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Calcium may enhance probiotic survival in the gut, cut cholesterol levels

By Stephen Daniells , 28-Oct-2011

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Combining calcium phosphate supplements with probiotic *Lactobacillus paracasei* may enhance the colonization of the probiotic in the gut, and boost reductions in LDL cholesterol levels, says a new study with humans.

Calcium in the form of pentacalcium hydroxy-triphosphate, combined with *Lactobacillus paracasei* (LPC37) was associated with significant reductions in total and LD cholesterol following four weeks of supplementation, and the results were greater than those observed for *L. paracasei* alone, according to findings published in *Clinical Nutrition*.

"To the best of our knowledge, there are no published studies examining the influence of a combinatory supplement consisting of probiotics and calcium phosphate on the faecal microbiota and on cholesterol metabolism in humans," wrote researchers from Friedrich Schiller University Jena in Germany.

"The results of the present human study imply that calcium phosphate positively affects the colonization of LPC37 in the human gut under conditions of combinatory supplementation of calcium phosphate and LPC37.

"This combined supplementation is also capable of beneficially modulating blood lipids in healthy, hypercholesterolemic men and women."

Probiotic potential

The study adds to the ever growing body of science supporting the potential benefits of probiotics.

On Tuesday, [an elegant study by Dr Jeff Gordon](#) and his team at the Washington University School of Medicine in St. Louis revealed that probiotic bacteria consumed in a yogurt may not change the host's gut populations, but they do influence carbohydrate metabolism by the resident microbes.

The new study suggests that calcium phosphate may enhance the activities of *L. paracasei*.

Study details

Led by Gerhard Jahreis, the Jena, Germany-based researchers recruited 34 omnivorous men and women with moderately elevated blood cholesterol levels to participate in their double-blind, placebo-controlled, cross-over study.

Participants were divided into two groups: One was provided with a probiotic drink containing 10 billion colony forming units (CFUs) per day of *L. paracasei* (Danisco) for four weeks, while the second group received the probiotic plus an additional gram of pentacalcium hydroxy-triphosphate.

After the intervention period, all participants had a two week period without intervention – the so-



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called wash out period – followed by two weeks of receiving placebo. After this they were crossed over to the other intervention for another four weeks.

Results showed that the combined intervention was associated with a significant reduction in total and LDL cholesterol levels, compared with the probiotic alone and placebo.

“There are two possible explanations for this observation,” said the researchers, *“either LPC37 and calcium phosphate act synergistically, or the cholesterol-lowering effect of LPC37 + calcium phosphate is due to the action of calcium phosphate in the human gut.”*

With reference to other studies that have shown an effect of calcium supplementations on blood lipids to a similar extent as measured in the current study, the researchers proposed that the *“cholesterol-lowering effect is solely due to the calcium phosphate supplement”*.

In addition, the level of *L. paracasei* and all lactobacilli in the feces increase significantly following both the combined and probiotic only interventions, compared with placebo.

“There was a significantly positive correlation between the fecal concentration of calcium and the concentration of L. paracasei,” wrote the researchers.

“This supports the hypothesis that calcium phosphate positively influences the colonization of L. paracasei in the human gut.”

Source: *Clinical Nutrition*

Published online ahead of print, doi: 10.1016/j.clnu.2011.09.013

“A combination of calcium phosphate and probiotics beneficially influences intestinal lactobacilli and cholesterol metabolism in humans”

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