

CORDYCEP SINENSIS IN BHUTAN

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Introduction

In Dzongkha *Cordycep sinensis* is known as yar-tsa- guen-bub which means ‘**summer grass, winter insect**’. Yar-tsa- guen-bub is a unique combination of a yellow caterpillar and a fungus.

Indians call it keera jhar and the Chinese call it dong cong xia cao which translates literally as "worm in winter, plant in summer", and is commonly abbreviated as dong cong cao.



Fig.1 Neynela pass, altitude- 4300m



Fig.2 Shingchila pass, altitude- 4800m



Fig.3 Dried Cordyceps ready for sale

Kingdom : Fungus
Phylum : Ascomycota
Subphylum : Ascomycotina
Class : Pyrenomycetes
Order : Clavicipitales
Family : Clavicipiteae

Habitat of *Cordycep sinensis*

Just prior to the rainy season, spores of cordyceps lands on the himalayan caterpillars that live on moist grass and hollow ground. After the spores bury itself in the caterpillar’s body, it works its way out through the insect’s head eventually killing and mummifying it. The parasite gets energy from the caterpillar which eventually dies. As the temperature increase and the snow melts - yar-tsa- guen-bub emerges and is harvested at this time. During monsoon, the yar-tsa- guen-bub is swept away.

Cordyceps sinensis is found between 3,300m - 4,000m in Bhutan, India, Nepal and Tibet.

It is highly valued for its medicinal values and is in demand worldwide. In May, people of Lingshi, Laya, Lunana and people of the other upper northern regions of Bhutan are busy searching and collecting yar-tsa-guen-bub (*Cordycep sinensis*). The caterpillar fungus also known as the Himalayan Viagra costs about US \$ 2.00 a piece and is used for various ailments.

Biology and life cycle

The asexual stage (anamorph) is *Hirsutella sinensis*. Identification of the asexual stage was difficult until the advent of molecular methods but now it was understood that *Cordyceps sinensis* and *Hirsutella sinensis* are simply different stages in the life cycle of the same organism. Previous identifications with *Paecilomyces sinensis*, *Staphybotrys* sp. and *Tolypocladium* sp. are proven to be incorrect. The sexual stage has never been successfully grown.



Fig. 4 Caterpillar before infection by fungus



Fig.5 Caterpillar after infection by fungus

Medicinal values

The medicinal properties of this fungus have been known to the Tibetans and Bhutanese for thousands of years. Nomadic people of upper northern Bhutan noticed that their flocks became particularly energetic after consuming the fungus and it is still used locally to increase the energy level of pack animals at high altitude, although the high price of the fungus now makes this economically unfeasible for the local people.

Cordyceps sinensis is used for lung and respiratory infections, pain, sciatica and backache. It also provides vitality and increases physical stamina of the body. Yar-tsa-guen-bub is used by the Chinese to cure chronic hepatitis B and boost immune function such as dysfunction of liver. According to the Hawaiian health products, cordycepin is found effective against tuberculosis as well as in the treatment of leprosy. Another major use of this is in the treatment of leukemia.

Many scientific studies and research reveals that it has properties of antibiotic in it. Amongst its scientifically published uses are those as an aphrodisiac, a lipid lowering agent, anti-cancer, treatment of asthma and hepatitis B.

The other important uses of *Cordyceps sinensis* are as follows:

- Chronic bronchitis and coughing.
- Regulating blood pressure (high or low).
- Allergic rhinitis.
- Anti-aging
- Improving function of lungs & kidneys.
- Treatment of Chronic Nephropathy, Chronic Nephritis and prevention of Nephralgia.
- Increasing the blood cells and protein for producing blood plasma.

Recently, it is also used by tumor patients who have received radiotherapy, Chemotherapy or operation for quick recoveries.

Market potential

Cordyceps sinensis is native to the Himalayas and most of the world supply of cordyceps comes from Tibet, Bhutan, Nepal and India. The fungus grows in those countries in the wild in very difficult terrain, which explains the high price it commands. Although, its quality varies from place to place, the average current price for a kilogram of *C. sinensis* is US\$7329.0 (Price estimated from the 2007 auction bids).

C. sinensis is traded commercially, but most of the trade is not reported or regulated in any fashion. The major countries involved in its import are US, China, Hong Kong, Taiwan and Singapore where it is used extensively for oriental medicine.

The following data in Table 1, which is obtained from the Chief Marketing Officer of the Ministry of Agriculture, shows that its prices increased drastically over the past few years.

Table 1. Auction values of four consecutive years

Year	Quantity auctioned	Quantity exported	Total Auction value
2004	178	158.35	10680000.00
2005	200	195.83	13000000.00
2006	506.665	422	42915586.21
2007	140.367	Ongoing till December 2007	41150033.00

Conclusion

This paper is not a scientific paper but give a lot of information for those who are interested in Cordyceps. All the photographs are original and are taken during my recent trip to the Northern regions of the Country. This paper also contains many of the important uses of Cordyceps which could be of interests to the Consumers and Pharmacists.

References

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