

COMPREHENSIVE OVERVIEW OF CARDIOKINASE SUSTENANCE

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ABSTRACT

Cardiokinase is a potent fibrinolytic enzyme with the potential for fighting cardiovascular diseases, hence referred so often. It is extracted and highly purified from a traditional Japanese food called Natto which is made from fermented soybeans and is also called nattokinase. Improper blood clotting or failure of clots to properly dissolve can lead to serious health consequences. Thrombotic diseases typically include cerebral hemorrhage, cerebral infarction, cardiac infarction and angina pectoris, and also include diseases caused by blood vessels with lowered flexibility, including senile dementia and diabetes. Pharmacologically Cardiokinase has a safe profile as the key agent for restoration of vasculature health and cure of all thrombotic diseases. Cardiokinase also termed “super health food” has caused world wide attention not only for its unique flavor and rich nutrition, but also due to a variety of health functions.

Keywords: Cardiokinase; nattokinase; natto; fibrin; blood clots.

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INTRODUCTION

Nattokinase was discovered in 1980 by Hiroyuki Sumi, researcher at Chicago University after testing over 173 natural foods as potential thrombolytic agents, searching for a natural agent that could effectively dissolve thrombus allied with cardiac and cerebral infarction¹⁻³. Nattokinase was discovered in Natto, a fermented cheese-like food that has been used in Japan for over 1000 year. Natto is a traditional Japanese food made of soybeans⁴. To prepare the beans are cooked and then by the action of the bacterium *Bacillus subtilis ssp.natto* fermented⁵⁻⁷. During this process is formed a slimy, stringy substance to the beans. In the traditional method of preparation are the bacteria from rice straw, into which the beans are wrapped⁸. In the modern manufacturing process, the bacteria cultures inoculated with beans, so that the use of rice straw is no longer necessary⁹⁻¹³. The botanical source for Nattokinase is *Glycine max* (L.) Merr. It appears as a yellow-white fine powder¹⁴⁻¹⁵.

Cardiokinase is a particularly potent treatment because it enhances the body's natural ability to fight blood clots in several different ways and has many benefits including convenience of oral administration, confirmed efficacy, prolonged effects, cost effectiveness, and can be used preventatively¹⁶⁻¹⁹. It is a naturally occurring, food dietary supplement that has demonstrated stability in the gastrointestinal tract. The properties of Cardiokinase closely resemble those properties of plasmin so it dissolves fibrin directly²⁰. More importantly, it also enhances the body's production of both plasmin and other clot dissolving agents²¹. The fibrinolytic activity of nattokinase, the various medicinal uses and other applications are described herewith.

Fibrinolysis

Blood clotting is a complex process. Initially when there is an injury such as a cut, the blood flow is immediately slowed to the area of the injury by vasoconstriction. Blood platelets then become activated and aggregate to form a loose platelet plug. To assure the stability of the platelet plug, a fibrin mesh is formed to trap the platelets and hold the plug together and finally the blood clot is dissolved by the action of plasmin²²⁻²⁵ as shown in Fig. 1.

Normal blood clotting is necessary to preserve life when injuries occur however improper clotting can occur when blood flow is impeded by excessive and prolonged pressure on blood vessels. Blood clots have the potential to cut off circulation to essential organs and to break loose and cause life threatening occlusions in the heart and brain. Nattokinase has been shown to degrade fibrin clots both directly and indirectly. Nattokinase lyses fibrin directly and enhances plasmin through active pro-urokinase (endogenous) moreover increases the concentration of Tissue Plasminogen Activators thereby lysing clots²³⁻²⁵ as shown in Fig.2.

Cure to Deep vein thrombosis

Thrombosis is a serious hazard of long distance travel involving extended periods of inactivity and sitting. The condition of Deep vein thrombosis is illustrated in Fig.3. Nattokinase effectively prevents the development of edema and deep vein thrombosis during long flights²⁶⁻²⁷. Nattokinase is actually superior to conventional thrombolytic drugs. T-PAs (tissue plasminogen activators) like urokinase (the drug) which are only effective when taken intravenously and often fail simply because a stroke or heart attack victim's arteries have hardened beyond the point where they can be treated by any other clot-dissolving agent. Nattokinase, however, can help prevent that hardening of blood vessels²⁸⁻²⁹.

