

Sweet Potato (*Ipomoea Batatas*): An Excellent Nutraceutical in the Management of Type 2 Diabetes

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Abstract: *Ipomoea batatas* (Sweet Potato) are known to be high in fiber and have a low glycemic index, which results in a less immediate impact on blood glucose levels. This can help individuals with diabetes control their blood sugar. In this article I discuss about the mechanism involved in sweet potato to control the blood sugar levels, quantity of sweetpotato to be consumed by people with diabetes and risks of overconsumption of sweet potato.

Keywords: *Ipomoea batatas* (Sweet Potato), low glycemic index, blood glucose levels, diabetes.

1. Introduction

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. [1]

Type 2 Diabetes

Type 2 diabetes (formerly called non insulin dependent, or adult onset) results from the body's ineffective use of insulin. More than 95% of people with diabetes have type 2 diabetes according to WHO. [1]

Sweet Potato (*Ipomoea batatas*)

Ipomoea batatas (L.) Lam; commonly known as sweet potato, is a herbaceous perennial vine plant Family: morning glory family of Convolvulaceae. [2]

even in temperate regions with hot summer climate like the USA, Spain, Portugal, Greece and Central Asia. [2]

Chemical Constituents: Bioactive carbohydrates, proteins, lipids, carotenoids, anthocyanins, conjugated phenolic acids and minerals represent versatile nutrients in different parts (tubers, leaves, stems and stalks) of sweet potato. [3]

Sweet potato tubers are extensively used as source of starch and eaten in various forms by humans. [2]

Composition [2]

Carbohydrate - 60.1 – 71.4%

Protein - 4.86 – 6.53%

Fat - 0.56 – 0.76%

Your Potato Craving With Fiber Rich Sweet Potatoes [4]

When it comes to food for type 2 diabetes to keep your blood sugar levels in check, it's best to reach for sweet potatoes, which are high in fiber (eat the skin for more fiber), as well as a host of other vitamins, According to USDA, one boiled medium size sweet potato (with no fat added during cooking) offer 3.75 g of fiber.

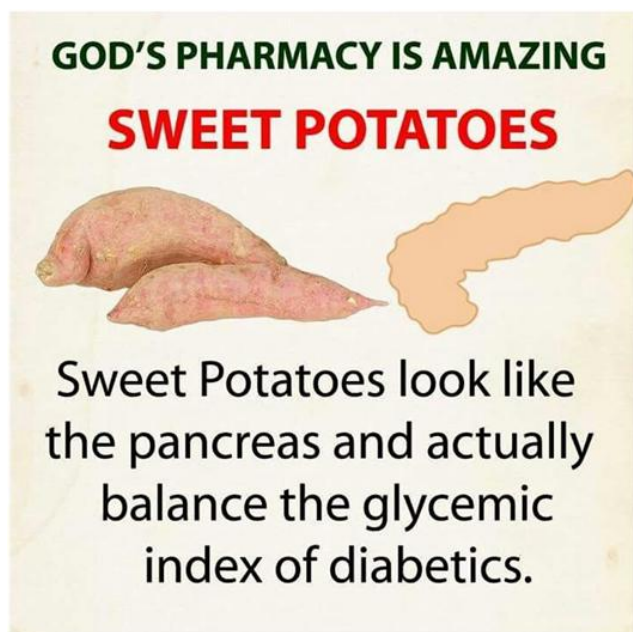
Another important consideration is the cooking process. When boiled, sweet potatoes are a low glycemic index (GI) food, meaning they won't spike blood sugar as much as regular potatoes, according to research published in the Journal of Nutrition and Metabolism.

Baking, roasting and frying are the worst ways to prepare sweet potatoes for people with type 2 diabetes.

Glycemic Index [5]

Glycemic Index (GI) is a measurement carried out on carbohydrate containing food and their impact on our blood sugar. There are various research methods for assigning a GI value to food. In general the number is based on how much a food item raises blood glucose levels in healthy research participants compared with how much pure glucose raises their blood glucose. GI values are generally divided into three categories.

Low GI: 1 to 55



Source: Pinterest

Cultivation: It is believed to be originated in Central America but now widely cultivated all over the tropics and

