

Orchids and its uses in Chinese medicine and health care products

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Introduction

Orchids are very diverse, attractive and economically important plants distributed from tropical to temperate zones. The family Orchidaceae consists of nearly 30,000 wild species and about 100,000 hybrids (Obchant Thaithong, 1999) [1].

All orchids are herbaceous plants in life forms and classified into four categories in natural habitat:

- 1) Terrestrial orchids (eg. *Cymbidium*, *Arundina* etc.)
- 2) Epiphyte orchids (eg. *Dendrobium*, *Vanda* etc.)
- 3) Lithophyte orchids (eg. *Eria*, *Pholiteda* etc.)
- 4) Saprophyte orchids (eg. *Gastrodia*, *Aphyllorchis* etc.)

In China recorded orchid species are 1,247 species in 171 genera; of which Yunnan province has 764 species making up 61% of total orchid species in China. There are 300 species of orchids are used in Chinese medicine (Long and Long, 2006) [2], the most important medicinal orchids are *Gastrodia alata*; *Dendrobium officinale*; *D. nobile*; *D. chrysotoxum*; *D. fimbriatum* listed in *China Pharmacopeia* (pp85, 2010); and *Bletilla striata*; *Gymnadenia*; *Bulbophyllum* etc. are commonly used in Chinese medicine. About 300 species of orchids are used for ornamental purpose in China, eg. *Cymbidium*, *Paphiopedium*, *Phalaenopsis*, *Phaius* etc.

In China, wild orchids (*Cymbidium*, *Dendrobium*, *Gastrodia*, *Bletilla* and *Paphiopedilum* etc.) were harvested grievously from wild habitat areas during 1970-2000 for commercial purposes. Since 2000's all orchid species are listed in CITIS that is to say all wild orchid species are prohibited for trade under the International Biodiversity Conservation Agreement. Since then, the cultivation of medicinal orchids such as *Dendrobium officinale* and associated species has been rapidly improved in China, and is being supplied by medicinal orchid's plantations in China.

Biodiversity conservation is an essential approach for present and future needs of human being. Sustainable use of biodiversity including cultivation orchids is the solution for conservation. Therefore, habitat protection, germplasm conservation and cultivation of useful orchids are the main appropriate approaches for sustainable use of orchids.

Orchids used in traditional chinese medicine

Utility of orchids for medicine in China can be traced back to 3,000 years ago, the earliest records was in 'Shijing' on the *Spilanthesis sinensis* in 300BC; the book 'South China Flora' recorded use of *Dendrobium* orchids for anti-toxic treatment, *Dendrobium* was recorded as 'lucky herb'. In Tang Dynasty *Dendrobium* was listed as one of the nine 'fairy herbs' meaning herbs from paradise.

There are about 300 orchid species are used in traditional Chinese medicines (Long & Long, 2006) [2], the most common used species are:

- 1) ***Gastrodia alata***: tuber is used for improving memory and brain tonic purposes. Commonly cultivated in high land areas of Guizhou and Yunnan. Known as 'Tianma' used as medicine and herbal food .
- 2) ***Dendrobium* species**: including *D. officinale*; *D. nobile*; *D. chrysotoxum*; *D. linifonmis*; *D. nobile*; *D. devonianum*; *D. primulinum*; *D. firmbreatum*; *D. densiflorum*; *D. chrysanthum*; *D. pendulum* etc.; are commonly used ones. *Dendrobium* stem known as 'Shihu' is widely used in treatment of blood circulation, cordial system and throat sore. Presently various products are being marketed including processed stem into 'Fengdou' Herbal tea and herbal drinks are permitted by government Drug and Food Administration , but the products must have usable certification; stem powder for oral taken; stem cooking with chicken and meat etc. The material is obtained from cultivated land. *Bletilla striata*: tuber is widely used for cough, lung problem, TB and to stop bleeding etc; It is collected from wild and cultivation on small scale is in practice.
- 3) ***Bulbophyllum* spp.**: used in treatment of cough, lung problem and injury. It os is harvested from wild.
- 4) ***Arundina graminifolia***: traditional Dai medicine known as 'Wen Shang-hai' in local Daile language, a well-known detoxification herb for all diseases before taking medicine and obtained from wild.
- 5) ***Eria pannea***: whole plant is used for tonic of lung, digestive system inflammation etc, and harvested from wild.
- 6) ***Vanda roxbunghii***: roots are used for rheumatism treatment, recent studies by Indian scientists showing reduce acute inflammation functions. *Anoectochilus roxburghii* and *A. formosancs*: both are important medicine in Taiwan for lung, kidney, diabetes and snake-bites etc.
- 7) ***Calanthe alismaefolia*; *C. alpina*; *C. graciliflora* and *C. clarata*** are widely used in Yunnan as herbal medicines among ethnic minorities for improving blood circulation and anti-toxication. ***Coeloglossum viride* var. *bracteatum***: tonic medicine used

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in Tibetan medicine and harvested from wild. *Cremastra appendiculata*: its pseudo-bulb is used for cough, lung, blood circulation, snake and insects bites; anti-cancer, skin-burning etc., and is available from wild.

