



Cordyceps

Cordyceps – the caterpillar fungus

Cordyceps sinensis, a well-known and valued traditional Chinese medicine, is also called DongChongXiaCao (winter worm summer grass) in Chinese. In herbal medicine, it is commonly used to replenish the kidney and soothe the lung and it is believed to benefit fatigue, night sweating, hyposexualities, hyperglycemia, hyperlipidemia, asthemia after severe illness, respiratory disease, renal dysfunction and renal failure, arrhythmias and other heart disease, and liver disease. As the rarity and upstanding curative effects of natural Cordyceps, several mycelial strains have been isolated from natural Cordyceps and manufactured in large quantities by fermentation technology, and they are commonly sold as health food products in Asia. Cordyceps is now cultivated not using caterpillars but having bio-identical genetics and with a potency superior to that of the fungus in the wild.



Traditional Chinese medicine (TCM) adopts a more holistic philosophy than in Western medicine. It emphasizes the importance of balance in the mind and body and the smooth flow of an optimal amount of energy, known as chi or Qi, in maintaining health. This balance is known as yin and yang. There is a lot of evidence to show that some of these ideas are sound in the treatment and diagnosis of a patient. Western scientists have discovered two chemical messengers that allow cells to communicate, called cAMP and cGMP. These also seem to be opposites very much like yin and yang. When Chinese doctors believe yin and yang is out of balance, western doctors see a change in the two chemical messenger levels, e.g. in the yin condition we find cAMP is low and cGMP is high and in the yang condition it, is the reverse. In Western medicine, the treatment is targeted specifically at the disease and the diseased organ. Where as in TCM the target is the whole patient since the treatment is based on the whole system being out of balance.

Many modern western drugs are the purified forms of chemicals present in traditional medicines. Aspirin is made chemically now in pure form, but the original source was willow bark. Digitalis was originally purified from fox glove, a flower, and ephedrine from a desert shrub. Only a few fungi have been used as traditional medicines. Scientists continue to visit other countries to collect and study traditional medicines hoping to discover new drug sources.

The caterpillar fungus is a traditional medicine that has been widely used as a tonic and/or medicine by the Chinese for hundreds of years. The use of this fungus was relatively unknown in this country until it was credited for the success of Chinese women athletes at the National Games in Beijing, in 1993. Three Chinese track runners set new world records during the Games at three different distances, 10,000 m, 15,000 m and 30,000 m. Their coach, Ma Zunren, attributed the runner's success to intensive training as well as a stress-relieving tonic prepared from the caterpillar fungus.

In the old days, Chinese people thought that the caterpillar funguses (DongChongXiaCao) were worms. However, after years of study, it was found that it really is a fruiting body produced by the fungus, *Cordyceps sinensis*, on dead caterpillars of the moth *Hepilus fabricius*. Spores of *Cordyceps sinensis* grow inside the caterpillars filling the caterpillar with filaments (hyphae). When the caterpillar dies the fungus produces a stalked fruiting body that produces spores. The spores are spread in the wind to the next generation of caterpillars. Uninfected caterpillars pupate into relatively large primitive moths.

There are many claims of what *Cordyceps* mushroom can do. In China the fungus is used to regulate and support the gonads, and as a lung and kidney tonic. It was also recommended as a tonic 'for all illness' because of its claimed effects to improve energy, appetite, stamina, and endurance and sleeping patterns. According to some herbalists the fungus can pretty much do everything, 'This is one of the most popular and precious longevity-promoting herbs because it strengthens the adrenal glands, increases sexual vitality, relieves bronchitis and emphysema, reduces blood fats and sugars, lowers blood pressure and improves blood circulation'. It is also supposedly able to increase a person's immune system. These effects are cause because of its high affinity to the Yin organs: the heart, kidneys and liver.

Some people believe the caterpillar fungus may put the following in remission: tuberculosis, coughing, anemia, and back and knee pains. Today, the caterpillar fungus is mainly used as a tonic to increase strength or for rejuvenation after a long serious injury. Some also believe that the fungus can also reduce stress. If scientific research supports these claims and identifies the active ingredients produced by the fungus it may become very valuable in modern medicine. Scientists have already identified several compounds isolated that might be useful when purified as drugs to combat some types of cancer and lymphocytes [natural killer cells].

Scientists from the University of Nottingham in Great Britain say they've documented how *Cordyceps* can fight cancer and the new discovery could increase the effectiveness

of mushroom-derived cancer treatments. For the study, published in the Journal of Biological Chemistry, Dr. Cornelia de Moor of the University of Nottingham and her colleagues investigated a drug called cordycepin, which was originally extracted from wild growing Cordyceps and is now prepared from a cultivated form of the mushroom. The University of Nottingham scientists found that the Cordyceps-derived treatment has two important effects on cells that could impact the growth of malignant tumors. At low doses, cordycepin inhibits the uncontrolled growth and division of cells while at high doses it prevents cells from sticking together, essentially blocking the cells from growing.

Scientists at Dalhousie University in Halifax, Nova Scotia, published research in the journal Cancer Immunology, Immunotherapy showing that oral Cordyceps can reduce the occurrence of cancer spreading to the lungs in metastatic breast cancer. Although the researchers found that Cordyceps does not reduce the growth of the primary breast tumor, they noted that deaths from breast cancer are primarily due to the development of metastases. That means a treatment that stops the spread of metastatic tumors could save countless lives. Although various medical therapies currently exist that attempt to stop the growth of cancerous metastatic tumors, they have little effect so this makes the Dalhousie University research into Cordyceps very important.

References

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