Introduction of Cordyceps Cultivation and progress of Sino-Thai project

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Cordyceps sinensis

- Anti-cancer effects
- Antioxidant actions
- Hepatoprotective activity
- Anti-hypoxic effects
- Hypoglycemic activity

Cordyceps sinensis is endemic to alpine habitats on the Tibetan plateau in southwestern of China, where it is a parasite on larvae of moths (Lepidoptera) in the genera Hepialus（蝙蝠蛾）and Thitarodes（蝠蛾）.

The *cordyceps sinensis* has been used in China as a food or herbal medicine to treat numerous diseases. As uncultivated *cordyceps sinensis* is becoming extremely rare, the price of this herbal medicine is very high.

Find a Alternative Products

- However, natural C. sinensis is scarce in nature and expensive. Therefore, much effort has been focus on discovering alternative species.
- *Cordyceps militaris* has received considerable attention in recent years due to the recognition that it has biological effects with health-stimulating properties and medicinal effects.
- It possesses similar constituents and functions to those of *C. sinensis* .

cordyceps militaris

- Amongst all the species, C. militaris is considered as the oldest source of some useful chemical constituents. Besides their popular applications for tonic medicine, the constituents are now used extensively in modern systems of medicine.
- It has a higher content of cordycepin than other kinds of Cordyceps and is successfully cultivated.
- The well-known active ingredients are **cordycepin**, **nucleosides** and **polysaccharides**.

The project of “Cordyceps Cultivation on Silkworm and Silk Pupa”,

- The project was approved by Department of International Cooperation, MOST, China and TICA, Ministry of Foreign Affaires, Thailand.
- 2015-2016.
- Object:

a. Technology research and application of silkworm pupa Cordyceps.

b. Exchange documentation and research materials in the field of Cordyceps

Previous cooperation with Thailand

Visited Thailand in 2013

Training project in AHAU in 2013.

Previous cooperation with Thailand

Visit Chulalongkorn University on 2012

Visit Chiangmai University on 2013

Cordyceps Cultivation in China

- Cordyceps has been authenticated as new resources food by State Food& Drug Administration in China in 2009.
- There are more than 50 tons outputs of rice medium, and about 2 tons outputs of silkworm pupae or worm medium. About 50 scaled companies produced *Cordyceps*. There are many kinds of *Cordyceps* products in China.

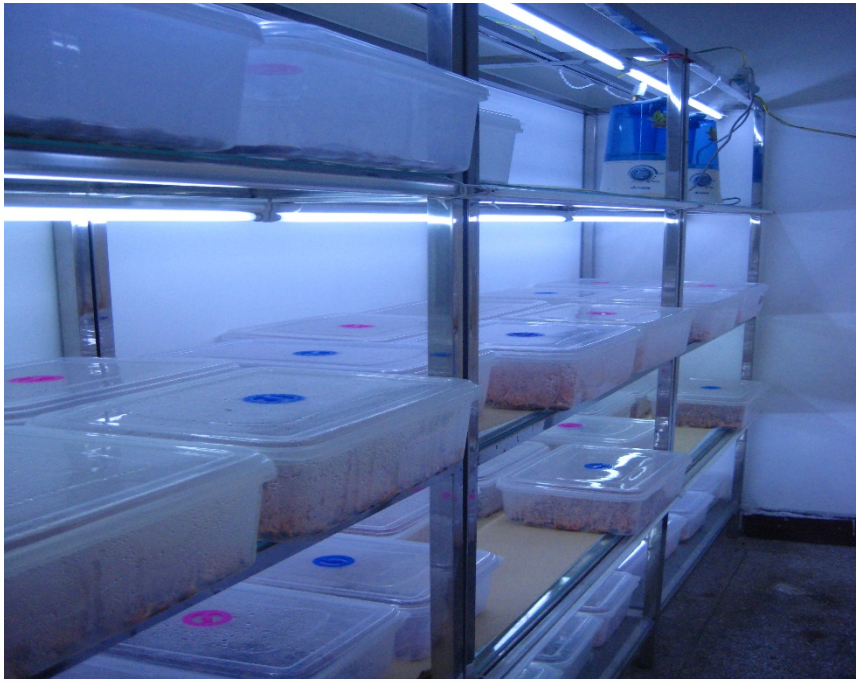
Silkworm pupae Cordyceps

Silkworm Cordyceps

Antheraea pernyi pupae Cordyceps

- There’s many companies produced mushroom *Cordyceps militaris* cultivated in rice medium. The products often used as food of dishes. So the price is very cheap. It is about 100 yuan /kg for the dry products.

