

Soy peptide lunasin has anti-cancer, anti-inflammatory properties

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Two new University of Illinois studies report that lunasin, a soy peptide often discarded in the waste streams of soy-processing plants, may have important health benefits that include fighting leukemia and blocking the inflammation that accompanies such chronic health conditions as diabetes, heart disease, and stroke.

"We confirmed lunasin's bioavailability in the human body by doing a third study in which men consumed 50 grams of soy protein--one soy milk shake and a serving of soy chili daily--for five days. Significant levels of the peptide in the participants' blood give us confidence that lunasin-rich soy foods can be important in providing these health benefits," said Elvira de Mejia, a U of I professor of food science and human nutrition.

In the cancer study, de Mejia's group identified a key sequence of amino acids--arginine, glycine, and aspartic acid, (the RGD motif)--that triggered the death of [leukemia cells](#) by activating a protein called caspase-3.

"Other scientists have noted the cancer-preventive effects of the RGD sequence of [amino acids](#) so it's important to find proteins that have this sequence," she said.

The scientists also verified lunasin's ability to inhibit topoisomerase 2, an enzyme that marks the development of cancer, and they were able to quantify the number of leukemia cells that were killed after treatment

with lunasin in laboratory experiments.

In another study, the first to report lunasin's potential anti-inflammatory activity, they showed that lunasin blocked or reduced the activation of an important marker called NF-kappa-B, a link in the chain of biochemical events that cause [inflammation](#).

They also found statistically significant reductions in interleukin-1 and interleukin-6, both important players in the [inflammatory process](#). The reduction in interleukin-6 was particularly strong, she said.

Although inflammation is linked in the public mind with chronic health problems such as heart disease, diabetes, and [rheumatoid arthritis](#), de Mejia said it also plays a role in the development of cancer. "We know that chronic inflammation is associated with an increased risk of malignancies, that it's a critical factor in tumor progression," she said.

"And we can see that daily consumption of lunasin-rich soy protein may help to reduce chronic inflammation. Future studies should help us to make dietary recommendations," she added.

Although the high cost of obtaining lunasin from soy waste limits its use for nutritional interventions, soy flour does contain high concentrations of the peptide, she said.

And de Mejia utilized the USDA soybean germplasm collection housed at the U of I, studying 144 soy genotypes to learn which varieties contain the most lunasin.

"Some genotypes contain very high concentrations of lunasin, others contain no lunasin, and some locations yield more lunasin-rich beans than others," she said.

More information:

The leukemia study was published in *Molecular [Nutrition](#) and Food Research*. Wenyi Wang and Vermont Dia are co-authors. Lunasin's anti-inflammatory effects were described in *Food Chemistry*. V. P. Dia, W. Wang, and V. L. Oh of the U of I and B. O. de Lumen of the University of California, Berkeley, were co-authors.

The plasma and genotype studies appeared in the *Journal of Agricultural and Food Chemistry*. The environmental conditions study was published in the *Journal of AOAC International*.

Source: University of Illinois at Urbana-Champaign ([news](#) : [web](#))

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