

BENEFITS OF NATTO

By Kazuo Shiraki¹

Natto is reported to have the following benefits:

- Prevention of Heart Attacks, Strokes and Senility
- Prevention of Osteoporosis
- Prevention of Cancer
- Antibiotic Effects
- Improvement in Digestion and Prevention of Intestinal Disorders
- Anti-aging Effects and Prevention of Obesity
- Maintaining Your Pet's Health

Prevention of Heart Attacks, Strokes and Senility

Pyrazine is an enzyme that gives natto its distinctive smell. It prevents blood from clotting. *Nattokinase* is another enzyme discovered by Dr. Hiroyuki Sumi, now a professor at Kurashiki Art Science University, during his research in 1990 at Chicago University. As its name implies it is produced by the natto fermentation process, and is contained in natto's sticky part. It is very **powerful agent that dissolves blood clots**. Blood clots obstruct the flow of blood, leading to heart attacks, strokes and senility among other diseases. It is said that 60% of senility among Japanese elders is due to blood clots in their brain.

Therefore natto, with pyrazine **preventing blood clotting** and nattokinase **dissolving it once its formed**, is very powerful natural medicine preventing and possibly treating brain infarction, cardiac infarction and brain apoplexy. An enzyme called *urokinase*, **extracted from urine**, is being used as a drug to dissolve blood clots, costing 20,000 yen (about US \$200) per dose, but it only lasts for about 30 minutes. In contrast, just 100g of natto gives similar effect at a fraction of cost (about US \$1). Moreover, once absorbed in our body, *nattokinase* continues to be effective for about 8 hours possibly because it has fewer detrimental side effects than *urokinase*.

Natto has been a staple food in the Japanese diet for a very long period of time; at least 1,000 years. It is popular among the people who live in the eastern part of Japan. The per capita consumption of natto in Japan is about 2 kg annually. Natto has not been known for any negative side effects so far. It is also not particularly known as allergen. Those who are taking *wafarin* to preventing blood clots and heart disease, however, are advised to consult with their doctor before eating natto because its high content of the Vitamin K may impede *wafarin*'s effectiveness. In Japan, advising patients not to eat Vitamin K rich food such as cabbage and chlorella while under *wafarin* medication is a standard practice.

¹ www.gaia21.net/natto/benefits.htm

Vitamin K tends to congeals blood. Natto is very rich in Vitamin K as well as pyrazine and nattokinase that prevents or dissolves blood clots. So natto has contradicting medicinal properties. One explanation for why our body takes so long to neutralize nattokinase without being negatively affected is that it is not "foreign" to our body. If that is the case, our body may be able to selectively use Vitamin K for congealing blood, and pyrazine and nattokinase for preventing or dissolving blood clots as necessary. That may explain the reason there is no report of natto causing uncontrolled bleeding.

Some doctors in Japan started prescribing natto instead of wafarin on an experimental basis. Some patients with retinal-vein-blockage-disease, a disease causing blood clots to occur in retinal veins and hemorrhaging in the retina, were instructed to eat natto twice a week, and had very positive results.²

Professor Hiroyuki Sumi says brain infarction and myocardial infarction tend to occur around 10:00am on Monday mornings. So he says the most effective time to eat natto is during the Sunday supper. Since nattokinase enzyme is sensitive to heat and loses its effectiveness above 70 degrees C, eating raw natto gives the best protection.

Lecithin and *linoleic acid*, rich in soybeans, purify the blood. Soybeans' protein preserves the elasticity of blood vessels, and prevents coronary heart disease, brain apoplexy and high blood pressure as a result. It follows that if natto, made from soybeans, is eaten as a staple food, these typical adult diseases may be prevented or improved.

Harvard University's 1989 research on 20,000 male American doctors concluded that one aspirin a day reduces heart failure due to blot clotting by 44%. However, recent research says that eating soybean products every day has the same effect. Aspirin tends to make blood easily soluble, and it is known to cause bleeding even from a healthy stomach. I would tend to think it is not a good idea to take such drug everyday even the mainstream medical authorities recommend it.

According to a Japanese joint research by the Ministry of Health and Gifu Medical University on 1,242 male and 3,596 female subjects from Takayama City's 31,000 residents, the more the subjects eat soybean products, the lower their cholesterol levels.

