

Natural plant materials to regulate starch digestion

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Researchers in Switzerland are reporting discovery of natural plant materials that may regulate starch digestion — slowing down the body's conversion of potatoes, rice, and other carbohydrate-rich foods into sugar. The findings could lead to new functional foods that fight diabetes, they say in a report scheduled for the June 26 issue of the ACS' bi-weekly *Journal of Medicinal Chemistry*.

In the new study, Elena Lo Piparo and colleagues explain that a key digestive protein called alpha-amylase rapidly converts certain high-carb foods into glucose or blood sugar. That fast conversion results in sudden spikes in blood sugar in patients with diabetes.

A common clinical strategy to manage sharp rises in blood glucose after eating is the use of pharmaceutical agents that inhibit specific starch-splitting enzymes. Although researchers have known for years that some natural foods appear to contain chemicals capable of blocking alpha-amylase, the exact structure and mechanism of action of these substances remained unknown.

The researchers at Nestlé Research Center were interested in finding natural food-based compounds that can modulate this process, and to further understand the molecular mechanisms through which this interaction occurs. Using molecular modeling techniques they selected 19 plant components, called flavonoids, to be tested for their ability to block alpha-amylase activity.

They identified 7 flavonoids with significant inhibition of alpha-amylase, the strongest of which inhibited activity by 99 percent. Knowledge gained from this study will lead to a better understanding about food-based compounds and their natural properties, to help the research and development of products with a positive impact on health and wellness.

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