.4m, so the difference is up to 6664m in altitude. The special terrain makes the diversity of the climate of the south and north, and makes the complex of the uprightness climate. "A mountain is divided into four seasons and a distance of ten li (half km) seems under different skies". Therefore, the climate is divided into 7 types, including northern torrid zone, southern, central, and northern subtropical zone, southern and central temperate zone, and alpine tundra range. Such typical and multiple natural conditions make Yunnan a province with the most medicinal materials in China. The investigation of the resources of traditional Chinese medicine in the 1980s has shown that Yunnan possesses 6559 kinds of

medicinal materials which account for 51 percent of the total in China, belonging to 315 families, 1814 genus and 6157 species of plants, 148 families, 266 genus, 372 species of animals, and 30 kinds of minerals. Scores of important medicinal materials have been developed and utilized.

To develop Yunnan medicine, once more, Science and Technology Bureau of Yunnan province performed the program "Investigation on Important Medicinal Materials Influencing the Continuable Development of Yunnan's Chinese Traditional Medicine Industry" in accordance with some experts' advices and Yunnan Institute of Materia Medica put it into practice as the leading undertaker. From 2008 to 2010, lasting for 24 months, the investigation group in Yunnan Institute of Materia Medica investigated the important 35 species influencing Yunnan's and China's natural medicine industry and even other industries in China , for example, *Panax japonicus var. major, Panax japonicus* var. *bipinnatifidus, Valeriana jatamansi, Bletilla striata, Dracaena cambodiana, Cinnamomum cassia, Pinellia ternate, Carthamus tinctorius*, etc.. The members of the group made clear the primary and secondary producing areas (cultivating areas), flower and fruit period, harvest period, and so on, of the 35 important species, worked out feasible scheme of investigation route, areas, seasons and opportunities, and investigated these species in the west of Yunnan in different season: *Taxus yunnanensis, Cimicifuga foetida, Mahonia baelei, Carthamus tinctorius, Ganoderma lucidum, Terminalia chebula, Aconitum carmichaelii, Tripterygium hypoglaucum, Panax japonicus* var. *major, Panax japonicus var. bipinnatifidus, Thamnolia vermicularis, Polygonatum kingianum, Dactylicapnos scandens, Kadsura interior, Onosma paniculatum, Laggera pterodonta* etc.; northeast of Yunnan: *Arisaema erubescens, Pinellia ternate, Bletilla striata, Coleus forskohlii*; south and southwest of Yunnan: *Acacia catechu,*

Crataegus scabrifolia, *Asparagus cochinchinensis*, *Oroxylum indicum*, *Phyllanthus urinaria*, *Amomum kravanh*, *Dracaena cambodiana*, *Cinnamomum cassia*, *Aloe vera* var. *chinensis*, *Caesalpinia sappan*, *Baphicacanthus cusia*, *Valeriana jatamansi*, etc.; central parts of Yunnan: *Rubia yunnanensis*, *Seseli mairei*, *Fagopyrum dibotrys*, *Aconitum vilmorinianum*, etc. According to investigation and tracing on the spot, the members estimated and calculated measurable quadrat, observed and recorded locally, and gained materials at first hand for variety monograph and survey report and performed analysis and judgment on distribution of existing resources, environmental condition, and so on. They also took photos on the spot, collected and made plant specimens and medicinal material specimens, and carried out microscopically researches on plant tissues.

Important Medicinal Materials in Yunnan Ⅱ was compiled after systematical survey and information collecting and neatening of 35 species of important natural medicinal materials in Yunnan for about two years. This book contains 35 species of important natural medicinal materials influencing Yunnan medicine development, each species with medicinal history, resource status, varietal quality (including varietal identification and product quality), exploited status (including modern research, cultivation and pharmaceutics exploit) and develop prospect analysis, etc.. This book will be helpful to government decision, rural support, scientific research and teaching. It also achieves the purpose of exploiting, utilizing and preserving the important natural medicinal materials in Yunnan on the other hand.

