

MEDIA RELEASE

Flour power: UP researchers boost nutritive benefits of sweet potato with novel drying technology

PRETORIA – Researchers at the University of Pretoria (UP) have found a way to make orange-fleshed sweet potato last longer, in an effort to benefit from this smart crop and address micronutrient deficiencies among young children and pregnant women.

As part of InnoFoodAfrica, a multinational, cross-continental project that aims to enhance food and nutrition security in Africa, UP researchers have discovered that they can leverage the health benefits of the vegetable by making it into flour.

Identified by their orange pulp, orange sweet potatoes contain beta-carotene, which is converted into vitamin A in the body. However, these potatoes have a short shelf life of only two to three weeks – but by making flour out of them, the UP team has found a way to expand the number of ways orange-fleshed sweet potatoes can be used.

PhD Food Sciences candidate Daddy Kgonothi has been central to the development of this flour, and has been working under the guidance of Professor Naushad Emmambux and Dr Nwabisa Mehlomakulu of the Department of Consumer and Food Sciences at UP.

“We dried the sweet potatoes and made it into flour by way of various drying methods, which we compared with the freeze-drying method,” Kgonothi explains. “Since it is a very perishable product, drying and milling the potatoes into flour is one of the best methods one can apply – flours can have a shelf life of at least a year.”

The process began with the team sourcing sweet potatoes from a commercial farm in North West, following a four- to six-month growth period, from planting to harvesting. “It is a seasonal crop and, in South Africa, it is planted around November or December,” Kgonothi says. “The harvest takes place between March and June or July.”

The team then set about testing different drying methods. “The whole process took about three weeks, which included testing the drying process and doing the actual drying and milling,” Kgonothi says. “We used microwaves, infrared applications and convection ovens to dry the potatoes, and discovered that when we combined microwave drying with infrared drying, the process was much faster. There was also a higher retention of beta-carotene.”

With vitamin A deficiency being one of the leading causes of micronutrient deficiencies in children up to the age of six and among pregnant women, flour made from orange-fleshed sweet potato could offer a helpful solution. Also, because the novel drying technology (of combining microwave and infrared applications) results in a higher retention of beta-carotene, the orange-fleshed sweet potato flour that is produced will be a particularly strong source of vitamin A.

“The flour is also a good source of dietary fibre and of minerals such as iron, zinc and phosphorus,” Kgonothi says.

“Orange-fleshed sweet potatoes can be used in several ways,” he adds. “One way is to boil it as a root and consume it, or to make fried chips from it. As flour, the application of orange-fleshed sweet potatoes is more diverse: the flour can be used in baked products like fortified bread or biscuits; as stabilisers in soups; as a

thickening agent, due to its rich dietary fibre; and because of its low viscosity, it can be used to make baby food – it is easy for infants to swallow.”

To learn more about the Innofood Africa project, please visit: <https://innofoodafrica.eu/>

For more information, please go to <https://www.up.ac.za/research-matters/news/multimedia-3102316-how-orange-fleshed-sweet-potato-flour-is-milled>. Research Matters is a curated content site, showcasing the University of Pretoria’s research.

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