Research Supports Anti-Aging Benefits of Traditional Tonic Herbs

Tango Advanced Nutrition’s herbal formulas are based exclusively on Tonic Herbalism—the practice of combining traditional ‘tonic herbs’ to achieve a synergistic effect greater than what can be obtained by taking individual herbs. The basis for tonic herbalism is the belief that, through regular consumption, tonic herbs help the body maintain its self-regulatory capacity, assuring optimal functioning.

Tonic herbs, referred to in Asia as the “superior herbs,” comprise an “elite class” of about 60 of the approximately 3,000 herbs used today in traditional herbal medicine. By definition, tonics can be taken continuously over a long period of time, yielding cumulative, long-term benefits without any unwanted side effects. Consistent daily consumption is the key to gaining the benefits of tonics.

According to Traditional Chinese Medicine (TCM) theory, there are three categories of tonic herbs. Each category represents one of the three key energies of the body. These energy categories are referred to as Three Treasures: Jing (Essence), Qi (Energy Flow) and Shen (Spirit).

Tango formulas are based primarily on Jing or Essence Tonics, which are commonly used to prolong the years of life without aging, and are often referred to as the “anti-aging” herbs.

Research on Tonic Herbs
Traditional Chinese Medicine has an extensive history—going back some five thousand years—of using tonic herbs to support health and extend lifespan. Not surprisingly, research into the physiological actions of tonic herbs has exploded in the last 20 years. The following is a brief review of recently published papers on three tonic ‘superstars’ found in several Tango formulas—Astragalus, Notoginseng, and Cordyceps.

Astragalus
Astragalus has been used in Traditional Chinese Medicine for thousands of years, often in combination with other herbs, to tone and strengthen the body. Modern research shows that Astragalus slows formation of advanced glycation end products (AGEs) and supports learning and memory. Additionally, astragalus has been shown to aid in restoring insulin receptor sensitivity in skeletal muscle.

In one recent study researchers demonstrated that administration of astragaloside IV, a major active constituent of Astragalus, significantly improved glucose tolerance and endothelium-dependent vasorelaxation (EDVR), resulting in reduced blood pressure and triglyceride levels in fructose-fed rats. These findings support the traditional use of Astragalus for the prevention of hypertension and endothelial dysfunction related to dietary-induced metabolic syndrome.

Astragalus is also the primary active ingredient in traditional Chinese formulas for cardiovascular support. This benefit is supported by a recent study that found Astragalus is especially effective at protecting the aorta from damaging effects of high levels of free fatty acids (FFA).

In a related study, scientists in Shanghai have shown that Astragalus inhibits cardiac fibrosis (stiffening of the heart muscle) while protecting heart tissues from the damaging effects of ischemia (restriction of blood flow) following a heart attack.

Astragalus has also been shown to be a potent immuno-supportive agent, capable of stimulating immune cell activation and modulating inflammatory responses, resulting in enhanced wound healing, growth of new blood vessels (angiogenesis) and normalization of blood pressure.

Perhaps the most exciting benefit of Astragalus is its ability to boost production of telomerase, the enzyme that controls short bits of DNA, known as telomeres that play a key role in cell replication, cancer and human aging (Fig. 1, right). In 2008 researchers from UCLA described how a compound derived from Astragalus, called IV, a major active constituent of Astragalus, significantly improved glucose tolerance and endothelium-dependent vasorelaxation (EDVR), resulting in reduced blood pressure and triglyceride levels in fructose-fed rats. These findings support the traditional use of Astragalus for the prevention of hypertension and endothelial dysfunction related to dietary-induced metabolic syndrome.

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cycloastragenol, prevented the progressive loss of telomeres in key immune cells, inhibiting the aging process of the cells and enhancing their response to fight off viral infections.

In 2011 Spanish researchers identified another compound in Astragalus, dubbed TA-65, that also activates telomerase. In their study the researchers noted that TA-65 significantly increased average telomere length in treated mice, leading to improvements in glucose tolerance, osteoporosis and skin fitness.

