History of Cordyceps

In September 1993, a scandal broke out in the wake of the National Games in Beijing, China. In a single week, three women's track-and field world records were broken. Never had a single track meet produced so many world records. Running the 10,000-meter race, Junxia Wang shattered the previous world record by an amazing 42 seconds (her record still stands).

Two days later, the record in the 1,500-meter race was broken by Yunxia Qu, who completed the race a full three seconds faster than the previous record (Qu's record also stands). Then, in qualifying heats for the 3,000-meter race, giddy fans watched as the world record fell twice, first to Linli Zhang, who broke the record in the first heat, and then again to Junxia Wang, who broke her teammate's newly minted record in the second heat. On Friday, in the 3,000-meter final, Junxia Wang broke her own world record by six seconds (another record that still stands).

Some in the world of track-and-field cried foul. For so many world records to fall in one place in such a short time, the athletes must have been taking illegal performance-enhancing drugs. Surely when urine tests were completed, the results would show that the Chinese women had been taking anabolic steroids or some other illegal drug. But the urine tests were negative. If the athletes had taken drugs, the tests did not show it. When

pressed him on why his athletes ran so well, Coach Ma Junren mentioned their rigorous training schedule, their passionate commitment to track-and-field, and a secret elixir made from the Cordyceps sinensis mushroom.

The mushroom is used to treat liver diseases, cancer, angina pectoris, cardiac arrhythmias, bronchial problems, anemia, tuberculosis, jaundice, emphysema, infertility, and sexual dysfunction.

• Active ingredients: Polysaccharides; deoxy-nucleosides (Cordycepin); otheraltered nucleosides such as hydroxy-ethyladenosine, which are antiviral and thought to work by a different mechanism than the deoxy-nucleosides.

• Uses: Anti-asthma and bronchitis; controls atherosclerosis (cardiovascular disease); lowers cholesterol; safely and effectively controls arrhythmias; helps control diabetes; antiviral (HIV, HBV); prevents liver cirrhosis (post-hepatitis); increases stamina and fights fatigue; increases libido and sperm count.

Cordycep Militaris used for treatment of many diseases

1. Cordyceps and Atherosclerosis

In predisposed individuals, a diet high in saturated fats can cause high cholesterol levels. Because most people have trouble managing their diets, it is difficult for these people to lower their cholesterol. Often, prescription drugs are needed, but patients can also take health supplements such as Cordyceps to bring down the level of cholesterol in their blood. Cordyceps, combined with rigorous exercise and a well-balanced diet, can be a big help in managing atherosclerosis. In general, cholesterol refers to the fatty, wax like material that is produced by the liver to perform vital functions such as hormone production and cell renewal. The liver produces most of the cholesterol that the body needs, but some of it is also obtained from animal products. High-density lipoprotein (HDL) cholesterol is the so-called good cholesterol, which transports fats, or lipids, through the body so that they can't collect. So-called bad cholesterol, known as low-density lipoprotein (LDL) cholesterol tends to deposit fats on the blood vessel walls, where it can cause atherosclerosis.

What's more, when LDL is deposited in the liver, it can cause fatty liver tissue. Atherosclerosis is caused when fatty cholesterol deposits form on the artery walls. The artery walls scar and may grow thick with lesions and

abrasions called fibrous plaques. The plaques may grow so large that they block the flow of blood to vital areas of the body.

What's more, immune cells and muscle cells that normally serve to keep the arteries healthy find their way to the plaques instead. Cell debris also gets stuck in the plaques.

Eventually, large clumps known as thrombi appear on the cell walls. When they break away and enter the bloodstream (embolism), a hole is left in the artery wall that can result in hemorrhaging and sudden death. It appears that Cordyceps helps prevent atherosclerosis by decreasing the number of platelets that can get caught in the plaques. Cordyceps does this by reducing the viscosity of the blood. In one study, coronary heart disease patients were given 3 grams (g) of Cordyceps a day for three months.

They showed a significant drop in blood viscosity and a 21% drop in total cholesterol. Clinical studies have shown that Cordyceps can increase the amount of good (HDL) cholesterol and reduce the amount of bad (LDL) cholesterol. In the largest study conducted on Cordyceps and cholesterol, which took place in China, 273 patients received 1 g of Cordyceps, three times a day.

Cholesterol levels dropped by 17% on average at completion of the eight week trial. Chinese physicians have also used Cordyceps to treat hyperlipidemia, a

disease caused by high levels of fat in the blood. How Cordyceps acts to treat this disease is not well understood, but it does help people who suffer from high cholesterol.

