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Adelaide Researchers Develop Calcium-Fortified Faba Bean Milk with Improved Texture

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The study demonstrates that calcium fortification can be achieved without compromising the sensory quality of faba bean milk

Researchers at Adelaide University have developed a calcium-fortified faba bean milk prototype with improved texture and stability, highlighting the potential of the pulse as a sustainable alternative to conventional plant-based milk sources.

Published in Food Chemistry, the study demonstrates that calcium fortification can be achieved without compromising the sensory quality of faba bean milk. The research could help bring the product closer to the nutritional profile of commercially available fortified plant-based milks, while addressing key processing challenges associated with pulse-based beverages.

Lead author Olaide Akintayo, a PhD student at Adelaide University's School of Agriculture, Food and Wine, said the research evaluated the faba bean milk with a panel of 30 regular consumers of plant-based milk alternatives.

The researchers used enzymatic starch hydrolysis, a technique developed and refined in their earlier work, to address starch-related challenges that can affect the texture and stability of pulse-based milk alternatives.

"By optimising a technique known as enzymatic starch hydrolysis, we were able to significantly improve the texture and stability of faba bean milk," Akintayo said.

The approach could potentially be extended to other pulse crops, including chickpeas and lentils, according to the researchers.

Starch-related issues remain a significant barrier to the wider application of pulses in plant-based milk production. By improving the texture and stability of faba bean milk, the study could expand the range of crops suitable for developing next-generation dairy alternatives.

Sustainable alternative to conventional plant milks

Faba beans offer several agronomic advantages that could support their use in sustainable food production. The crop is naturally high in protein and can fix atmospheric nitrogen, potentially reducing reliance on synthetic fertilisers.

According to Akintayo, faba beans are also tolerant of cooler climates and shorter growing seasons, making them particularly suited to Australian farming systems where soybean cultivation can be less viable.

“While soy, almond, and oat currently dominate the plant-based milk alternative market, each comes with environmental trade-offs,” Akintayo said.

“In addition to its agronomic benefits, faba bean contains a range of bioactive compounds with potential health benefits, further supporting its role in next-generation food products.”

The research was conducted by Akintayo under the supervision of Adelaide University’s Dr Hayriye Bozkurt and was supported by Adelaide University’s Research Training Program and GRDC scholarships.

While the faba bean milk prototype requires further refinement, the findings point to opportunities for its future use in applications including cafés, breakfast bowls and other food and beverage formats.