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**Notoginseng**

Notoginseng (also called *Panax Notoginseng* and *Tienchi Ginseng*) is commonly used in Eastern countries for cardiovascular health. Panax Notoginseng is rich in ginsenosides — the main active ingredients of all ginseng types — and exhibits many of the adaptogenic properties of its related species. Panax Notoginseng Saponins (PNS), the major ingredients, have recently been shown to improve blood vessel health and to support healthy cholesterol levels. In related research, Notoginseng has also been shown to support healthy blood vessels by reducing inflammation and by normalizing elevated blood lipids.

Notoginseng has been shown to be clinically effective for improving vascular reactions, supporting its use in treating hypertension and myocardial ischemia. Researchers from the Institute of Molecular Medicine in Beijing recently identified two active components of Notoginseng — ginsenosides Rb1 and Rg1 — that support healthy blood pressure levels by aiding L-arginine transport within endothelial cells and elevating NO (nitric oxide) to increase blood vessel dilatation.

In another study, researchers recently demonstrated that Notoginseng fractions can aid in preventing hardening of the arteries (atherosclerosis) by reducing arterial inflammation and subsequent formation of atheromas (plaques) in arteries.

**Cordyceps Sinensis**

Cordyceps sinensis is a powerful, all-purpose tonic herb that has been used in Traditional Chinese Medicine for thousands of years to promote health and longevity, restore energy and enhance athletic endurance, especially at high altitudes. This is fitting, given that natural Cordyceps is only found at extremely high altitudes in the Himalayan Plateaus. Harvesting in such extreme conditions has made this exotic medicinal one of the most highly valued of all traditional crops. Even today, high quality, naturally harvested Tibetan Cordyceps can cost over $8,000 per pound.

Despite the expense, the adaptogenic and medicinal benefits of Cordyceps made it one of the most highly prized staples of Tibetan, Chinese and traditional herbal medicines, which was often reserved for the elderly as a rejuvenating agent to fight fatigue and prevent aging.

The introduction of modern cultivation techniques twenty years ago allowed for production of Cordyceps at reasonable prices, and virtually all scientific research conducted today is with extracts of cultivated Cordyceps.

Early research revealed that Cordyceps exerts powerful antioxidant properties that contribute to its wide range of antiaging and adaptogenic health benefits. In one study Cordyceps was shown to fight fatigue, enhance performance and promote lung health by enhancing production of mitochondrial adenosine triphosphate (ATP), the universal energy molecule.

These findings are supported by recent research published in 2011 that describes how Cordyceps fights fatigue and enhances athletic ability. Researchers found that groups of exercising and non-exercising rats both benefited equally when given Cordyceps. Cordyceps was shown to work by activating skeletal muscle metabolic regulators, acting as a potent natural exercise mimetic.

Cordyceps’ antioxidant properties have also been shown to improve serum lipid profiles by reducing serum total cholesterol (TC), increasing high-density lipoprotein (HDL), and lowering LDL (low density lipoprotein) and VLDL (very low-density lipoprotein) levels. Additional animal studies have shown that Cordyceps also inhibits oxidation of low-density lipoprotein by free radicals to prevent the formation and accumulation of cholesterol deposits in the aorta.

In a related study in 2011, researchers in China demonstrated that the antioxidant properties of an extract of Cordyceps enhanced immune activity to protect mice exposed to ionizing radiation by reducing oxidative injury and modulating the secretion of cytokines IL-4, IL-5 and IL-17.

One of the most important adaptogenic properties of Cordyceps is its ability to aid in reversing insulin resistance. Insulin resistance is a condition that severely impairs the body’s ability to absorb glucose, resulting in dangerously high glucose and insulin blood levels, and contributing to obesity and diabetes.

In 2002, researchers discovered that Cordyceps extracts restored insulin sensitivity in both healthy and diabetic animals after only 17 days of treatment. The researchers reported significant improvements in fasting blood glucose levels, fasting plasma insulin levels, glucose insulin index and oral glucose tolerance in treated animals.

