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University of Auckland: Low-calorie apple flour takes on wheat

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Tonnes of fruit pulp normally sent to waste is being turned into nutrient-rich flour with the potential to replace wheat.

Biological scientists at the University of Auckland have created an alternative flour high in protein, vitamins and dietary fibre that is also a zero-waste product.

PhD student Ninna Granucci has been conducting the research under the supervision of Associate Professor Silas Granato Villas-Boas who has been looking into uses for fruit pulp, or pomace, from, juice companies for a number of years.



University of Auckland Associate Professor Silas Granato Villas-Boas and PhD student Ninna Granucci. Photo / supplied

"We started studying it for animal feed to give to cows but the problem is it has a lot of sugar so, when cows eat it, it ferments and produces a lot of ethanol, or alcohol, and they get intoxicated," Villas-Boas says.

"So we adapted the fermentative process to reduce the sugar and leave the fibre for the cows. But in doing that we realised there was potential not just for animals but for human consumption."

Fermentation experiments in the lab have used pulp from apples, oranges, kiwifruit, olives, carrots and grapes.

Granucci's PhD research will continue throughout 2016 and they are exploring the commercial potential. The first product concept has been finalised – Ample Apple, a nutrient-rich flour that's gluten-free and low in cholesterol, fat and sugar.

"We've tried to replace wheat flour completely with this and it cooks well – the consistency is fine, it tastes great, the flavour is better," Villas-Boas says. "You can still make pastries and pasta but they will not have as many calories as common flour.

"These days we're all trying to control what we eat – I know this myself, I've been on a diet so many times. When you're on a diet, you're just dying to eat a muffin but you can't because it has so many calories. But this could allow you to have a muffin guilt-free."

Their venture, named Green Spot, came runner-up in the Spark \$100k Challenge, the University of Auckland's entrepreneurship competition, winning \$15,000 in seed capital and three months' incubation at The Icehouse.

They have also received funding from Callaghan Innovation and it's one of the first projects to be funded by the Bioresource Processing Alliance, a Ministry of Business, Innovation and Employment initiative to create value from biological waste.

"We've been told a few times this idea can be disruptive, that the fruit industry could change completely," Villas-Boas says.

"Instead of producing fruit for making juice, they could produce fruit to make [flour] and the juice would be a by-product. That's the potential that has been described to us."

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