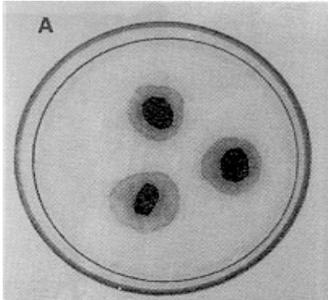


A Miracle of Japanese Food Remedy: Natto (Traditional fermented soybean food)

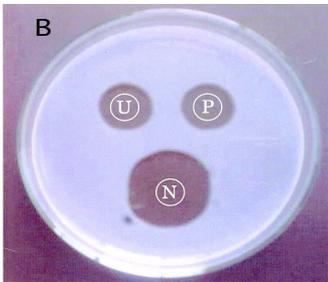
1. Fibrinolytic Enzyme found in Natto Food



First Test with Surprise

3 pcs of Natto (fermented soybeans) sold in a store were placed directly on a fibrin plate.

100g of Natto served in a pack for a meal has fibrinolytic activity equivalent to approx. 1600 IU/g of Urokinase.



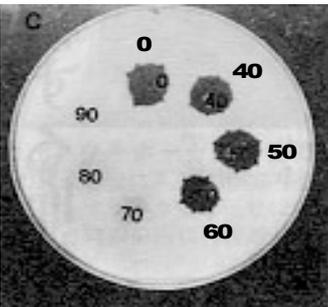
Comparative Test

(10 μ L each applied on a fibrin plate):

N : Nattokinase extracted from 300g of natto

P : Serum Plasmin standard 4.0 CU/mL

U : Urokinase standard 100 IU/mL



Nattokinase* Heat-Resistance Test

Nattokinase extract was heat-treated at the temperature indicated ($^{\circ}$ C) for 10 minutes, and then applied on a fibrin plate.

Each sample volume : 10 μ L

Incubation time: 18h at 37 $^{\circ}$ C

This test shows Nattokinase heat-resistance.

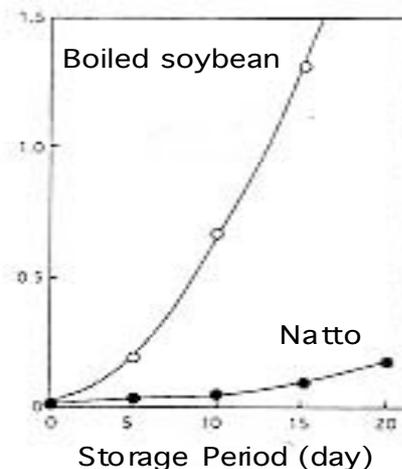
* Nattokinase (NattoVR 501) is manufactured at the pharmaceutical GMP factory where an ethical drug Urokinase is also made.

2. Natto : Anti-Oxidation

Natto has stronger anti-oxidant effect than ordinary soybean. (Ezaki et al, 1992)

Prof. Watanabe, U of Gifu revealed that anti-oxidant extracted from Natto cured stomach impairment caused by experimental stress in mice. This indicates that superoxide produced in peripheral blood vessels of stomach by stress was significantly suppressed.

Fatty Acids Peroxidized
(TBA Value: OD_{500nm})



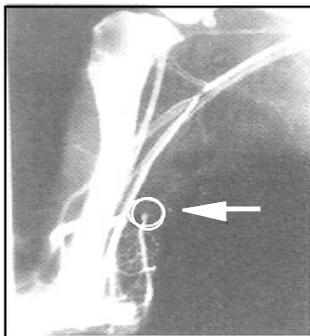
3. Strong Fibrinolytic Activity of Natto: Nattokinase (NattoVR 501) Lasting Longer Time Than An Ethical Drug.

Features of Nattokinase are;

- 1) the fibrinolytic activity is enhanced in plasma by oral administration,
- 2) and lasts long time such as in between 4 hours and 8~12 hours in comparison to injectable fibrinolytic agents used in hospitals last 4 ~ 20 minutes during treatment of i.v. infusion.