In two placebo-controlled trials conducted in China, patients 60 to 84 years old were given Cordyceps to see how the mushroom would affect age-related oxidation of fats in the bloodstream. After subjects took the Cordyceps, doctors discovered that their red blood cells had significantly higher levels of an enzyme called superoxide dismutase (SOD), one of the body's natural antioxidants.

SOD rose to a level usually found in 17-to 20-year-olds. The good news for people who suffer from high cholesterol is that researchers have discovered that lowering cholesterol levels restores the inner lining of the arteries and allows them to relax from the stiffened, plaque-infested state. Apart from administering cholesterol-lowering agents such as niacin and cholestipol, exercise can have a significant effect on cholesterol levels. In one study, 26 men with high cholesterol were asked to ride a stationary exercise bike three times a week.

The men, all older than 46 years, rode the bike for different amounts of time according to their level of fitness. Twenty-four weeks into the exercise program, their cholesterol levels had dropped by 9%.

2. Cordyceps and Chronic Bronchitis

Chinese researchers have conducted numerous clinical trials of Cordyceps in the treatment of chronic bronchitis, In one study, patients between the ages of 55 and 60, who had been suffering from chronic bronchitis for about 12 years, were randomly divided into two groups. The 27 patients in the study group received 3 g of Cordyceps three times a day for four weeks.

The control group received a similar amount of a berry extract called Oleum Voices negundo, which is commonly used in China to treat coughs, colds, wheezing, and bronchitis. At the end of the study, 21 patients in the Cordyceps group found significant relief from their symptoms, whereas only eight patients in the control group felt any improvement.

A second one-month trial with 35 patients was completed the following year. Jiangxi Medical College reported that Cordyceps had helped as many as 90% of the patients, or 18 of the 20 people in the study group. This compared to a mere 20% improvement rate in the control group. Medical examinations showed a significant increase in lung function in the Cordyceps group, and patients experienced fewer bronchial spasms, cough spells, and incidences of airway resistance.

There were also significant increases in maximum breathing capacity and forced expiratory volume tests, which measure the amount of air that a patient can expel

in one second. The Cordyceps patients showed about 40% more capacity than patients in the control group.

A 1995 survey sparked a revival of interest in Cordyceps for the treatment of respiratory illnesses in China. Researchers at Jiang-Su Provincial Hospital reported preliminary findings in 100 respiratory disease patients, the majority of whom had chronic bronchitis complicated with pulmonary heart disease or emphysema. Following two weeks of treatment with Cordyceps, patients caught fewer colds, showed improved expectoration and cough, and had fewer asthmatic symptoms. In addition, patients reported relief from night sweats and their appetites began to return.

Since the Jiang Su survey showed that 92% of patients taking Cordyceps improved on one or more of these functions, it is logical to suppose that Cordyceps could help patients with other respiratory disorders.

3. Cordyceps and Asthma

Physicians in China commonly prescribe Cordyceps for the treatment of asthma. In at least one clinical study of Cordyceps, arranged by Beijing Medical University, Cordyceps proved to be beneficial for asthma. Fifty asthma patients, 17 to 65 years old, had all had been unsuccessfully treated with antibiotics and other commonly prescribed Western medications.

Thirty two patients assigned to the Cordyceps group received 3 g of Cordyceps or 10 milligrams (mg) of the antihistamine astemizole for 10 days. For patients in the Cordyceps group, it took an average of only five days to improve; but it took nine days for cough to sub side in the antihistamine group.

Cordyceps and Cardiac Arrhythmias Cardiac arrhythmia is a disturbed or abnormal heartbeat. The most common type of arrhythmia, atrial fibrillation, affects more than 2 million Americans; 15% to 20% of strokes in the United States are caused by atrial fibrillation.

The disease has many causes, including acute intoxication, hyperthyroidism, and rheumatic valvular disease.

Medications such as studies show that blood anticoagulants such as a spirin and warfarin may prevent stroke in arrhythmia patients.

In 1994, a clinical trial was undertaken at Guangzhou Medical College, in China, to see whether Cordyceps could be used to treat ventricular arrhythmia.