Prevention of osteoporosis

Bones are made with a special protein called *gamma glutamic acid* combined with calcium. Vitamin K2, acting as a mediator in that combination and in synergy with vitamin D3, increase bone formation, enhances osteocalcin accumulation in cells, and amplifies bone mineral density. There are a few types of naturally occurring Vitamin K; K1 is found in seaweed, liver and some vegetables, and K2 in fermented food products like cheese,

² Yuhobika, March 1998 issue

natto and miso. Unlike other foods in this second group, natto has an unbelievably large amount of Vitamin K2: 870 micrograms of K2 per 100 grams of natto.

A Japanese research reported that the level of K2 is low in the people with osteoporosis and high in the people without osteoporosis; although, the former and the latter have the same level of Vitamin K1 in their blood. There also is a report that *polyglutamin acid* found in the sticky part of natto aids the absorption of calcium from the intestine.

The national average for the annual family expenditure on natto is 3,170 yen. Generally speaking, regions east of Mt. Fuji have lower expenditure, and those west of Mt. Fuji have higher one. Mito, known for its Mito Natto has the highest expenditure of 8,036 yen. The lowest is Wakayama's 1,043 yen. It is statistically recognized that the regions with higher natto consumptions have lower rates of bone breakage as shown in the table above. Japanese researchers credit natto for preventing osteoporosis.³

Prevention of cancer

According to Dr. Dean Ornish, Director of the Preventive Medicine Research Institute in Sausalito, California, the instances of prostate cancer in Japanese males is one quarter of their American counterparts. However, for Japanese males who moved to America, the rate of prostate cancer abruptly rises. The reason for the low occurrence of cancer in Japanese males living in Japan is thought to be due to the high consumption of soybean products instead of animal products. This happens due to the anti-carcinogen effects of *phytoestrogen* and one type of *flavonoid* pigmentation ingredient called *infrabin* present in soybeans.

Dr. Amy S. Lee of the University of Southern California's School of Medicine reported one type of *isoflavone* called *genistein*, present in soybeans in large quantity, slowed down the reproduction rate of cancer cells in mice.

Dr. Lee says that Asians consume 20 to 30 times as many soybeans as Americans, and it is thought that there is a reverse relationship between the instances of cancer of the breast, skin, large intestine, and prostate gland and the consumption of soybeans. But she cautions that more detailed research is needed to determine if this is indeed the case.⁴

The Cancer Research Center in Hawaii reported in 1997 that *genistein*, *daidzein* and other types of *isoflavones* present in soybeans, were shown to effectively prevent uterine cancer. Other research has shown their effectiveness against kidney and breast cancer.

In addition soybeans contain selenium that is an anti-cancer mineral. They also contain edible fibers that cleanse the intestines. Edible fibers are said to be effective in preventing large intestine cancer.

³ Yuhobika March 1998 and Mainichi News morning edition, July 25, 1994

⁴ Journal of the National Cancer Institute April 1988

There is also a report that not only soybeans, but also natto bacteria themselves have an anti-carcinogenic effect. According to the September 25, 1996 edition of the Daily Sports Newspaper in Japan, "A research conducted on mice by Professor Yukio Kameda of Kanazawa University, showed mice injected with natto bacteria either showed absolutely no growth of cancer cells, or slowed the growth rate to less than half the norm when implanted with carcinogenic protein."

No matter how you look at it, if you eat soybeans food products, especially natto, frequently, it is very effective in the prevention of various cancers.

Antibiotic effect

Natto bacteria has an anti-bacterial effect on pathogens such as *typhoid bacilli* and *amoebicdysentry* and *O-157*⁵ that causes Hamburger disease. *Dipicolinic acid* which natto bacteria produce has also been proven to be an anti-bacteria agent according to a Japanese research. In tests done by Nagano Prefecture Public Health Research Facility, 30,000 parts of *O-157 E-coli* were reduced to less than 40 parts by natto extract.

