



**THE
THERAPEUTICS OF
GINSENG GINSENOCIDES
IN THE TREATMENT AND PREVENTION
OF CORONARY HEART DISEASE**

A collection of international research demonstrating the value of using Ginsenocides extracted from the root, leaf, stem, and flowers of North American Ginseng to treat and prevent coronary heart disease. This research identifies and uses the "full spectrum of known ginsenocides", which exceed 30 in number, to dilate coronary blood vessels, reduce myocardial oxygen requirements of the heart muscle, prevent heart damage during periods of oxygen deprivation and restoration, shrink areas of heart damage following heart attacks, reduce heart damage caused in myocardial ischemia by isoproterenol, improve heart function, and reverse arteriosclerosis. This research demonstrates effective rates of 56% for improvement in heart function on ECG's and 90% for angina pectoris patients without adverse side effects. A review of these results indicate that every healthy individual, including athletes, as well as those with heart problems, should investigate the use of ginsenocides to improve their athletic performance while at the same time reduce their risks of heart damage.

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**PEGASUS GINSENOCIDES
"CARDIO GUARD" STUDIES**

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**RESEARCHING THE USE OF GINSENOCIDES
IN THE CURE AND PREVENTION OF HEART DISEASE**

Hu XiaoJin, Li Xian

Ginseng, the precious natural medicinal flora which enjoys a high reputation for a long time, is being used widely in clinical practice to treat coronary heart disease, ulcer, anti-shock, epideffic homorrhage-fever, diabetes, anti -senility etc. The pathological research testifies ginseng has obvious pathological activation on the vascular, blood system, and it can improve the cerebral function, the organic immunity, etc.

Ginsenosides are the main activate ingredient of ginseng. Scientists of worldwide nations have gone through the research on chemical ingredients for years and the systematic investigation on the pathological function, and they have made progress of break-through significance. On the research of the chemical ingredients, they have more than thirty kinds of chemical structures and research of the chemical ingredients, they have expounded more than thirty kinds of chemical structures and types of ginsenoside monomer, on the pathological function, which is more strikingly, they have clarified function and its characteristics on the more strikingly,

they have clarified the ginsenoside's function and its characteristics on the vascular systematic diseases, after summing-up, the brief report is as follows:

1. The Effect on the Heart Function:

It can enhance the heart systolic power, increase the cardiac output, thus it has the function of strengthening the heart. Also, it can increase the coronary blood flow, slow down the heart pulse; at the same time of enhancing the heart systolic power, P-P period and the prolongation of the P-R do not appear. Therefore, ginseng is not completely the same as ordinary heart strengthening ginsenoside medicine in terms of the features of its heart strengthening function.

The research shows, ginseng's effects on heart systolic power of function mainly are: enhancing the systolic power of myocardial muscle, slowing down the heart pulse, increasing cardiac output and the coronary blood flow. The study on functional mechanisms consider this may be related to the inhibition of the activation of Na⁺, K⁺- ATP enzyme, the promotion of the release of catecholamine, or the improvement of the CAMP/CGMP ratio of myocardial muscle.

2. The effect on the blood flow dynamics:

Through the effect of ginsenoside on the blood flow dynamics of dog hearts, the experiment results prove that the intravenous injection of ginsenosides, 50mg/kg,

on the anesthetic dog, the LVP (left ventricle pressure) , CO (cardiac output), CI (cardiac index), TPVR (total pressure of vascular rounded), BP (blood pressure), HP (heart pulse), cardiac oxygen-consumption, (dp/dt) max and cdr/dr/ (BP) etc. , have descended, while the value of PF (peripheral flow), SI and the (t-(dp/dt) max) , the time which reflecting the quickness of the cardiac muscle systole in the left ventricle have increased. This result indicates ginsenosides can reduce the TTI, time- tension index, which reflects the oxygen-consumption condition of cardiac muscle.

3. Oxygen Deficiency Enduring:

Ginsenoside can effectively improve the animal's ability of enduring oxygen-deficiency, slow down the speed of oxygen-consumption, prolong the living time, and the systolic time of the ventricle under the condition of oxygen-deficiency. The experiments have proven that reducing the anti-oxygen attraction of the hemoglobin, releasing more oxygen to the organ may be the reason of ginsenoside's improvement on the organic ability of enduring oxygen- deficiency, while to the cardiac muscle cells with oxygen and sugar deficiency, it can prevent oxygen-free ferment dissolving, accelerate the compose of glycogen; and to the cardiac muscle cells with oxygen and sugar deficiency, it has a protective function.

4. The Protective Effect on the Cardiac Muscle:

Ginsenoside can improve the organic ability of oxygen deficiency endurance, reduce the cardiac muscle's oxygen consumption volume, increase the coronary blood flow, improve the metabolism of cardiac muscle. Ginsenosides can reduce the dog's infarction scope induced by LAD, beneficial to the restoration of the myocardial infarction. The abdominal injection of ginsenoside on the male rats can improve obviously the heart function when blood - deficiency in myocardial muscle occurs and reperfusion is needed, and it can prevent the occurrence of arrhythmia cordis. The series of experiments testify that ginsenoside's mechanism of anti-blood deficiency in myocardial muscle may be similar to glucocorticoid hormone, i.e. by way of reducing the CGMP content of myocardial muscle, stabilizing the lysosomotropic membrane, protecting the myocardial muscle of blood deficiency.

The research also shows the Rb+Ro (including Rb₁, Rb₂, and Rb₃) content in ginsenoside can help the infant big rats' myocardial muscle to cultivate the injury of sugar and oxygen deficiency, reduce the release of LDH when regaining oxygen injury occurs, cut down the CPK release when reperfusion injury happens on the big rats' heart with blood-deficiency which aparted from the body. Ginsenoside Rg group (Rg₁, Rg₂ and Rg₃) and Rb₀ can promote the LDH releasing of the myocardial muscle cells. Therefore, ginsenoside Rb+Ro group reduces the intake of ATP of