- 8) *Cymbidium* spp. common used in Chinese medicine for various purposes. Commonly cultivated in home garden & pot-plant.
- 9) *Gymnadenia conopsea* and *G. crassinervis*: tuber used for tonic kidney, lung, TB, ashma etc. Very rare in wild and cultivated in alpine areas.
- 10) *Thunia alba*: whole fresh plant is used for bone-break treatment and injury. Found from wild and used locally.
- 11) *Amitostigma*; *Alparis*; *Anthogenium*; *Cephalauthera*; *Changnienia*; *Oreorchis*; *Peristylus*; *Cypripedium*; *Goodyera*; *Platanthera*; *Habenaria*; *Satyrrium*; etc. have records of medicinal uses in traditional Chinese medicines. Harvested from wild.

New development of orchids utilization in food supplements and cosmetics

Since 1990's many new products from orchids have been developed as healthy and functional food in China. Many of these products are from *Gastrodia* and *Dendronbium* spp. Traditional knowledge of orchid uses are found from numerous ancient Chinese records and contemporary ethno-medical and ethnobotanical studies. Since 1970's relevant records of hundred orchid species are found on thousand books and published papers in China.

- ◆ **Food supplements:** Stem and flower of *Dendronbium officinale* and other *Dendronbium* species are used for making functional products such as healthy drinks, food, and chewing materials.
- ◆ ***Gastrodia alata*:** tuber is common used for cooking dishes and soup with chicken and meat for improving memory.
- ◆ ***Cymbidium* flowers:** used as herbal tea and drinks.

Cosmetics

- ◆ *Cymbidium* flowers are used in perfume, skin cream and anti-aging cosmetics.
- ◆ Orchids in Chinese culture is a symbol of beauty, elegant and clean, many believe that there is great potential of new development orchids products in cosmetics.

Ornamental

Cymbidium *Dendronbium*, *Vanda*, *Paphiopedilum*, *Papilionanthe* and *Phalaenopsis* are cultivated commercially for ornamental purpose

Methods and approaches of new products development from orchids

Literature survey

- ◆ To identify scientific names of orchids and its distribution area recorded in ancient records and books as a starting point and followed by study its usages on the records.
- ◆ To search all records of orchid species on modern publications and its uses including mode of use, value of uses etc.

Market survey

- ◆ Traditional market is very rich in local products of orchids Using ethnobotanical methods to investigate, record and evaluate local products of orchids is very useful.
- ◆ Modern market survey is also very important to gather information on new products from orchids, for instance, functional food, cosmetics, essential oil and herbal tea.

Ethnobotanical field survey and inventory

- ◆ Interview with informants (rural people, herbal doctors, house wives, forest-products collectors etc.)
- ◆ Field observation on orchids and habitat environment.
- ◆ Voucher specimens collection with field records.
- ◆ Identification and inventory.
- ◆ Chemical property investigating at laboratories.
- ◆ Evaluation and validation and
- ◆ New products design and production (Figure 1).

Conclusion

- 1) China has rich orchid species diversity as well as traditional knowledge on orchids, which are the fundamental basis of new products development from orchids.
- 2) China is successful in the development of its rich traditional botanical knowledge into new medicine, functional and healthy food products.
- 3) China and Asian countries should work together to build-up a bridge for sharing knowledge for development of new products from orchids and many other common medicinal plants for health care and benefit people [3-7].

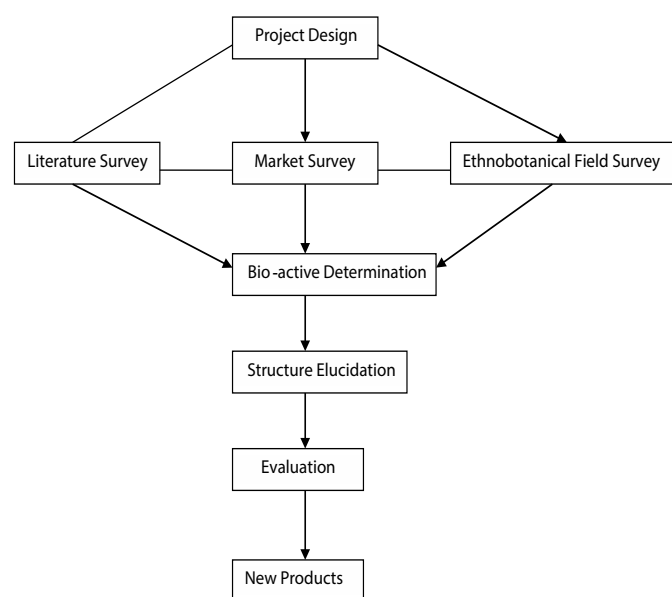


Figure 1. Framework of development new plant-products

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