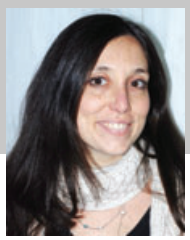
Letter to the Editor



Answer to Dr. Gylling's Letter to the Editor

We would like to thank Dr. H. Gylling for pointing out an error in the discussion section of our paper "Phytosterols can impair vitamin D intestinal absorption in vitro and in mice" published in Molecular Nutrition & Food Research in 2011, volume 55, S303–S311 [1]. Indeed, we cited a study aiming to assess the effect of sitostanol esters on serum lipid micronutrients after a 12-month supplementation [2]. We said that phytosterols leaded to a decreased serum level of 25(OH)vitamin D, which was not exact. Our misunderstanding of the data came from the fact that the phytosterol supplemented group ($n = 51$) and the control group ($n = 49$), which were similar for every other clinical and biological parameters, displayed significantly different 25(OH)vitamin D levels since the beginning of the study (82.1 nmol/L vs. 65.7 nmol/L for control and supplemented subjects, respectively). At the end of the 12 month study, the vitamin D levels were increased in both groups (91.0 nmol/L vs. 75.2 nmol/L). The supplemented group still showed a significantly lower vitamin D status. These differences were not discussed by the authors of this study (2).

Dr. H. Gylling says that phytosterol safety doesn't need to be challenged and provides 4 references assessing that 25(OH)vitamin D plasma status remained unchanged after phytosterol consumption [3–6]. The duration of 3 of these clinical trials was 10 weeks or less [3–5]. The last trial was performed during 16 weeks, but unfortunately, vitamin D status was not measured in the subjects [6].

Phytosterol supplementation long-term studies with plasma fat-soluble vitamin follow-up are scarce in literature. We would like to take this opportunity to cite another 12-month trial aiming to assess the safety of long-term consumption of plant sterol esters [7]. 25(OH)vitamin D was measured in control ($n = 96$) and supplemented ($n = 88/89$) patients at 0, 6 and 12 months. 25(OH)vitamin D was diminished in both groups at 6 months (probably due to season) and increased up to the initial values after 12 months. The decrease observed at 6 months was significant in the phytosterol supplemented group (−14 nmol/L, $p < 0.01$) while it was less important and non-significant in the control group (−7 nmol/L). Moreover, a significantly lower plasma vitamin D status was also observed at the end of the study in the supplemented group when compared to its initial value (−3 nmol/L, $p < 0.05$), whereas there was no difference within the control group (+3 nmol/L). These data suggest that in this trial, phytosterol consumption moderately but significantly interfered with vitamin D plasma level in humans.

However, none of these trials is adequate to accurately investigate the effect of phytosterols on vitamin D intestinal absorption. A study assessing the chylomicron cholecalciferol response to a vitamin D challenge in the presence or absence of phytosterols in humans would be the best experiment to answer this question.

The aim of our published paper was not to stigmatize phytosterol consumption, which provides an efficient nutrition-based alternative or complementary strategy to drugs. Nevertheless, more and more people are consuming phytosterol-enriched products daily in an uncontrolled manner. Our data suggest that the intake of such products decreases vitamin D absorption and thus can be deleterious for vitamin D insufficient or deficient people after long-term consumption. We are looking forward to further adequate trials to definitely clarify this point.

The author has declared no conflict of interest.

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