

Abstract

Br J Nutr. 2009 Nov 27:1-4. [Epub ahead of print]

Effects of magnesium on postprandial serum lipid responses in healthy human subjects.

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BACKGROUND: Postprandial hyperlipidaemia has been recognised to be a risk factor for atherosclerosis development. Epidemiological and animal studies have shown that Mg intake is inversely associated with some risk factors of atherosclerosis, including lipid metabolism.

OBJECTIVE: The present study was performed to determine the effects of Mg supplementation on postprandial responses in serum lipid levels.

METHODS: We used bittern (Nigari, in Japanese), a natural $MgCl_2$ solution from sea or salt lake water, for Mg supplementation. In a two-way, randomised, crossover study, sixteen healthy male volunteers consumed 30 g butter with or without 5 ml bittern containing 500 mg of Mg. Fasting and postprandial blood samples were taken 2, 3, 4 and 6 h after ingestion. Postprandial lipid responses were evaluated by serum TAG, chylomicron TAG, apo-B48, remnant-like particle cholesterol (RLP-C) and NEFA concentrations.

RESULTS: We found that the serum and the chylomicron TAG responses after the fat load were reduced and delayed by Mg supplementation. The concentrations of apo-B48 ($P < 0.05$), RLP-C ($P < 0.05$) and NEFA ($P < 0.05$) were significantly lower at 2 h after the fat-with-Mg meal compared with the fat-only meal.

CONCLUSION: The present study indicated that Mg supplementation could inhibit fat absorption and improve postprandial hyperlipidaemia in healthy subjects.

PMID: 19941679