

Proteins from garden pea may help fight high blood pressure, kidney disease

March 22 2009



Proteins found in the yellow garden pea (above) show promise as a natural food additive or new dietary supplement for fighting high blood pressure and chronic kidney disease. Credit: Rotimi Aluko, Ph.D., University of Manitoba, Canada

Researchers in Canada are reporting that proteins found in a common garden pea show promise as a natural food additive or new dietary supplement for fighting high blood pressure and chronic kidney disease (CKD). Those potentially life-threatening conditions affect millions of people worldwide.

The study, which will be presented here today at the American Chemical Society's 237th National Meeting, is the first reporting that a natural food product can relieve symptoms of CKD, the scientists say.

Peas long have been recognized as nutritional superstars, with healthful amounts of protein, dietary fiber, and vitamins wrapped in a low-fat, cholesterol-free package. The new research focuses on the yellow garden pea, a mainstay pea variety enjoyed as a veggie side-dish and used as an ingredient in dozens of recipes around the world.

"In people with high [blood pressure](#), our protein could potentially delay or prevent the onset of [kidney damage](#)," says study presenter Rotimi Aluko, Ph.D., a food chemist at the University of Manitoba in Winnipeg, Canada. "In people who already have kidney disease, our protein may help them maintain normal blood pressure levels so they can live longer."

High blood pressure, or hypertension, is a major risk factor for CKD, a condition that has been affecting an increasing number of people in the United States and other countries. Estimates suggest that 13 percent of American adults — about 26 million people — have [chronic kidney disease](#), up from 10 percent, or about 20 million people, in the 1990s. CKD is difficult to treat, and may progress to end-stage kidney disease that requires kidney dialysis or a kidney transplant. That situation is fostering a search for new ways of treating CKD and preserving kidney function.

Working with University of Manitoba colleague Harold Aukema, Ph.D., Aluko purified a mixture of small proteins — called [pea protein hydrolysate](#) — from the yellow garden pea. The researchers fed small daily doses of the protein mixture to laboratory rats with polycystic kidney disease, a severe form of kidney disease used as a model for research on CKD. At the end of the 8-week-long study period, the protein-fed rats with kidney disease showed a 20 percent drop in blood pressure when compared to diseased rats on a normal diet, the researchers say.

"This is significant because a majority of CKD patients actually die from cardiovascular complications that arise from the high blood pressure associated with kidney malfunction," Aluko notes.

In both rats and humans with polycystic kidney disease, the condition causes urine output to be severely reduced and the kidneys are unable to properly remove dangerous toxins. The researchers showed that their pea extract caused a 30 percent boost in urine production in the diseased rats, bringing their urine to within normal levels.

"That's a huge improvement," says Aluko, adding that there were no obvious adverse side effects from the pea protein.

Based on those promising results, the researchers plan to test the protein extract in humans with mild hypertension within the next year at the Richardson Centre for Functional Foods and Nutraceuticals, University of Manitoba, in collaboration with co-investigator Dr. Peter Jones. Scientists do not know exactly how the pea extract works. However, it appears to boost production of cyclooxygenase-1 (COX-1), a protein that boosts kidney function, the researchers say.

Aluko points out that eating yellow peas in their natural state won't produce the same potential health benefits as the purified protein extract. The potentially beneficial proteins exist in an inactive state in natural peas, and must be activated by treatment with special enzymes.

But the pea extract does have a very welcome social advantage over fresh peas: "It won't give you gas," notes Aluko. That's because the purified proteins don't contain the complex plant-sugars found in fresh beans that are known to trigger flatulence. The extract itself does not appear to have any unpleasant taste or odor, he adds.

If studies continue to show promise, Aluko estimates that the extract

could hit the consumer market within the next two to three years. The extract could be made into a soluble powder that can be added to foods and beverages or it could be developed into a pill, the scientists say.

Source: American Chemical Society ([news](#) : [web](#))

Citation: Proteins from garden pea may help fight high blood pressure, kidney disease (2009, March 22) retrieved 6 May 2024 from <https://medicalxpress.com/news/2009-03-proteins-garden-pea-high-blood.html>

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