The 64 subjects were assigned at random to two groups: the test group was given 1,500 mg of Cordyceps every day for two weeks, and the other group received a placebo. More than 80% of patients who were given Cordyceps improved, where as only 10% of patients in the placebo group recovered

4. Cordyceps and Diabetes

Diabetes, an autoimmune disorder, is associated with abnormally high blood sugar levels. Autoimmune disorders occur when the immune system fails to distinguish between what does and what doesn't belong in the body.

In the case of diabetes, T cells incorrectly attack the cells of the pancreas that produce the sugar-regulating hormone insulin, with the result that the body cannot control the buildup of blood sugar. Cordyceps, by calming and quieting the cells of the immune system, may be able to help against autoimmune disorders such as diabetes.

The first experiments in treating diabetes with Cordyceps were under taken in Japan and China in the 1990s, when scientists reported significant hypoglycemic, or sugar-lowering, effects from the mushroom. In one clinical study involving 42 diabetics, 20 received an herbal formula that included mycelium powder from Cordyceps, and the remaining 22 received the herbal formula only (the researchers did not say what ingredients were in the formula). After 30 days, in the Cordyceps and formula group, improvement was seen in 95% of cases (only one diabetic did not improve).

Cordyceps Cs-4 is effective in lowering both blood glucose and plasma insulin, improving glucose metabolism by enhancing insulin sensitivity, and improving oral glucose tolerance. It appears to lower blood sugar levels through specific polysaccharides (CS-F10 and CS-F30). However, patients who tend to be hypoglycemic should use the mushroom only after careful consultation with a physician. If you have a tendency to fatigue or anorexia, your blood sugar levels may already be too low. Taking Cordyceps may intensify this problem.

5. Cordyceps and Hepatitis B

Hepatitis B is usually contracted by infected blood or sexual contact. It is the number one cause of liver cancer, chronic hepatitis, and cirrhosis of the liver. A vaccine for hepatitis B is available, but it is too costly for most people who live in Africa, Southeast Asia, and China, where the disease is most prevalent.

In those parts of the world, an estimated 8% of the population will die from hepatitis B, and over 50% of the population will contract the disease in their lifetime. About 350 million people worldwide are believed to suffer from hepatitis B, according to the World Health Organization. An estimated 1 million people die each year from the disease.

In the United States, approximately 1.25 million people suffer from chronic hepatitis B. Even when the immune system is able to destroy infected cells and stop the hepatitis B virus from replicating, certain immune cells called cytotoxic T lymphocytes may act against the virus without destroying infected cells in the liver.

In this case, something more is needed to prevent infected cells from becoming cancerous, especially in chronically infected people. The immunostimulant alpha-interferon is the main treatment for hepatitis B, but it is costly and effective in only about 30% of cases.

There is evidence that Cordyceps can treat some cases of hepatitis B.

In one study, 83 subjects, 2 to 15 years old, who carried the hepatitis B virus but showed no symptoms were given Cordyceps for three months. A complete conversion of antibodies to the virus was found in 33 of the test subjects, which indicates that the infection had been completely resolved and the virus was no longer contagious.

Meanwhile, researchers reported that the number of antibodies positive for the virus had decreased in 47% of the subjects. Because the subjects were so young and their immune systems were not as developed, the drop in the number of positive antibodies indicates that the benefits of Cordyceps may have been more significant than the study showed.

Researchers believe that the greater a person's immune response, the less likely he or she is to become a chronic carrier of hepatitis B. Only 3% to 5% of the adults exposed to hepatitis B become chronic carriers, because their immune systems are developed, whereas 95% of infected newborns become chronic carriers. In children under the age of 6 years, about 30% become chronic carriers. The drop of 47% indicated by the study is indeed significant.

In 1990, a study was undertaken in which 32 hepatitis B sufferers were given 3,750 mg of Cordyceps a day for 30 days. Positive antibodies to the virus changed to negative in 21 patients. In 23 patients, tests showed that liver function had improved.

6. Cordyceps and Cirrhosis

Cirrhosis of the liver is a degenerative disease that is caused by scar tissue in the liver. People who drink alcohol to excess or suffer from hepatitis are subject to the disease. Sufferers are 100 times more likely to develop liver cancer. About 30% of sufferers eventually succumb to liver cancer or complications as a result of chronic active hepatitis B.

Cordyceps has proved to be beneficial to patients suffering from post hepatitis cirrhosis, which sometimes results when the liver does not heal

Correctly after a bout of hepatitis. In 1986, an extract of cultured mycelium was tested in 22 patients with post-hepatitis cirrhosis. Patients took 6–9 g of Cordyceps every day for three months, and by the end of the study their symptoms had improved dramatically. Cirrhotic cells had disappeared in 15 patients and had decreased significantly in another 6 patients. In a more recent study, Japanese and Chinese researchers found that mice developed a high-energy state in their livers, without signs of toxicity, after consuming large quantities of Cordyceps mycelium.