Long time ago when there were no antibiotics, natto was used as one kind of "medicine" against the infection of dysentery, typhus and other intestinal disease. In 1936, in a pre-war Japanese Imperial Naval research, Naval Medical Lieutenant Arima Genkai conducted the "Experimental Natto Research on its Anti-Dysentery Effect." His thesis confirmed natto's antibacterial effect. He stated "natto eliminated *paratyphus* bacteria excretion in a short period of time from a patient who did not respond to all other treatments for five months."⁶

A Japanese research on the bacillus bacteria family, of which natto bacteria is member, found they produce a number of antibiotic such as *bacitracin*, *polymyxin* and *urethin*.⁷ The spores of Natto bacteria inoculating in the small intestine, and suppressing disease-causing pathogens such *salmonella bacteria* has been know in Japan for a long time.⁸

According to a survey conducted in 1996 after the mass-infection of the *O-157* virus occurred at a Gifu City elementary school, which focused on the relationship between the infection of *O-157* and lifestyle and eating habits, students who occasionally, that is between one to three times per week, ate natto, and students who ate absolutely no natto had a much higher likelihood of catching the *O-157* disease than those who ate natto more than three times a week.

⁵ Enterohemorrhagic Escherichia coli: EHEC

⁶ Naval Medical Journal, University of Hokkaido Medical Journal 1936-1938

⁷ Japan Journal of Bacteriology 1980

⁸ Ozawa Kyousuke, Eisei Gijutsu Kai Publication, 1983, Okayama Prefecture University Assistant Professor /Kurashiki Art & Science University Professor Dr. Sumi Hiroyuki, living Okayama Number 595

Improvement in Digestion and Prevention of Intestinal Disorders

Under good conditions, natto bacteria can double in 30 minutes, producing various enzymes that help digestion, breaking down soybeans nutrients, difficult for humans to digest. These enzymes include *protease* that breaks down protein into amino acids; *amylase* that converts complex carbohydrates into glucose; *lipase* breaks down neutral fat into glycerin and fatty acids; *cellulase* breaks down fibers into simpler carbohydrates. Others are *urease*, *peroxidase*, *catalase* and *pectinase*.

Most of the bacteria beneficial to the intestines such as *bifidus* are killed in the stomach by the acid before they reach the intestines if taken orally. But natto bacteria are able to survive the journey and reproduce in the intestines where they aid digestion.

A large amount of cellulose present in soybeans, which in combination with *oligosaccharide* the natto bacteria produce, help beneficial microbes such as *bifidus* to reproduce. The dietary fibers also help getting rid of waste materials and carcinogens. But modern Japanese eat an average dietary fiber of 17g per day, falling short of the recommended amount of between 20 and 25g. One hundred grams of natto contains seven grams of dietary fibers.

Anti-aging Effects and Prevention of Obesity

Lecithin acts as a *surfactant*, lowering the surface tension of water by adsorbing at the liquid-gas interface. It is found in high quality conscientious natural cosmetic products. It balances fat and water in skin cells and on the skin surface. It is said that Japanese women's smoother and softer skin compared to that of Europeans and Americans is due to their higher consumption of soybeans and other foods that are high in lecithin.

Lecithin strongly emulsifies the surplus cholesterol in blood and on blood vessel walls and help expels it from our body. Soybeans contain 18% of fat. However, 85% of fat is an essential unsaturated fatty acid called *linol acid* and *linolin acid*. Linol acid accounts for between 50 and 60 percent that is characteristic to soybeans. Linol acid and linolin acid both also have the similar function as lecithin; therefore, it is said that soybeans prevent the aging of blood vessels and strengthen them. They also prevent high blood pressure caused by hardening of the arteries and obesity by reducing body fat.

Soybean protein also curbs the accumulation of body fat by heightening the activity of the thyroid gland hormone that in turn accelerates the burning of fat.

In addition, the *inflavin* and *flanovoid* present in soybeans have a similar nature to female hormones. Therefore eating one package of natto daily is recommended for the American women approaching menopause, instead of using hormonal drugs with adverse side effects.

Natto is rich in Vitamin E and other forms of vitamins. Vitamin E is antioxidant and aids circulation of blood in the periphery vessels. Therefore, it prevents skin from damage and keeps it young.

Maintaining Your Pet's Health

If you search for "natto" on the Internet, the pages of several feed companies' drugs for restoring digestion of domestic animals will appear. Natto bacteria are not only helpful to humans, but very helpful for digestion in domestic animals as well. An American report says pets such as dogs and cats and their owners tend to share similar intestinal microbe flora. This is probably because pets eat humans' leftovers, and dogs and cats lick their owners.

So now, an experiment is underway where natto is mixed with pet food and fed to a dog and a cat. It seems they don't mind the sliminess or smell of the natto. No adverse effect has been observed so far.