

# Press Release

American Chemical Society  
Office of Public Affairs



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*Note to journalists: Please report that this research was presented at a meeting of the American Chemical Society*

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## Potatoes reduce blood pressure in overweight/obese people with high blood pressure

DENVER, Aug. 31, 2011 — The potato's stereotype as a fattening food for health-conscious folks to avoid is getting another revision today as scientists report that just a couple servings of spuds a day reduces blood pressure almost as much as oatmeal without causing weight gain. Scientists reported on the research, done on a group of overweight people with high blood pressure, at the 242<sup>nd</sup> National Meeting & Exposition of the American Chemical Society (ACS), being held here this week.

But don't reach for the catsup, vinegar, or mayonnaise. The research was not done with French fries, America's favorite potato, but with potatoes cooked without oil in a microwave oven. Although researchers used purple potatoes, they believe that red-skin potatoes and white potatoes may have similar effects.

"The potato, more than perhaps any other vegetable, has an undeserved bad reputation that has led many health-conscious people to ban them from their diet," said Joe Vinson, Ph.D., who headed the research. "Mention 'potato', and people think 'fattening, high-carbs, empty calories'. In reality, when prepared without frying, and served without butter, margarine, or sour cream, one potato has only 110 calories and dozens of healthful phytochemicals and vitamins. We hope our research helps to remake the potato's popular nutritional image."



The healthful phytochemicals in purple potatoes lower blood pressure in patients, and white potatoes may do the same.  
*Credit: iStock*

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In the new study, 18 patients who were primarily overweight/obese with high blood pressure ate 6-8 purple potatoes (each about the size of a golf ball) with skins twice daily for a month. They used purple potatoes because the pigment, or coloring material, in fruits and vegetables is especially rich in beneficial phytochemicals. Scientists monitored the patients' blood pressure, both systolic (the higher number in a blood pressure reading like 120/80) and diastolic. The average diastolic blood pressure dropped by 4.3 percent and their systolic pressure decreased by 3.5 percent, said Vinson, who is with the University of Scranton in Pennsylvania and has done extensive research on healthful components in foods. The majority of subjects were taking anti-hypertensive drugs and still had a reduction in blood pressure. None of the study participants gained any weight.

“Vinson said other studies have identified substances in potatoes with effects in the body similar to those of the well-known ACE inhibitor medications, a mainstay for treating high blood pressure. Other phytochemicals in potatoes, occur in amounts that rival broccoli, spinach and Brussels Sprouts, also may be involved, Vinson added.

Unfortunately for French fry and potato chip fans, those high cooking temperatures seem to destroy most of the healthy substances in a potato, leaving mainly starch, fat, and minerals. Potatoes in the study were simply microwaved, which Vinson said seems to be the best way to preserve nutrients.

The purple potatoes used in the study are becoming more widely available in supermarkets and especially in specialty food stores and farmers' markets. Vinson said that he strongly suspects a future study using white potatoes, now in the planning stages, will produce similar results. Funding for the study came from the United States Department of Agriculture Agricultural Research Service (USDA-ARS) State Cooperative Potato Research Program.

The American Chemical Society is a non-profit organization chartered by the U.S. Congress. With more than 163,000 members, ACS is the world's largest scientific society and a global leader in providing access to chemistry-related research through its multiple databases, peer-reviewed journals and scientific conferences. Its main offices are in Washington, D.C., and Columbus, Ohio.

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## Abstract

Potatoes are the most consumed vegetable in the US diet. Pigmented potatoes have high concentrations of antioxidants including phenolic acids, anthocyanins and carotenoids. In a single dose study we gave normal fasting subjects 6-8 small microwaved purple potatoes or an equivalent amount of potato starch in the form of biscuits. Post-prandial plasma and 24-hour urine antioxidant capacity was increased by the potatoes and decreased by the starch, i.e. potatoes were *in vivo* antioxidants and starch was a prooxidant. In a crossover study 18 hypertensive subjects, average BMI 29, consumed either 6-8 purple potatoes twice daily or no potatoes in their normal diet for 4 weeks and then crossed over to the other regimen. Potatoes did not change body weight, lipids or HbA1c. Diastolic blood pressure was significantly decreased by potatoes, -4.3%, a 4 mm decrease. Systolic blood pressure decreased 3.5%. This blood pressure drop occurred in spite of the fact that 14/18 subjects were concomitantly taking blood pressure medication. Thus purple potatoes are an effective hypotensive agent and lower the risk of heart disease and stroke in hypertensive subjects without a weight gain.

## Nontechnical summary

1. Are you considering development of some sort of "purple potato pill" or beverage that has all the beneficial ingredients and none of the 'bad' stuff like salt?
2. Are these very small potatoes?
3. Won't a potato diet also contribute to obesity despite its apparent beneficial effect on blood pressure?
4. What's the optimal amount of purple potatoes a person should eat per day to experience beneficial effects? Recommended serving size?
5. Are potato chips made out of purple potatoes beneficial for blood pressure?
6. Where did you come up with the idea that purple potatoes may be beneficial for blood pressure? Are purple potatoes used for medicinal purposes (including blood pressure control) in other countries?
7. Could this study help expand the use of the purple potato?
8. Are the purple pigments in potatoes the same chemical composition as those found in blueberries and other dark-colored fruits? Which has the most antioxidants?
9. Have you tested sweet potatoes and do you know if they have a similar effect on blood pressure?
10. What's funding source for your study?

## Answers

1. Our subjects (who had high blood pressure) were allowed to eat salt with the potatoes if that was their custom. Hidden salt is a greater problem in the US diet than added salt. We are not thinking about developing a pill or beverage, just potatoes as a food.
2. These are small potatoes a little larger than a golf ball.
3. Potatoes are high in starch but the amount of calories is low, 106 for the serving size of 138 g (average weight of 7 small potatoes) we used. This is equivalent to a medium potato. That was eaten twice a day. Probably the subjects felt full from the potatoes and ate less but there might be a metabolic effect of the polyphenols in the potatoes since other sources of polyphenols have either a weight neutral or a weight loss capability.
4. Answered in 3
5. There will be loss of polyphenols and vitamin C from frying (high temps, fat soluble polyphenols dissolve in the oil) so we recommend microwaving.
6. My hypothesis was coffee has high levels of chlorogenic acid which is one of the compounds that

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lowers blood pressure in animal studies and coffee consumption decreases the risk of hypertension. Potatoes are high in chlorogenic acid. Also potatoes have been shown to have ACE inhibitors both in the protein and in the polyphenol fraction. ACE inhibition is one of the mechanisms of blood pressure-lowering drugs.

The purple potato was the idea of my collaborator. It is high in chlorogenic acid and anthocyanins. There is no known medical uses of purple potato. There are native to South America.

7. My wife can buy purple potatoes in the high end supermarket.

8. Yes purple potatoes and berries have anthocyanins. Berries are higher. I do not believe that the anthocyanins are the active ingredients in the purple potatoes for blood pressure lowering. Published studies with highly purified anthocyanin extracts showed no effect on blood pressure.

9. No we have not tested sweet potatoes. There has been no published study on any kind of potatoes and blood pressure in humans.

10. This was funded by the USDA-ARS State Cooperative Potato Research Program.

**SUMMARY:**

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**KEYWORDS:**

Chemistry/Physics/Materials Sciences; Medicine/Health; Earth Science.