The researchers concluded that one of the main effects of taking Cordyceps on a repeated basis might be a higher metabolic state of the liver. One drug prescribed to treat cirrhosis, called malotilate, helps the liver regenerate by activating the cells of its energy factories. This in turn boosts concentrations of adenosine triphosphate (ATP), which supplies energy to cells. The fact that Cordyceps increases ATP levels may be one way it helps repair the liver.

7. Cordyceps and Kidney Failure

Cordyceps can relieve acute kidney failure brought on by an adverse toxic reaction to antibiotics. Studies have shown that Cordyceps has significant kidney-protective effects against gentamycin and another amino glycoside known as kanamycin. In a controlled study of patients

who had developed a condition called gentamycin kidney toxicity, half the patients were given an extract of the cultured mycelium of Cordyceps while still taking gentamycin.

The control group continued to receive the gentamycin and additional drugs to neutralize its toxicity. By the sixth day, 89% of the Cordyceps group had made a complete clinical recovery from the toxicity of gentamycin; in comparison, only 45% of the control group recovered.

In 1995, researchers in China reported that Cordyceps can help patients with chronic renal failure (CRF). A clinical study of 37 CRF patients treated with 5 g daily of Cordyceps for 30 days found significant improvement. Compared with the results of pre-treatment tests, red blood cell and hemoglobin counts were greatly increased. The most improvement was shown in the creatinine clearance test, which measures the kidney filtration rate in terms of waste product called serum creatinine.

Tests showed an improvement rate of about 39%. In addition, there was a 34% decrease in blood urea nitrogen (BUN); a high level of BUN is a major indicator of kidney disease. The test subjects also showed increased levels of superoxide dismutase (SOD), one of the body's strongest free-radical scavengers. Equally important was the 63% drop in proteins found in the urine, which is one of the strongest indicators of an overall correction of kidney function.

Cordyceps and Kidney Transplants Cordyceps provides protection against the toxicity of cyclosporine, the major drug used to prevent the immune system from rejecting newly transplanted organs. Cyclosporine is a very useful immunosuppressant that has trans formed the field of transplantation and saved many lives.

But because of its deleterious effect on the kidneys, the drug presents a difficult problem for transplant patients who rely on it for survival. By constricting blood vessels and causing damage to kidney cells, cyclosporine can induce acute kidney failure. It can also cause diabetes, hypertension, and malignancies, and make patients susceptible to infections. In one clinical study on Cordyceps, researchers selected seven kidney transplant patients who were taking the conventional cocktail of anti-rejection drugs—azathioprine, cyclosporine, and prednisone. All the subjects had developed low levels of infection-fighting white blood cells and other symptoms of organ rejection.

Cordyceps was administered as a replacement for the toxic azathioprine. Researchers determined that Cordyceps had caused no inhibition of the leukocytes. In fact, their levels returned to normal, allowing the immune system to combat infections. A larger, placebo-controlled clinical study of Cordyceps in kidney-transplant patients was conducted at Nanfang Hospital and Taizhou Medical School, in China, to test its ability to protect the kidneys from cyclosporine toxicity.

Sixty-nine stable kidney-transplant patients were randomly assigned to two groups: one group of 39 patients received a placebo, while the other 30 patients received Cordyceps. All the patients received cyclosporine, and thoughout the 15-day trial, they were monitored for signs of kidney toxicity. Researchers found less kidney toxicity in the Cordyceps group, and the longer patients took the mushroom powder, the less toxicity there was.

Based on their findings, the doctors who conducted the trial now recommend Cordyceps for kidney-transplant patients on cyclosporine. It is interesting to note, that cyclosporine is produced by another species of Cordyceps.

8. Cordyceps and Fatigue

Chinese athletes have begun to use Cordyceps as general health supplement to increase vitality and energy and as a post-exercise recovery food. In TCM, doctors have long used the mushroom to treat cases of excessive tiredness. Cordyceps seems to increase patients' stamina. For this reason, physicians have recently been looking into whether Cordyceps can aid patients who suffer from chronic fatigue syndrome. Although the disease is a recognized disorder, chronic fatigue syndrome is difficult to diagnose accurately.