Relief from Hypertension and Blood pressure

Natto has long been known to reduce blood pressure evidence is emerging to suggest that nattokinase may reduce high blood pressure in humans as well, and has been reported to lower systolic and diastolic blood pressures by 11 and 9.7%, respectively. One possible explanation for the blood pressure lowering effect of nattokinase is less restricted blood flow due to removal of small clots in the capillaries³¹⁻³³. Blood pressure tends to rise when blood flow is restricted and the heart must pump against resistance. Nattokinase can play a key role in preventing the long-term sequel of damaged, inflamed blood vessel walls is also believed to act as an angiotensin converting enzyme. It can inhibit angiotensin converting enzyme (ACE), which converts angiotensin I to its active form angiotensin. ACE causes blood vessels to narrow and blood pressure to rise - by inhibiting ACE, nattokinase has a lowering effect on blood pressure³²⁻³⁴.

Keeps blood cells from sticking together

Normally, each red blood cell maintains its distinct shape as it travels through the blood vessels. Sometimes, though, the red blood cells clump together, much like dry cereal does if you leave it sitting in a bowl of milk. When red blood cells stick together, they start to form a clot. Cardiokinase decreases the tendency of blood cells to stick to each other, which supports the health of the arteries³⁵⁻³⁸.

Promotion of Longevity

Some people have suggested that nattokinase may prolong life. It is interesting that natto, the food from which nattokinase is derived, is a commonly eaten food in Japan, which has the longest lifespan of in the world (80.91 years, CIA Fact Book 2002)³⁹. While the association is not proof that nattokinase increases the lifespan, it is certainly an interesting association. Certainly good circulation is important for everyone and when combined with a healthy lifestyle should contribute to a long and healthy life⁴⁰.

Prevention of osteoporosis

Bones are made of calcium and an amino acid called gamma glutamic acid. Nattokinase consists of polyglutamin acid which is actually the sticky part of natto. This aids in the uptake of calcium from the intestine. Moreover vitamin K is also present in natto, it being a fermented food. Many older women complain of bone pain, but it is not possible to put them on Coumadin and upset their Vitamin K cascade since that helps form a protein in bone. Nattokinase can be used instead⁴⁰⁻⁴².

Treatment of Fibromyalgia

Fibromyalgia is a musculoskeletal syndrome characterized by pain and tenderness throughout the body. Although the etiology of fibromyalgia is poorly understood, one theory is that poor circulation due to the formation of small blood clots in the capillaries of muscle tissue deprives the muscle of oxygen resulting in pain and inflammation. Accordingly, nattokinase has been used as treatment for fibromyalgia and reports suggest it is highly effective⁴².

Nattokinase and Dysmenorrhea

Use of nattokinase has been proven nearly miraculous is dysmenorrhea. Women suffering from painful menstrual cycles can be helped with a standard naturopathic protocol of hydrotherapy, lifestyle and nutrition changes and botanicals; however administering nattokinase alongside gives remarkable relief subsiding stress and pain⁴³.

