

## **Nattokinase**

Nattokinase is effectively used as adjunctive therapy for hypertension, dyslipidemia, prevention of arteriosclerosis and improvement of blood clotting markers according to clinical studies.

Dyslipidemia, or abnormal levels of serum lipids, is a risk factor for development of a broad range of cardiovascular diseases and metabolic disorders.

The National Health and Nutrition Examination Survey (NHANES) data show that the prevalence of dyslipidemia in adults is about 30–40%, and the prevalence rate in some European countries, such as Germany and the United Kingdom, is similar to that in the United States.

Nattokinase directly acts on lipid metabolism and regulates blood lipid levels by activating hormone-sensitive lipase, enhancing lipoprotein lipase activity that accelerates the breakdown of triglycerides into fatty acids, and inhibits cholesterol synthesis (which reduces endogenous cholesterol production).

NK also has an excellent thrombolytic effect through multiple mechanisms. NK promotes production of plasminogen. Plasminogen is then converted to plasmin, activated by tPA (tissue plasminogen activator) and degrades fibrinogen and fibrin to dissolve thrombus. NK can directly hydrolyze cross-linked fibrin clots for the same result.

A 2023 systematic review and meta-analysis done by Li, X. et al. (2023) found that NK supplementation alone reduced systolic blood pressure by about 3.5 mmHg and diastolic blood pressure about 2.3 mmHg compared to placebo group.

While Natto is the most concentrated dietary source of MK-7 (K2), isolated nattokinase supplements extracted from natto fermentation are purified fibrinolytic enzymes, standardized in fibrinolytic units, and the MK-7 is removed during this process or is only present in negligible amounts. We added it back into our formulation for increased effectiveness.

The daily effective dose range of supplemental nattokinase is 2000-4000 FU (fibrinolytic unit) for cardiovascular health and antithrombotic or thrombolytic needs.

Most randomized trials reported good short-term tolerability. Common side effects include mild stomach discomfort, nausea, bloating, and diarrhea. Serious adverse effects were uncommon in clinical studies.

Consult with your primary care physician before use, as Nattokinase and Vitamin K supplementation can interact with certain medications such as (but not limited to) blood thinners, statins, and blood pressure medications.

## **Vitamin K**

Population-based dietary data suggest that inadequate vitamin K intake is widespread. In the United States, approximately 55% of adults have intakes below recommended levels, according to data from the National Health and Nutrition Examination Survey.

Elevated dietary consumption of calcium combined with insufficient dietary vitamin K intake or presence of vitamin K insufficiency/deficiency increases the risk for heart disease, accelerating the deposit of calcium in soft tissues and blood vessels. Calcium is directly influenced by the circulating amounts of vitamin K in the body. Vitamin K supplementation can reduce the progression of vascular calcification, by inhibiting the deposit of calcium on vessel walls and improving the process of calcium removal by activating matrix GLA protein.

So, why specifically vitamin K2?

The dietary sources of the major forms of vitamin K differ greatly. Vitamin K1 is found predominantly in leafy green vegetables (kale, spinach, cabbage) while sources of vitamin K2 have different menaquinone lengths (MK-4 found in animal products and MK-7 found in fermented foods).

The distribution of vitamin K1 and K2 also differ. While the biological activity of K1 is preferred in coagulation, it is found in higher amounts in the liver. K2, while also acting on coagulation, is more widely distributed throughout the body.

#### Clinical References for Vitamin K & Nattokinase:

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