We sincerely thank the academician of Chinese Academy of Science Prof Sun Handong for his preface of this book and the Science and Technology Department of Yunnan Province, Yunnan Baiyao Group for their helps. And also thank Zhang Renwei, Zhang Rongping, Zhao

Ronghua, Feng Deqiang, Wei Qunhui ect Profs for their direction.

For the ability and experience, it is hard to avoid mistakes and inadvertence. Don't hesitate to point them out and contact with us.

Editors

目 录

1 儿茶
Ercha

图 1-1　儿茶原植物图

儿茶为豆科植物儿茶 *Acacia catechu*（L.f.）Willd.的去皮枝、干的干燥浸膏。为历版《中华人民共和国药典》收载品。

滤过，改善脂代谢与肾功能，延缓肾脏病理慢性进展，可为临床治疗肾病综合征提供新的治疗手段[39]。

(11) 其他作用：皮下埋入儿茶 30mg，可显著延迟醋酸所致小鼠扭体反应发生的潜伏期，明显减小扭体次数，皮下埋入 40mg 儿茶 5h 局部无明显刺激反应，表明儿茶有一定镇痛作用[16]。于体外儿茶对艾氏腹水癌有抑制作用[17]。儿茶精有抗放射、升高白细胞和抗肿瘤作用[19]，并因能抑制瘤细胞与纤维蛋白粘连而阻止瘤细胞扩散[20]。儿茶鞣酸对维生素 C 缺乏的豚鼠可促进维生素 C 吸收[21]，并能抑制实验性大鼠膀胱结石的形成，可能与其能降低尿液的 pH 有关[10]。

(12) 毒性：儿茶鞣酸小鼠静注 200mg~300mg/kg 可致死亡，以含儿茶鞣酸 3%~5% 的饲料喂大鼠 1 月不引起动物死亡。儿茶精灌服对小鼠的 LD_{50} 大于 1.37g/kg[11]。给小鼠腹腔注射儿茶素，LD_{50} 大于 1.37g/kg。以含儿茶鞣质 3%~5% 的饮料喂大鼠 1 个月，无死亡发生；而给小鼠静脉注射 200mg~300mg/kg 儿茶鞣质则可致死。周永贵等采用 Ames 试验比较研究鞣酸和相关化合物的毒性和抗突变性，即在无抑制和抑制浓度减少 2- 硝基芴 (2-NF)、4- 硝基喹啉 -1- 氧化物 (4-NQO) 和 N- 甲基 -N- 硝基 -N- 亚硝基胍 (MNNG) 回复菌落数，结果表明儿茶素抑制 Ames 试验沙门氏菌菌株生长[40]。

(二) 生产栽培[41~43]

1. 生物学特性

(1) 儿茶产于热带地区，主产地平均气温 21.2~21.77℃，极端最低气温 -0.5~2.8℃，年降雨量 1200~1500mm，相对湿度 83%~85%。儿茶是阳性植物，要求阳光充足，特别是幼苗，最怕其他植物的覆盖和阴蔽。在平地肥沃而湿润的土壤中，生长良好，但儿茶膏含量低；在山坡、干旱瘠薄的土壤中，生长缓慢、但儿茶膏含量高。因此种植应选择两种兼顾的条件种植，土壤选向阳，土层深厚，排水良好的壤土或轻黏土栽培。

(2) 种子特性：花期 7~8 月，果期 11~12 月早春果实成熟，当荚果变褐尚有光泽时采收，种子的发芽率最高，反之则显著降低或失去发芽力。将所收种子晒干，选粒大、饱满的留种，放通风处贮藏备用。儿茶种子平均千粒重 45.9g，鲜种子发芽率 90%以上，在室内常温条件下存放 1 年的种子不发芽，种子放冰箱内 (温度 4℃左右) 存放 1 年，发芽率可达 70%。

(3) 幼树习性：顶枝喜下垂，应设支柱，并应将离地面 2m 高以下的分枝剪除，确保主干的形成。

2. 栽培技术

选地与整地：选向阳的丘陵山坡、平地、河旁、溪边、铁路、公路行道旁种植，也可栽于地边作篱笆或荒山造林，将选好的土地，按行株距 2m × 3m 挖穴，深 40~50cm，穴挖好后施基肥，每穴施牛、马粪泥以钙镁磷肥 (100 : 25) 15kg，待雨季定植。一般大苗比小苗成活率高。