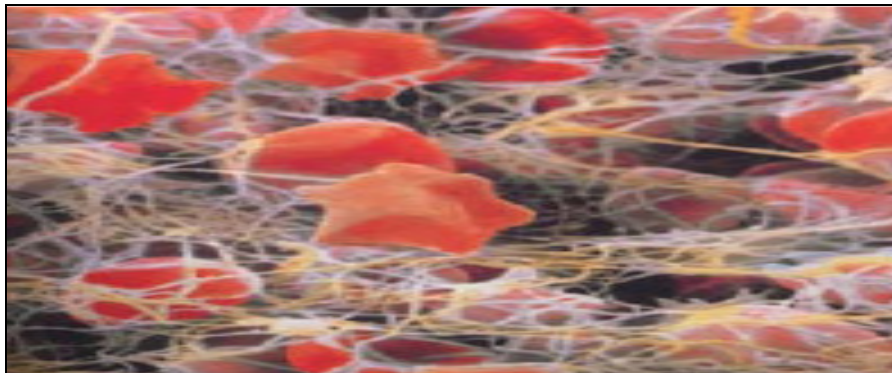


Fig.-1: Fibrin coagulating blood

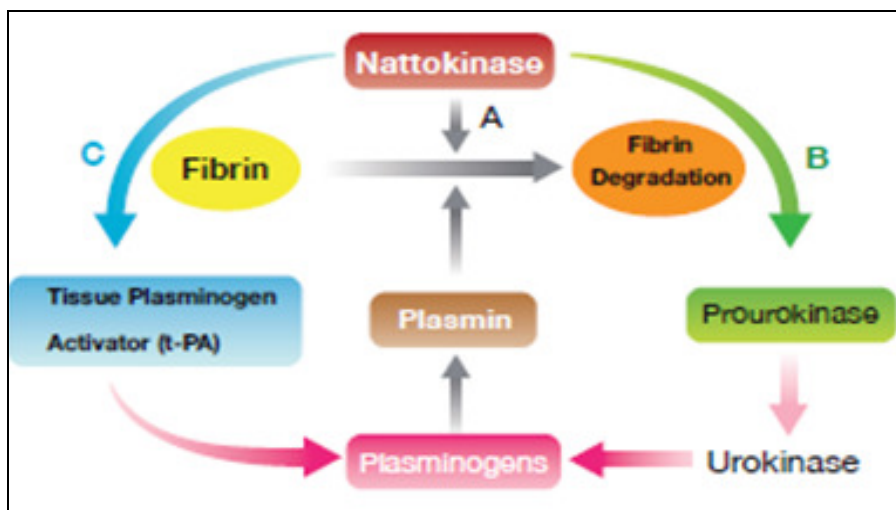


Fig.-2: Physiological effects of nattokinase on fibrin

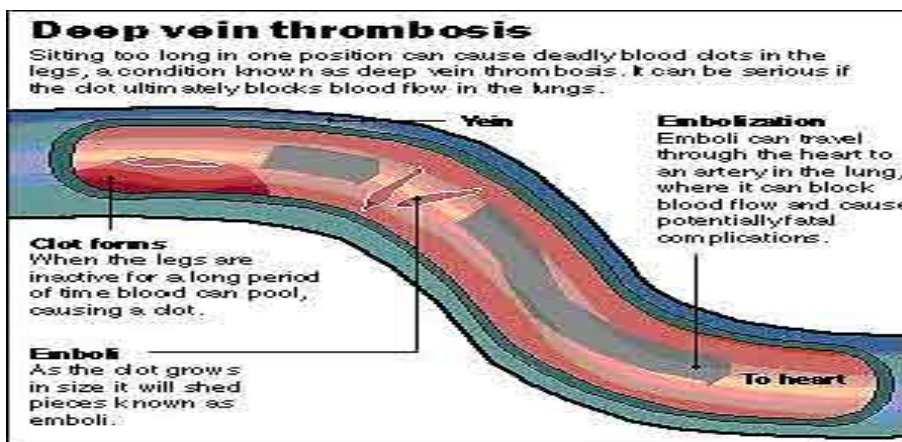


Fig.-3: Condition of Deep vein thrombosis

Prevention of cancer

Nattokinase nutrition in the form of natto when augmented in diet dramatically decreases the incidence of cancer. *Bacillus subtilis* natto can also be used directly to act on the cancerous tissue. This is because of phytoestrogen and isoflavones present in soybeans; the blood thinning nature, prevention of cell sticking and antibiotic action of nattokinase which can lyse the carcinogenic protein slowing the cancer cell growth rate to less than half the normal⁴⁴⁻⁴⁶.

Antibiotic effect

Nattokinase has an anti-bacterial effect on pathogens such as typhoid bacilli and amoebic dysentery. Nattobacteria can be used to produce a number of antibiotics like bacitracin, polymyxin, urethrin. Spores of nattobacteria can be used to suppress disease causing bacteria like salmonella⁴⁷⁻⁴⁸.

Other uses

Nattokinase can be used in nutritional or functional foods and dietary supplements like meal replacements, medical foods, tablets, capsules, cold extruded bars, dry mixes and yoghurt drinks. A more recent use of nattokinase is found in cheese manufacture, which accelerates proteolysis during ripening and use of attenuated starters in combination with nattokinase may accelerate peptide breakdown and enhance breakdown of hydrophobic and potentially bitter peptides produced by nattokinase, which aid in improvement of cheese flavor⁴⁵⁻⁵⁰.

CONCLUSION

The traditional Japanese food Natto has been used safely for over 1000 years. The potent fibrinolytic enzyme nattokinase appears to be safe based upon the long-term traditional use of this food. Medical uses include prevention of heart attacks, strokes, senility, osteoporosis, cancer; antibiotic effects, anti ageing effects and many others. Nattokinase has many other benefits including convenience of oral administration, confirmed efficacy, prolonged effects, cost effectiveness, and can be used preventatively. It is a naturally occurring, food based dietary supplement that has demonstrated stability in the gastrointestinal tract, as well as to changes in pH and temperature. Stressful era of modernization has led to high rates of cardiovascular diseases; thence it would then seem prudent to add this effective natural product to our heart health preventive arsenal as more recently, both clinical and non-clinical studies have demonstrated that Nattokinase supports heart health and promotes healthy circulation. More recent uses include meal replacements, medical foods, tablets, capsules, cold extruded bars, dry mixes and yoghurt drinks and cheese manufacture. Hereby, this paper paraphrases the assorted therapeutic and medicinal uses of nattokinase.

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