

20th October 2026

PRESS RELEASE

Calcium-rich whey permeate improves bone health in postmenopausal women, study finds

Twice-daily supplementation with calcium-rich whey permeate supports the maintenance of bone mineral density in postmenopausal women, a clinical study has found.¹

In the early menopausal years, women experience a rapid loss of bone mineral density, which is an indicator of bone health. This is partly due to a significant decline in oestrogen levels, which accelerates bone breakdown and increases the risk of osteoporosis.

The RENEW project (valorization of dairy side-streams to fight calcium deficits in postmenopausal women) set out to establish if calcium-rich permeate from whey production could be used as a bioactive food ingredient to counteract bone loss in postmenopausal women.

In the 12-month intervention study, participants were randomised to a placebo or 800mg of calcium, either from calcium carbonate or from calcium-rich whey permeate (taken alone or with inulin), divided into two doses per day. They all also received vitamin D, which contributes to the maintenance of normal bones.

In total, 316 postmenopausal women completed the study. In the group receiving whey permeate high in calcium (n=78), bone mineral density was maintained. Conversely, participants in the placebo group (n=75) showed a reduction in bone mineral density after 12 months. In addition, blood markers of bone turnover indicated a noticeable slowing of bone loss by the third month of the whey permeate intervention. Adding inulin to the calcium-rich whey permeate did not provide any additional bone health benefits.

The calcium-rich whey permeate supplement used in the study featured Arla Foods Ingredients' Capolac®, a calcium-rich milk-based ingredient, and Variolac®, a lactose-based ingredient. Commenting on the findings on World Osteoporosis Day (20th October 2026), the nutrition leader highlighted the potential of calcium-rich whey permeate at a time when the condition is increasingly prevalent.

Simon Bøge Riis, Nutrition Scientist (PhD) at Arla Foods Ingredients, said: "Globally, approximately one in five older adults has osteoporosis. It's especially common among postmenopausal women and across Asia, underscoring the need for effective nutritional

¹ Inge Tetens, Sadime B. Kisi, Alexandr Parlesak, Sidse I.I. Rasmussen, Mai Ø. Cramon, Caroline F. Petersen, Danielle G. Lemay, Dennis S. Nielsen, Hanne C. Bertram, Henrik J. Andersen, Mette F. Hitz, 'Effects of a one-year calcium-enriched permeate supplement on bone health in post-menopausal females: The RENEW randomized controlled intervention trial' The American Journal of Clinical Nutrition, 2026, 101339

strategies to support bone health. This research demonstrates that twice-daily supplementation with calcium-rich whey permeate can deliver remarkable improvements in bone turnover markers and maintain bone mineral density in postmenopausal women.”

Valorisation of nutrition-rich side streams such as calcium-rich whey permeate also has benefits for more sustainable and efficient whey production. In addition, it offers the potential to develop innovative ingredients and product formats that are appealing and convenient for consumers.

Arla Foods Ingredients is currently developing a dried fruit bar containing 265mg of calcium in a 10g serving – equivalent to the amount in a glass of milk. This innovative, on-the-go format delivers an enjoyable consumer experience while offering the flexibility to tailor flavour profiles to regional preferences. The concept also supports circularity by incorporating solutions that help reduce fruit waste while utilising a calcium-rich whey permeate side stream.

Simon Bøge Riis added: “The development of affordable calcium-rich milk-based ingredients from whey production could be particularly relevant for developing countries, where calcium deficiency is an overlooked challenge. Such ingredients may also be incorporated into food products aimed at addressing multiple nutritional deficiencies, including inadequate calcium intake and poor bone health.”

About the project

The RENEW study was conducted in Denmark by Zealand University Hospital and the University of Copenhagen, and funded by Innovation Fund Denmark. The project is a joint partnership between Arla Foods Ingredients, Arla Foods amba, the University of Copenhagen, Zealand University Hospital, Aarhus University and the USDA Western Human Nutrition Research Center. It aims to develop a new type of ingredient that combines milk calcium with whey permeate rich in lactose and the prebiotic dietary fibre inulin. It has been proposed that prebiotics may help create an intestinal environment that improves calcium absorption.

View the research at: [https://ajcn.nutrition.org/article/S0002-9165\(26\)00148-6/abstract](https://ajcn.nutrition.org/article/S0002-9165(26)00148-6/abstract)

For more information contact:

Steve Harman, Ingredient Communications

Tel: +44 (0)7538 118079 | Email: steve@ingredientcommunications.com

About Arla Foods Ingredients

Arla Foods Ingredients is a global leader in improving premium nutrition. Together with our customers, research partners, suppliers, NGOs and others, we discover and deliver documented ingredients and products that can advance lifelong nutrition for the benefit of consumers around the world.

We serve leading global brands in early life nutrition, medical nutrition, sports nutrition, health foods, and other foods and beverages.

Reasons to choose us:

- We're passionate about improving nutrition
- We innovate by connecting the best
- We master both discovery and delivery
- We build strong, long-lasting partnerships

Headquartered in Denmark, Arla Foods Ingredients is a 100% owned subsidiary of Arla Foods.

<https://www.arlafoodsingredients.com/>

LinkedIn

<http://www.linkedin.com/company/arla-foods-ingredients>

LinkedIn (Latin America)

<https://www.linkedin.com/showcase/arla-foods-ingredients-latin-america/>