Fibrinolytic activity in the plasma after ingestion of natto

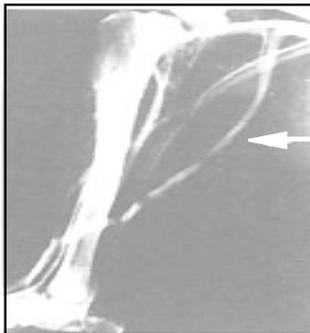
	ELT (hr) Euglobulin Lysis Time	EFA (m m ²) Euglobulin Fibrinolysis Time
Time after ingestion of natto		
0 hr	31.5 ± 6.2	0
2 hr	16.4 ± 8.6	8.4 ± 5.1
4 hr	16.7 ± 6.6	15.2 ± 3.1
8 hr	19.3 ± 12.0	5.8 ± 4.1
12 hr	27.4 ± 10.3	1.9 ± 5.2
24 hr	31.59 ± 8.9	0.8 ± 0.6
Time after ingestion of boiled soybean		
0 hr	32.2 ± 6.3	0
2 hr	33.4 ± 9.0	0
4 hr	33.2 ± 4.8	0
8 hr	36.1 ± 5.5	0
12 hr	34.6 ± 7.3	0
24 hr	34.6 ± 7.3	0.4 ± 0.2



4. Nattokinase fibrinolytic activity in experimental thrombus

Experimental thrombus in dog leg (○ in the photo) was demonstrated.

250mg of Nattokinase (NattoVR 501) was orally administered.

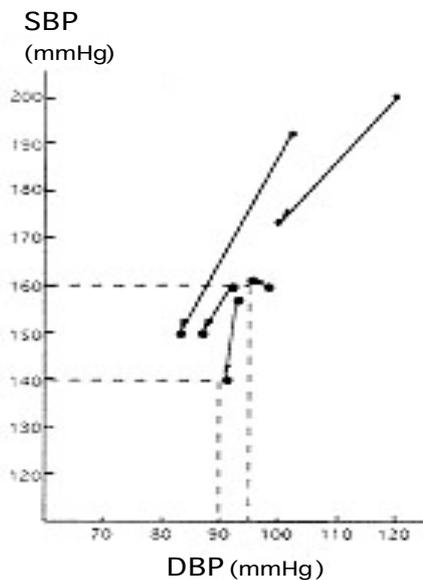


After 5 hours, lysis of the experimental thrombus was observed only with the dog administered.



Prophylaxis of senile demesia

5. Lowering Blood Pressure and Cholesterol



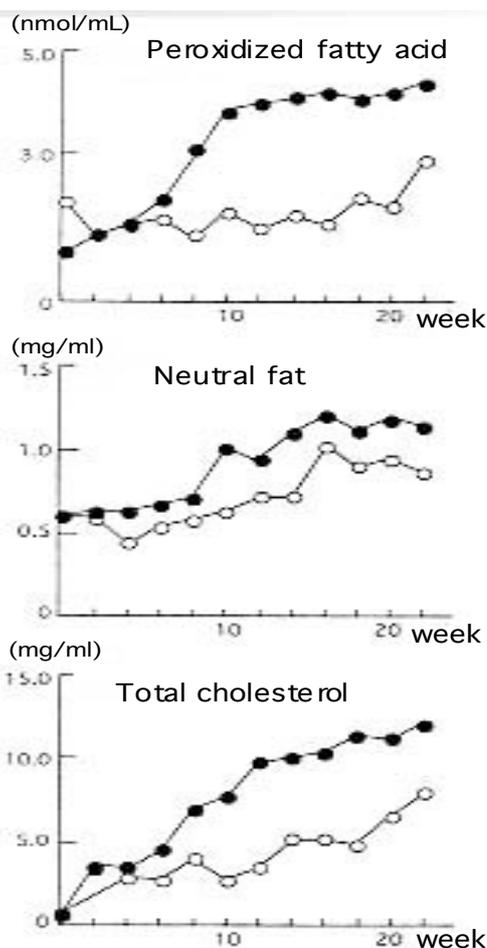
Volunteers who have high blood pressure were administered Nattokinase (Natto VR 501) extracted from natto.

Any medicine was administered in advance to the experiment.

Arrows show the blood pressures after Nattokinase was administered.

Both SBP and DBP values (mmHg) were found in the normal blood pressure zone.

Natto : Nattokinase effects to high-cholesterol-fed rabbits



Natto lowers cholesterol.