In a related study in 2006, researchers demonstrated that animals treated with Cordyceps for as little as 10 days had significant improvements in whole-body glucose disposal, accompanied by a reduction in insulin secretion after eating meals high in carbohydrates.

That same year researchers at the Institute of Chinese Medical Sciences in Macau found that Cordyceps extracts significantly reduced blood glucose levels in diabetic mice. Serum insulin levels were also normalized, indicating that Cordyceps was stimulating pancreatic release of insulin while reducing insulin resistance.

In a related study, scientists revealed that Cordyceps can exert anti-hyperglycemic activities while causing signifi-
Vital Cell® Advanced Anti-Aging and Circulatory Support Formula

**Vital Cell**™ advanced herbal formula has been shown to counter a host of common discomforts associated with human aging. The following summary, condensed from a clinical trial involving 150 patients, aged 55 to 89 years old, demonstrates how Vital Cell confers a wide range of antiaging benefits to enhance energy levels, reduce plasma viscosity, improve microcirculation and repair capillary damage.

By restoring microcirculation Vital Cell promotes internal organ function while speeding removal of cellular metabolic waste products, such as lipofuscin, that have been implicated in age-related degenerative health issues. Vital Cell has also been shown to support immune performance by increasing resistance to illness and improving overall health.

Researchers conducted detailed medical examinations of each patient prior to the start of the trial, and again at the end of the 30-day treatment phase. After evaluating their data, the researchers discovered significant improvements in a wide range of symptoms.

**Angina, Chest Tightness, Palpitations**

With advanced age, arteries tend to thicken as fatty deposits accumulate on the inner lining of arterial walls, especially in the coronary and cerebral arteries. These deposits reduce arterial circumference and impair blood vessel elasticity, resulting in a lack of blood flow to heart tissues. Common symptoms usually include chest distress, palpitations, insomnia, and pain due to insufficient blood supply to the coronary arteries.

- **Angina:** Prior to treatment, 25 patients were diagnosed with angina pectoris. After one month of treatment, 23 of the 25 patients (92%) were completely free of symptoms, and the remaining two patients reported that their symptoms were significantly reduced.

- **Chest Tightness:** Before taking Vital Cell, 106 patients reported experiencing chest pains. After receiving Vital Cell for one month, only two of the 106 patients (1.3%) continued to feel chest pains.

- **Palpitations:** Of 86 patients experiencing unpleasant sensations, including irregular and/or forceful beating of the heart, 82 reported complete relief from symptoms one month after treatment, and only four patients reported continued symptoms.

**Edema, Puffiness of Lower Limbs**

In the elderly, as plasma albumin levels decrease, colloidal osmotic pressure of the plasma is reduced as well. Additionally, as aging blood vessels become increasingly permeable, plasma levels of sex hormones decline, leading to increased retention of water and sodium. Together these changes contribute to increased accumulation of fluid (edema) in the lower limbs.

Vital Cell has previously been shown to increase plasma albumin and sex hormone levels, leading researchers to theorize that the formula would aid in reducing lower limb edema.

Prior to administration of Vital Cell, 32 subjects were diagnosed with edema of the lower limbs, including edema resulting from chronic heart failure and chronic renal dysfunction. After one month of treatment with Vital Cell, 30 patients (94%) were free of edema, and only two patients still showed signs of swelling of the lower limbs.

**Blood Pressure**

In the elderly, elevated systolic and diastolic blood pressure levels result from the loss of elasticity in the arterial walls. Other contributing factors include a narrowing of the diameter of blood vessels, increased resistance to peripheral blood flow, and elevated blood serum viscosity. Vital Cell has been shown to exert a number of positive anti-aging effects to aid in normalizing blood pressure levels.

Researchers measured blood pressure levels of patients before and after treatment with Vital Cell. Of the 150 volunteers, only those with a systolic pressure greater than 160 and a diastolic pressure greater than 90 were selected for further evaluation, for a total of 62 subjects.