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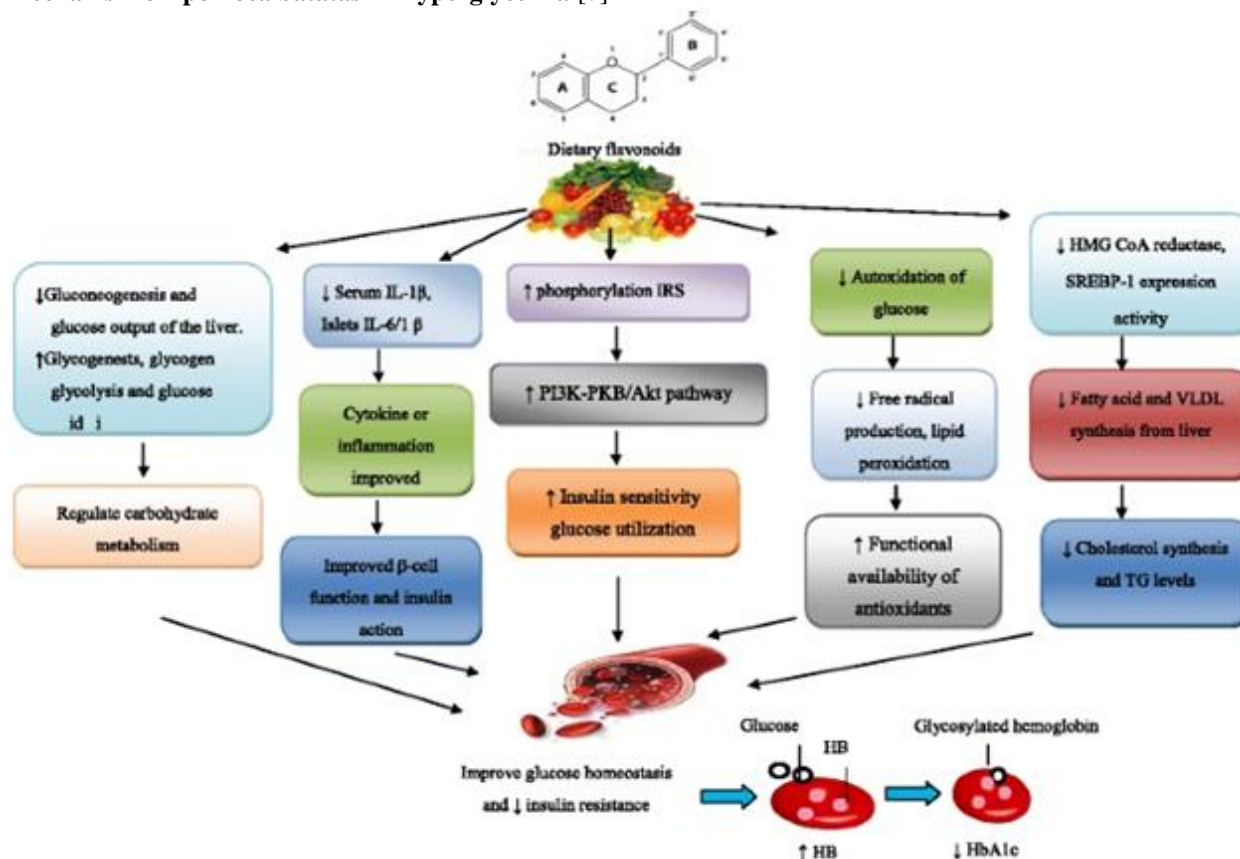
Medium GI: 56 to 69
High GI: 70 and higher

According to research conducted in the College of Agriculture and Life Sciences, sweet potatoes are a low glycemic index (GI food) which release glucose very slowly into blood stream.

Research shows that sweet potatoes can help regulate blood sugar because of their ability to raise blood levels of adiponectin, a protein hormone created by fat cells to help regulate how body metabolizes insulin [5] Sweet potato is known to be beneficial to individuals with type 2 diabetes due to high levels of magnesium and fiber, which can aid in reducing insulin resistance and stabilizing blood sugar. [6]

Mechanism of Action

Mechanism of Ipomoea batatas in Hyperglycemia [7]



Source: ResearchGate

The primary reason for *I. batatas* healing capability is mainly due to its bioactive compounds such as flavonoids and phenols. Flavonoids are able to promote glucose absorption in peripheral tissue and enhance insulin secretion via the modulation of pleiotropic mechanisms. The sequence of pleiotropic mechanisms includes stimulation of glucagon like peptide 1 (GLP - 1) which may enhance autonomic nerve activation and cause a rise in portal GLP - 1. As a result, glucose synthesis via portal GLP - 1 receptors will be hindered. At the same time, islet activation will be inhibited. Thus the inactivation of locally produced intact GLP - 1 in the islets is prevented. This may increase insulin secretion while suppressing glucagon secretion and possibly reducing islet inflammation simultaneously.

Different Varieties of Sweet Potato [8]

Orange Sweet Potatoes

Most common type found in U. S supermarkets. They are reddish brown on the outside and orange on the inside. Orange Sweet Potatoes have a higher fiber content. This

gives them a lower GI and makes them a healthier option for people with diabetes.

Purple Sweet Potato

Purple Sweet Potatoes contain anthocyanins which are polyphenolic compound that studies indicate may reverse or prevent obesity and type 2 diabetes risk by improving insulin resistance.

Japanese Sweet Potatoes

This strain of sweet potato contains Caiapo. A study found that Caiapo extract was able to significantly reduce fasting and two hour glucose levels in subjects when compared with placebo. Caiapo was also shown to reduce cholesterol.

Quantity of Sweet Potato to be Consumed By People With Diabetes [9]

While sweet potatoes can be a good diet choice for people with diabetes, it's important to remember that these orange veggies still contain carbs. A typical serving size is ½ cup, according to the U. S. Department of Agriculture. Kaufman recommends half of a medium size sweet potato for most

people with diabetes because this is the equivalent of 15 grams of carbohydrates.

Risks of Overconsumption of Sweet Potato [10]

High oxalate content found in sweet potatoes may lead to the formation of kidney stones if consumed in excess. Excessive consumption can make nails and skin look a little orange.

Diabetes – friendly recipes with sweet potato [8]

Avocado and sweet potato salad.
Sweet potato casserole cups.
Baked sweet potato fries.
Broccoli – stuffed sweet potatoes.

2. Conclusion

Finally, I want to conclude by stating that sweet potato is known to be beneficial to individuals with type 2 diabetes due to the high levels of magnesium and fiber which can aid in reducing insulin resistance and stabilizing blood sugar. More studies need to be conducted to determine the exact glycemic indexes of sweet potatoes and how it impacts glucose and glycemic response after it is eaten.

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