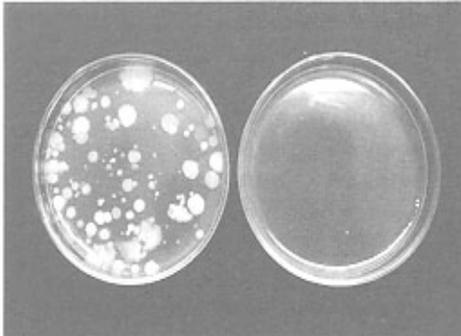
Cholesterol is a cause of high blood pressure. Natto is a high protein food like meat but contains no cholesterol. Furthermore natto contains lecithin that washes out cholesterol as well as linoleic acid that makes blood flow smoother. Anti-oxidant Vitamin E is also contained.

It was proved that oxidation of fatty acid, especially oxidation of LDL-cholesterol was suppressed by natto.

Anti-oxidant extracted from natto cured mice suffering from stomach impairment under experimental stress.

A person who cares about blood pressure is recommended to take 50g of natto 3~4 times a week in order to anticipate lowering effect in blood pressure.

6. Anti-bacterial activity



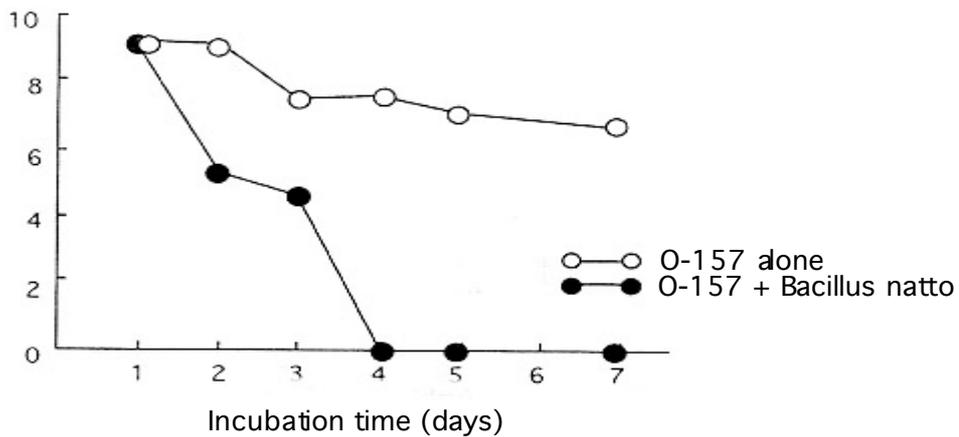
Anti-bacterial components were extracted from natto sold in town. Standard agar-agar plate was left open for 5 minutes in air. Incubated for 2 days at 37°C.

Left plate without natto extract shows colonies.

Right one shows no colony with natto extract.

Bacterial counts

(log/ml)



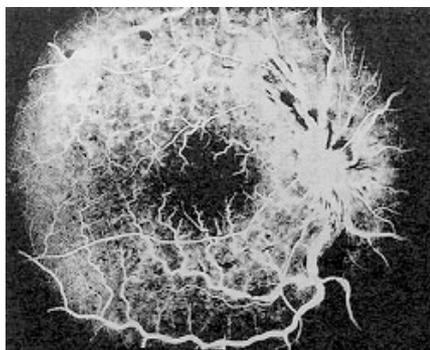
10^6 pcs/ml of *Bacillus natto* of which concentration is found in a colon tract was added to 10^9 pcs/ml of O-157.

On 4th day, O-157 disappeared.



Natto is good for your bowels.

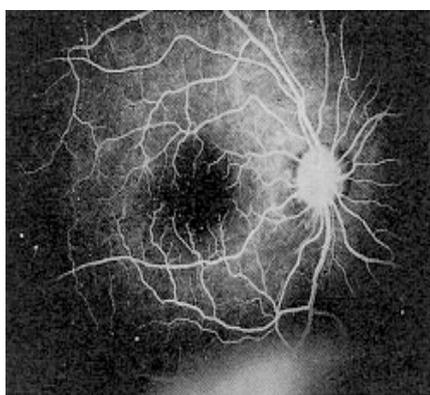
7. Thrombosis of the central-retina vein



58 years old male,
right eye

Oral drug and hemostatic agent were administered while one pack of natto (100g) was served everynight.

On 10th day bleeding from bottom eye was stopped. On 20th day, thrombosis was improved and vision was also recovered.



Natto meal therapy was continued twice a week.

