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Soy protein shows brain boosting benefits: Human data

By Stephen Daniells, 20-Jan-2012

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Peptides from soybeans may influence the immune system and hormones linked to emotion, and ultimately boost brain function, according to a new Sino-Japanese study.

Soybean peptides, obtained by hydrolyzing soy protein isolate with food-processing enzymes, were associated with a decrease in adrenalin levels and an increase in dopamine levels

“These results suggest that adequate [supplementation] with soybean peptide can be useful in healthy populations through an improvement in immune functions, stress conditions, and brain circulation,” wrote researchers in *Nutrition*.



“Considering the public health consequences of decreased immune competence during the stresses of life, strategies for immune response modulation are needed to decrease the health burden for the healthy and improve their quality of life.”

The study adds to a large body of science supporting the potential benefits of soy consumption, including cholesterol reduction, reducing the risk of heart disease, certain forms of cancer, and reducing the severity of menopausal symptoms.

The isoflavone ‘drawback’

The researchers behind the new study, led by note that soy does contain isoflavones and these compounds have weak estrogen-like action.

“This drawback led us to develop a soy peptide with degradation of the protein molecule,” they explained.

Using protein-specific enzymes (proteases) the researchers hydrolyzed soy protein isolate to produce 18 amino acids, with glutamic acid representing 18.5% of the soybean peptide, asparagine 10.5%, arginine 6.8%, and the other 15 amino acids between 0.9 and 5.6%.

Following ingestion of 8 grams of the soybean peptide powder in 200 mL of water, ten healthy volunteers aged between 20 and 25 participated in the study and had their brain cerebral blood flow measured using a technique called near-infrared spectroscopy (NIRS).

Blood samples were also compared before and after to analyze the effects on various neurotransmitters such as adrenalin and dopamine, and on levels of the

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Data

Results showed that in subjects with a lot of a certain type of white blood cell called granulocytes, the number of these decreased after consuming the soybean peptide, while levels of a different type of white blood cell called lymphocytes increased.

The opposite occurred in people with higher levels of lymphocytes: Soybean peptide ingestion was associated with a decrease in lymphocytes and an increase in granulocytes.

The soybean peptide beverage was also linked to a decrease in adrenalin levels and an increase in dopamine levels.

"In other words, the subjects dominated by the sympathetic nervous system could release stress, whereas the sympathetic nerves of subjects dominated by the parasympathetic nervous system were excited by soybean peptide," explained the researchers.

"The brain and the immune system are the two major adaptive systems of the body. During an immune response, the brain and the immune system 'talk to each other' and this process is essential for maintaining homeostasis.

"The mechanism of active components of soybean protein on immunomodulation improves the stress hormone unbalance, brain circulation, and energy metabolism and is partly related to the soybean peptide, but the precise mechanism requires further study," they concluded.

Source: *Nutrition*

February 2012, Volume 28, Issue 2, Pages 154-159

"Effects of soybean peptide on immune function, brain function, and neurochemistry in healthy volunteers"

Authors: D. Yimit, P. Hoxur, N. Amat, K. Uchikawa, N. Yamaguchi

Keywords: [soybean](#), [peptides](#), [stress](#), [brain function](#)

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