Before administration, 26 patients had blood pressure measurements greater than 160/90. The highest systolic pressure was 207, and the highest diastolic pressure was 120. The average systolic pressure was 149.78, and the average diastolic pressure was 79.48. These improvements were found to be statistically significant (P<0.01).

**Blood Flow**

Researchers randomly gathered blood samples from 41 patients (20 males and 21 females) prior to treatment and at the end of the study. The examiners conducted the following tests on blood samples:

- Whole-blood specific viscosity
- Erythrocyte sedimentation rate
- Hematocrit (red blood cell count)
- Plasma specific viscosity
- Erythrocyte electrophoresis

While there were no detectable changes in erythrocyte sedimentation rate or hematocrit after treatment, test results revealed significant improvements in whole-blood-specific viscosity, plasma specific viscosity and erythrocyte electrophoresis.

**Microcirculation**

Researchers randomly selected 51 patients to measure circulation in nail-fold microcapillaries prior to receiving Vital Cell, and again at the end of the study.

Microscopic observations revealed significant improvements in the speed of blood flowing through the microcapillaries of the nail folds after treatment.

**Metabolism of Plasma Proteins**

Albumin is an abundant blood plasma protein produced by the liver and secreted into the blood. In addition to preventing the leakage of fluids from the capillaries into surrounding tissues, albumin aids in transporting small molecules, such as calcium, unconjugated bilirubin, free fatty acids, cortisol and thyroxine. Serum albumin lev-
cant reductions in blood glucose concentrations in diabetic rats, further supporting its potential role as a functional food for metabolic disorders and for people at risk of becoming obese and developing diabetes.21

The most recent study on Cordyceps, published in March 2012, measured the antidiabetic effects of Cordyceps and taurine as compared to glibenclamide, an antidiabetic drug in a class of medications known as sulfonylureas. Oral administration of Cordyceps was shown to decrease serum glucose, fructosamine, total cholesterol, triglyceride levels, insulin resistance index and pancreatic malondialdehyde content. Cordyceps also significantly increased serum insulin, HDL-cholesterol, total antioxidant capacity, β cell function, and pancreatic reduced glutathione (GSH) content. In their conclusion the researchers reported that while Cordyceps demonstrates less potent hypoglycemic effects than glibenclamide, it is superior at reducing insulin resistance and exhibits stronger antioxidant properties.22

Summary
While the three “tonic herbs” reviewed here represent a small fraction of the many “elite” herbs that have passed the tests of time, they do serve as excellent examples of how nature can provide safe, effective methods of improving health and quality of life.

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els can serve as a useful marker of chronic liver disease and nutritional status. Researchers measured albumin levels in 44 patients prior to administration with Vital Cell and again at the end of the treatment.

? Plasma Albumin: The average value of plasma albumin was 4.573 before Vital Cell, and rose to 4.768 by the end of the study. These numbers were statistically significant (P<0.01).

? Plasma Globulin: Prior to administration, average plasma globulin was 2.734. This number decreased to 2.564, indicating a statistically significant improvement.

? Plasma Albumin - Plasma Globulin Ratio: The ratio before treatment was 1.702, and increased to 1.897 following the treatment period. The difference indicated a great statistical significance (P<0.01).

Summary
Vital Cell has been shown to have excellent therapeutic actions on such elderly disorders as chest tightness, insomnia, chest pains, coughing, shortness of breath, heart palpitations, dizziness and lack of appetite. Vital Cell has been shown to promote healthy blood circulation while supporting expansion of coronary arteries and arterioles of the brain and lungs, increasing blood flow in coronary vessels, improving vessel elasticity, enhancing T-cell immuni ty and promoting the synthesis and metabolism of proteins. These findings indicate that Vital Cell is a valuable antiaging formula that can aid in reversing various disorders affecting the elderly, such as insufficient blood supply to the brain, coronary heart disease, chronic bronchitis, and hypoproteinemia, without the risk of adverse or toxic side effects.