After 2 months, thrombosis was cured completely. There was no side-effect reported.

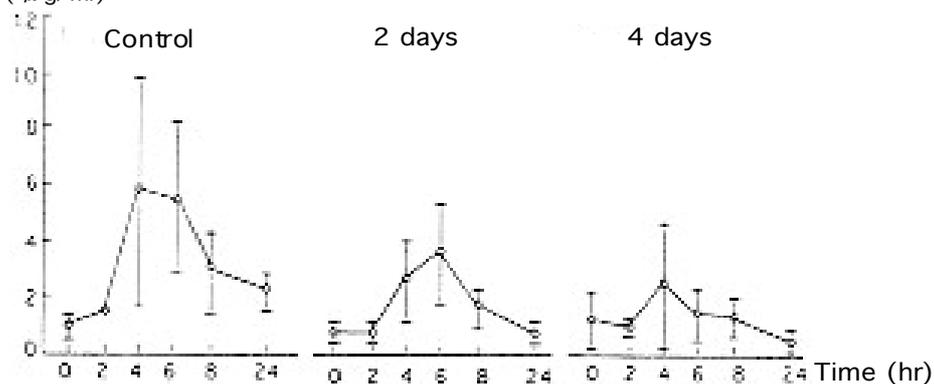
(Prof. Nishimura et al, Univ. of Tottori, School of Medicine 1994)

8. Best time to eat Natto: eat Natto at supper and continue to eat it.

(Prof. Sumi et al, 1996)

FDP (Fibrin decomposed products in serum)

($\mu\text{g/ml}$)



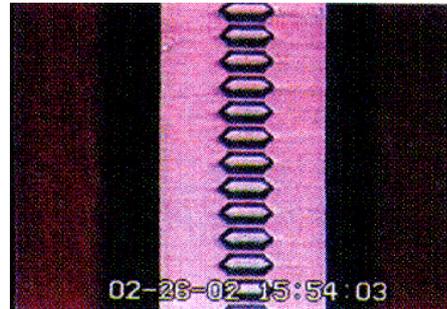
5 healthy volunteers ate 30 grams of natto on 1st day, and 30 grams on 2nd day, and 30 grams on 4th day.

A peak of FDP was declining day after day. This indicates that thrombus in the blood vessels gradually has been dissolved.

Reference: Sticky Effect of Natto by Dr. H. Sumi, 1998 Furusato-Bunko Heart Publishing

9. Effect of Oral Administration of Nattokinase Extract (Nattoesse™) on human blood mobility

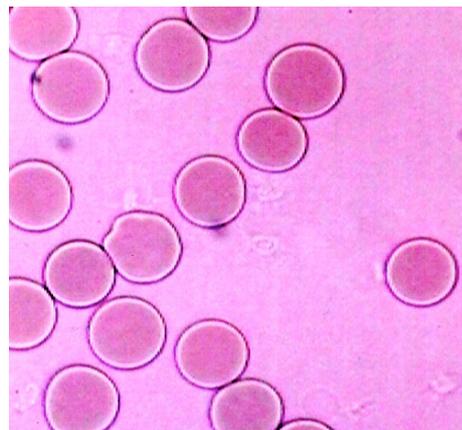
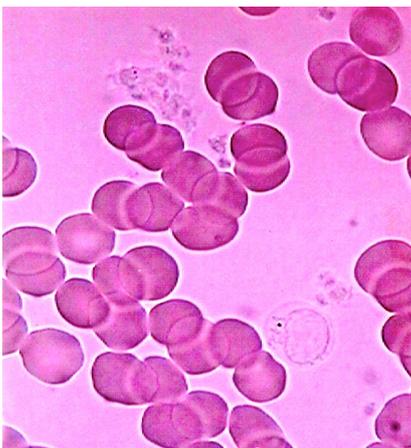
Volunteer C (male, Age 46)



Before intakes of Nattoesse

After 4 Weeks

It was clearly observed that platelets and leukocytes clogged at the entrance of passages of the silicon crystalline base were disturbing the stream of erythrocytes (red blood cells) before the administration. However, after 4 weeks there was no platelets and leukocytes clogged at the entrance and red blood cells were flowing smoothly through the passages.



Dirty, sticky blood

Before intakes of Nattoesse

Clean, smooth blood flow

After 4 Weeks