“Nattokinase enhances the body's ability to dissolve blood clots in several ways”

Nattokinase is known as a fibrinolytic enzyme. Fibrin is a whitish, filamentous protein that is formed in blood after a trauma or injury to protect the body from excessive blood loss. When strands of fibrin accumulate along the walls of blood vessels, the results are decreased blood flow, blood clots and thicker blood. **Thrombi, (blood clots) can block blood flow in the arteries of the heart and brain and cause angina, heart attacks or stroke.** In the arteries, veins and lymphatic systems are endothelial cells that produce a variety of enzymes that protect the body from clot formation. As we age, production of these enzymes declines. Reduced enzyme production can bring about thrombotic conditions throughout the entire body. Examples of these conditions include senile dementia, cerebral hemorrhage, cerebral and cardiac infarction, and even hemorrhoids.

One of the anti-thrombotic enzymes produced in the body is called plasmin. **Plasmin is responsible for digesting or breaking down fibrin.** Hence, the term "fibrinolytic" is used to describe this kind of enzyme. The research for a natural agent that has activity similar to plasmin has continued for many years. After trials of over 173 natural foods as potential thrombolytic agents, Dr. Hiroyuki Sumi at the Chicago University Medical School found, in 1980, what he had long been looking for. When he placed drops of a traditional Japanese fermented soybean food onto an artificial thrombus (fibrin) in a petri dish that was held at approximately body temperature (37°C), the thrombus around the food gradually disappeared and completely dissolved within 18 hours.

That food was natto, a fermented cheese-like food that has been used safely in Japan for more than 1000 years. Dr. Sumi named the enzyme "nattokinase" which means "enzyme in natto."

It was later determined that **Nattokinase actually has four times greater the fibrinolytic activity than plasmin.**
Nattokinase enhances the body’s ability to dissolve blood clots in several ways. Not only is it able to potently decompose fibrin directly, but it also enhances the body’s production of both plasmin and other clot-dissolving agents, including (endogenous) prourokinase. As fibrin is being dissolved, levels of EFA (euglobulin fibrinolytic activity) and FDP (fibrin degradation products) increase in the blood. Endothelial cells and/or the liver release TPA antigen (tissue plasminogen activator). The increase in these parameters allowed researchers to confirm the action of nattokinase and also to determine that the activity lasts from eight to 12 hours.  

Research

Two human trials and 17 other studies have been done on nattokinase. In a placebo-controlled study done by Dr. Sumi in which dogs were induced to have blood clots, oral administration of nattokinase (1 gm nattokinase as four 250 mg capsules) resulted in angiograms showing normal circulation and dissolution of the clot within five hours of treatment. In contrast, blood clots in the dogs receiving only a placebo did not show any signs of dissolution during the 18 hours following treatment.  

Japanese researchers who studied nattokinase’s ability to dissolve a thrombus in the carotid arteries of rats found that those given nattokinase regained 62% of blood flow, whereas those treated with plasmin regained only 15.8%.  

Researchers from Oklahoma State University, Miyazaki Medical College and JCR Pharmaceuticals conducted a human study on 12 healthy volunteers (6 men and 6 women; ages 21-35 years). Before breakfast, each of the volunteers was given 200 grams of the food natto. Then, through a series of blood tests, the researchers tracked the fibrinolytic activity. On average, the volunteers’ ELT (a measure of how long it takes to dissolve a blood clot) dropped by 48% within two hours of treatment. This heightened ability to dissolve blood clots was retained for 2 to 8 hours. In order to provide a control for the study, the same amount of boiled soybeans (non-fermented) was consumed by the volunteers. The same tests for fibrinolytic activity did not show any significant changes.  

The Japanese have long believed that the food natto also helps to control blood pressure. In recent years, several clinical trials on animals and humans have confirmed this action. A Wistar rat study demonstrated an average 12.7% decline in systolic blood pressure within two hours of a single administration of test extract directly into the peritoneum of the rats. These same researchers also confirmed the presence of angiotensin converting enzyme (ACE) inhibitors within the test extract of natto. The same extract was then tested on hypertensive human volunteers who took 30 grams of the extract for four consecutive days. In four out of five volunteers, the systolic blood pressure dropped an average of 10.9% and the diastolic dropped 9.7%.  

Researchers at Tottori University in Japan used nattokinase therapy to dissolve blood clots in the eyes. These are clots that hinder blood flow and weaken the optic nerve, causing blindness. Patients regained their eyesight within ten days. Furthermore, no abnormalities were observed two months later.

Nattokinase is stable in the GI tract and also helps to control blood pressure. It is convenient to ingest and cost effective. The efficacy and prolonged effects of nattokinase, as well as its preventative uses, have been confirmed by researchers. Some doctors have the opinion that nattokinase is superior to conventional clot-dissolving drugs. While traditional drugs have to be administered intravenously and within 12 hours of the stroke or heart attack, the natural dietary supplement taken orally on a regular basis at a daily dose of 50 grams of natto or the equivalent of as little as 2,000 fibrin units may help prevent the conditions leading to a clot.
How Your Patients Will Benefit From NattoKinase™

Nattokinase has been shown to possess fibrinolytic activity*

Nattokinase is capable of enzymatically breaking down fibrin associated with vascular disorders and injuries*

NattoKinase™ is produced by an exclusive patented process that removes the vitamin K to prevent adverse reactions with warfarin*

References:
2. Sumi H. Healthy Microbe "Bacillus natto". Japan Bio Science Laboratory Co. Ltd.
8. Sumi H. Healthy Microbe "Bacillus natto". Japan Bio Science Laboratory Co. Ltd.

Caution:
Do not use this product without the supervision of a health care professional. Unless instructed to do so by your health care professional. DO NOT exceed 4 capsules within a 24 hour period. DO NOT take this product if you are taking any anticoagulant, including aspirin or other prescription medication. Be sure to tell your health care professional if you are consuming ginger, garlic, fish oils, bromelin or any other natural products that may affect blood clotting and/or platelet aggregation. DO NOT use if you are pregnant or lactating.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Learn more about the complete line of Xymogen® formulas at:
www.xymogen.com or e-mail your questions to: info@xymogen.com

Xymogen® - Copyright 2004 - All Rights Reserved

Supplement Facts
Serving Size 1 Capsule Servings Per Container 90

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nattokinase™ (NSK-SD)</td>
<td>40 mg</td>
<td>**</td>
</tr>
<tr>
<td>(active enzyme at 20,000 FUD/gram)</td>
<td>f</td>
<td></td>
</tr>
<tr>
<td></td>
<td>**Daily Value not established.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>f Enzyme activity (fibrin units per gram)</td>
<td></td>
</tr>
</tbody>
</table>

Other Ingredients: cellulose, magnesium stearate.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Learn more about the complete line of Xymogen® formulas at:
www.xymogen.com or e-mail your questions to: info@xymogen.com

Xymogen® - Copyright 2004 - All Rights Reserved