- There’s some companies produced *Cordyceps militaris* used silkworm pupae. The products often used as tonic medicine. So the price is higher. It is about 2000-5000 yuan /kg for the dry products.



Cordyceps Cultivation Processes

①Select good pupae.

②Disinfection of pupae with 70% alcohol for 30s.

③Injection:5-10 uL /pupa liquid culture.

Cordyceps Cultivation Process

④Dark administration

Temperature 20-22 ℃， Humidity: 60%

About 5-7 days. Pupae become harden.

Cordyceps Cultivation Process

⑤ Coloring management

Lighting 14 h/ day，

Temperature 20-22 ℃，

Humidity: 65%, about 3-4 days.

Cordyceps Cultivation Process

⑥Fruiting body cultivation

Lighting 24 h,
Temperature 24 ℃,
Humidity: 85%

About 20 days.

Work progress in 2015

Thai group visited Silkworm Pupae Cordyceps company.

Work progress in 2015

Chinese group visited TICA and QSDS.

Work progress in 2015

Chinese group visited one Center of QSDS.


ไหม (Silk)
กั่งเฉ้า (Chong Cao)

Work progress in 2015

Chinese group visited C.Y.Boss Food Company-Mulberry fruit wine.

Work progress in 2015

Boonrod company

Work progress in 2015

Thong Cao Lanna Company

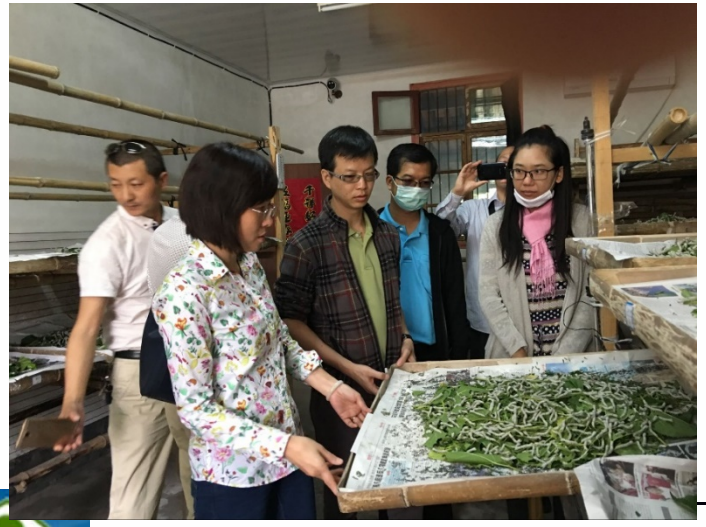
Work progress in 2015

Chinese group visited
Chiang Mai University.

Work progress in 2015

Work progress in 2016

Work progress in 2016



Training project in 2016 and 2017

- **Title:** ASEAN Silkworm Variety Innovation and Utilization Symposium & Sericultural Technology Elite Workshop
- **Fund:** MOST, China
- **Countries:** Face to the ASEAN countries including Thailand, Indonesia, Myanmar, Laos and Vietnam.
- **Project plans** : Hold technical training courses specifically designed for ASEAN countries in the field of Sericulture.

Training project in 2016 and 2017

- **Objective:** This project aims to progress sericulture technologies in ASEAN countries, and to promote regional collaboration in Asia, and to impulse the development of friendly relations between neighboring countries within ASEAN.
- **Date:** First time: October, 2016 ,10 days

  Second time: June, 2017, 10 days
- **Expenses:** All expenses in China will be covered by the project. Trainees should pay for the international flights.

Training project in 2016 and 2017

- **Programs：**

① Modern silkworm rearing technologies including silkworm standardization rearing, silkworm disease prevention and silkworm labor-saving rearing;

② Silkworm resistance breeding technology;

③ Sericulture by-products utilization;

④ Mulberry tree planting technologies including mulberry grafting and cuttage techniques.

⑤ Codyceps cultivation technology.

⑥ Visit the sericulture industrialization base and silk company.

Acknowledgement

Sino-Thai cooperation project
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