Its strong psychological component has made it a controversial subject in Western medicine. No single test or biological aspect has yet determined the presence of chronic fatigue syndrome, and the biochemical and biological signs of the disease continue to be a subject of debate.

Complicating the problem of diagnosis, fatigue can be caused by any number of diseases, including low blood pressure, AIDS, tuberculosis, depression, or hepatitis. By definition, a person is diagnosed with chronic fatigue syndrome if he or she exhibits these symptoms:

- Shows signs of the disease for more than six months.
- Is not tired by reason of overexertion.
- Can get no relief by resting.
- Suffers from at least four of the following ailments: headache, muscle pain, unrefreshing sleep, memory impairment, inability to concentrate, post-exertion malaise, sore throat, multijoint pain, or tenderness of the auxiliary lymph nodes or cervical nodes. More research needs to be done to determine the effectiveness of Cordyceps in alleviating fatigue. In the meantime, people suffering from fatigue who have tried Cordyceps have reported some encouraging results.

How does Cordyceps help people who suffer from chronic fatigue? Scientists report that chronic fatigue sufferers have an unusual form of adrenal insufficiency and, strangely, high levels of male hormones. Because Cordyceps improves the function of the adrenal cortex, it may help people who suffer from chronic fatigue. The mushroom also strengthens the resiliency and integrity of the HPA (hypothalamic-pituitary-adrenal) axis, the neuroendocrine system that responds to stressful events by producing chemical messengers that bring feelings of despair. It appears that Cordyceps calms the HPA axis and thus the nervous system. In any case, Cordyceps does appear to boost the stamina of people who are not suffering from chronic fatigue.

At the annual meeting of the American College of Sports Medicine in 1999, Christopher Cooper, professor of medicine and physiology at the University of California—Los Angeles School of Medicine, presented a study that showed Cordyceps Militaris increases exercise performance.

In the study, 30 healthy elderly patients underwent a double-blind, placebo-controlled trial in which they were tested on a stationary bike. Subjects who took Cordyceps increased their oxygen intake from 1.88 to 2.00 liters per minute; those who took the placebo showed no increase in oxygen intake. Dr. Cooper concluded, "These findings support the belief held in China that Cordyceps Militaris

has potential for improving exercise capacity and resistance to fatigue.

The results complement other studies which have shown increased cellular energy levels through the use of Cordyceps.” Recent studies addressed the underlying mechanisms by which Cordyceps improves or increases performance. It increases the ratio of adenosine triphosphate (ATP) to inorganic phosphate in the liver by a 45% to 55%. One double-blind study, published in the American Journal of Clinical Nutrition in 2000, tested the energy and endurance in 110 healthy, but sedentary adults. Half took 3 g of Cordyceps daily, while the other half took a placebo. After 12 weeks, the Cordyceps group could cycle 2.8% longer than they could before taking the supplement, while the placebo group decreased the length of their rides by 5.6%. Cordyceps and Erectile Dysfunction

9. Cordyceps and Erectile dysfunction

Cordyceps, which acts on the libido over a period of weeks or months, can be classified as a sexual restorative. Its use as a remedy for sexual dysfunction has a long history in China: Cordyceps was simmered with other herbal medicines or cooked with meats such as lean pork, chicken, or steamed turtle, each of which was thought to have its own power to enhance sexual function. Using Western scientific methods, researchers

have determined that Cordyceps stimulates activities in the body similar to those produced by the natural sex hormones.

In 1995, laboratory research in Japan demonstrated that Cordyceps mycelium extract inhibits muscle contractions of the double chamber inside the penis called the corpus cavernosum, which consists of arteries, veins, and muscle tissue.

Under a relaxed, sexually stimulated state, blood pours into this sponge-like structure and becomes trapped, resulting in an erection. Western-trained physicians in China have performed multiple studies with Cordyceps in the treatment of male impotence. At Hua Shan Hospital, in Shanghai, researchers tested the mycelium product in 286 impotent men.

After taking 1 g of Cordyceps three times a day for 40 days, 183 patients reported improvement in sexual functioning. At the end of another 40 days, almost half the men reported that their sex lives had been partially or completely restored. When word got out, others wanted to begin their own trials.

The Shanghai Institute of Endocrinology tried two 20-day courses of Cordyceps in 50 impotent men. After they had completed both courses of the mycelium, 13 patients reported that they had been able to resume sexual activity; another 12 subjects indicated that they were

experiencing sexual sensations and were now able to have erections.