

Issue 60

In a nutshell

Although there are theoretical reasons to believe calcium supplements might interfere with iron status, recent study results suggest that this is not a problem in most cases.

Another study found calcium useful in premenstrual syndrome.

Calcium, iron and premenstrual syndrome

Arbor Clinical Nutrition Updates 1999 (Feb);60:1-2 ISSN 1446-5450

ARCHIVES

The full list of archived issues can be found at www.arborcom.com/archives/. Some issues of our translated language editions are also available in archive, for Spanish, Portuguese and French.

COPYRIGHT, disclaimer and terms of use

This copy from our archives is for your private use only, and is NOT to be forwarded to any other party. Your use of these Updates constitutes your agreement to our disclaimer and terms of use: see section at the end of this publication.

NUTRITION RESEARCH REVIEW

Study one: Calcium and premenstrual syndrome

Calcium supplementation produces a significant reduction in premenstrual symptoms, according to results from an American trial which has just been published.

Subjects: 466 healthy, pre-menopausal women in a multicenter clinical trial who were screened for moderate to severe, recurring premenstrual symptoms, documented over 2 menstrual cycles.

Method: In a prospective, randomised, double-blind, placebo-controlled trial, subjects were given either calcium supplements (1200mg of elemental calcium/day in the form of calcium carbonate) or placebo for 3 menstrual cycles. Premenstrual symptoms were scored on 17 parameters.

Results: The calcium treated group had a significantly lower premenstrual symptom score for the second ($p = 0.007$) and third ($p < 0.001$) treatment cycles. By the third treatment cycle, calcium supplementation was associated with a 48% reduction in total symptom scores from baseline, compared with a 30% reduction in the placebo group.

Ref: Am J Obstet Gynecol, 1998; 179:444-52

Study two: Calcium supplements don't affect iron status

Long term calcium supplementation does not interfere with iron status, according to American researchers who studied mothers in the second six months post-partum.

Subjects: 95 lactating and 92 non-lactating mothers received either 1000 mg elemental calcium supplementation (calcium carbonate as twice daily dose) or placebo. This was given with meals from approximately the sixth month after delivery for 6 months.

There was no relationship between calcium supplementation and serum ferritin concentration.

Ref: Am J Clin Nutr, 1998; 67:1244-9

Study three: Calcium and iron in pregnancy

There is a negative correlation between calcium intake in early pregnancy and serum ferritin, according to recent European research.

Subjects: General population sample of 576 pregnant British women.

Method: Observational study in which dietary intake of calcium was correlated with serum ferritin concentration.

Results: Ferritin concentrations fell with increasing calcium intake ($p < 0.0001$). In those women with the lowest quartile of calcium intake, 14% had abnormally low serum ferritin ($SF \leq 12 \mu\text{g/L}$), compared with 29% of the women in the highest quartile of calcium intake.

Ref: *Br J Nutr* 1998;79:249-55

Study four: calcium and iron in adults

3111 adult women and 2337 men had 24 hour dietary histories taken, and serum ferritin measured. A negative correlation was found between serum ferritin and calcium intake ($p < 0.05$)

Ref: *Eur J Clin Nutr* 1998;52:383-8

Study five: Calcium does inhibit iron absorption but it doesn't matter long-term

Calcium supplements (1200 mg calcium/day as calcium carbonate) decreased non-haem iron absorption when added to a low calcium ($< 320 \text{ mg/day}$), moderately high iron (15 mg/day) diet. Non-haem iron absorption fell from 15.8%, to 4.7% ($p < 0.001$).

On the other hand, when the same amount of calcium was given to 11 iron-replete adults over 6 months, and compared to a non-supplemented control group, there were no changes in plasma ferritin.

Ref: *Am J Clin Nutr* 1998;68:3-4

Comments

The relationship between calcium supplementation and iron status has been of interest for some years now, as the initial evidence suggested that calcium in high doses might interfere with iron absorption.

Since women in many situations need to increase their intake of both iron and calcium (e.g. in pregnancy, lactation and adolescence), this interaction would obviously be of concern.

However, the outcome of the various studies on this subject in recent times has been generally reassuring. Those studies whose results suggest there is not too much to worry about have tended to be longer-term and controlled intervention studies, whereas most of the worrying data have come from laboratory and observational studies.

The British study mentioned last above perhaps provides a key to understanding what is going on. It shows that, in short term 'laboratory' absorption studies, there is indeed an interaction. But the body

is able to adapt somehow over time so that the interaction is not so clinically significant.

What remains to be seen is how widely this holds true, and whether there are not some situations of marginal iron status in which calcium in large amounts does affect iron status clinically.

For this reason, there are some nutritionists who believe that some measure of caution is still advisable when giving high dose calcium supplements, particularly to people at risk of iron deficiency. They maintain that calcium supplements should at least be given at a different time of day from the main iron-containing meal or iron supplement.

Finally, the study on menstrual symptoms and calcium is interesting, although the reduction in symptoms is not as impressive when compared with the very large placebo effect (typical of studies on premenstrual syndrome). It is certainly one worth following up.

Disclaimer, copyright and terms of use

Your use of these Updates constitutes your agreement to our disclaimer and terms of use which can be found on our web site at: <http://arborcom.com/disclaim3.htm>. You can also obtain the disclaimer and terms of use by emailing us at: upD@arborcom.com.

© Copyright Arbor Communications PTL 1999. All rights reserved. This publication may NOT be forwarded onto others without our written permission.

If you want to receive the Clinical Nutrition Updates on an ongoing basis, please send us a request email to upD@arborcom.com. This is a FREE service to health professionals and students. Include details of your name, email address, which country you live in, institution you are associated with (if relevant) and professional background. The Updates are available in English, Spanish, Portuguese, Italian, French, Korean and Russian