3. 田间管理

(1) 除草松土每年应除草松土 2~3 次。若为种子直播，当苗高 8cm 进行第一次除草，每穴留 4 株苗。先将植株附近杂草铲光，松土，然后将四周的杂草铲光，覆盖于植株附近，可增加土壤肥力，有利于抗旱保苗。苗高 15cm 时，第二次除草，每穴留 2 株

苗，第二年雨季来前去弱留强，每穴留一株苗。

(2) 增施追肥为了使儿茶迅速生长，提前投产，应当追肥。7~8月除草时，在植株附近处挖坑，将除下的杂草填入坑内，然后每株施入过磷酸钙或硫酸铵腐熟的有机肥适量，与草混合作追肥。

(3) 整枝设支柱，儿茶主要利用茎干心材，如分枝过多，则影响心材产量，应将离地200cm以下分枝修剪。幼树顶枝下垂，应设支柱，使其正常生长。幼苗生长期间可间种花生、大豆，成林后间作萝芙木。儿茶生长4年后开花结籽，10年后可熬制儿茶膏。

(4) 林间间作：儿茶树为落叶乔木，株行距通常为3~4m。幼龄期生长慢，林间空隙较大，除草管理费工。在林间间作黄豆、花生等农作物，既可经济利用地力，增加收益，且豆科植物有固氮作用，能提高地力，还可防止土壤冲刷，抑制杂草滋生，有利儿茶树的生长，达到以短养长。

(5) 病虫害及防治

猝倒病：病原菌是真菌中一种藻状真菌 *Pythium* sp.，苗期发病，在出苗过密，隐蔽度大而潮湿的环境易发生。发病后，茎基很快干缩倒伏。防治方法：控制湿度，育苗地方通风露阳，排水良好。发病时拔除病株，用3∶1的石灰和草木灰撒于表土，喷1∶1∶120的波尔多液防治。

粉蚧壳虫：多乐聚在枝杈上，吸收汁液。防治方法：幼龄期用1605乳剂1000~1500倍液或二硫磷3000倍液喷雾。

地老虎、蟋蟀：幼苗期遭地老虎、蟋蟀从基部咬断，造成缺株。防治方法：用100kg米糠或麦麸炒香后加1.5kg90%敌百虫做毒饵，每亩撒10kg进行毒杀。

4. 采收加工

儿茶栽种15年以上可采伐，树龄愈大，儿茶出膏率愈高，采收在冬季落叶后至次年春季未萌发前进行为宜，将砍下的树除去树皮和白色边材，留黑褐色心材，人工劈成碎片，有条件的用车床削成宽10mm，厚112~210mm的松散碎片，加水4倍左右，浸泡24小时，用铝锅煎煮待煮沸约1小时浸提，再加水煮沸1小时浸提，如此反复进行4~5次，最后滤液合并浓缩至糖浆状，稍冷后倒入模型内，模内涂上食油，以免粘连，干燥后倒出即得儿茶膏。

(三) 制剂开发

儿茶是我国民族药中最早收载于《中华人民共和国药典》的中药品种之一，按中医临床用药分类为收涩药，在民间防病治病中使用较广。以儿茶为配伍的制剂有胶囊剂、散剂、丸剂、栓剂、膏剂、片剂、糖浆及颗粒剂等。现已开发出儿茶静脉注射液。

五、前景分析

儿茶除作中药外，傣族、维吾尔族、蒙药、德昂族、藏族等民族将其作为民族药广泛使用。儿茶的活性成分为儿茶素和表儿茶素等，具有抗病原体、增强机体免疫力、抗心律失常、降低血管通透性、防癌抗突变、抗氧化、保肝解毒、降低血糖血脂和胆固醇等药理作用。用于治疗多种细菌感染性疾病、肝病等。儿茶除药用外还可提取栲胶作为制革、染料工业的重要原料。现代用儿茶素抑制腹水癌细胞，并试用于临床。儿茶已