

Extended Abstract

The Influence of Galactooligosaccharide Addition to a Plant Sterol-Enriched Beverage upon Plant Sterol Colonic Metabolization: A Clinical Trial [†]

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The consumption of milk-based fruit beverages enriched with plant sterols (PSs) has previously showed a cholesterol-lowering effect in postmenopausal women [1]. The addition of galactooligosaccharides (GOSs) to these kinds of beverages could enhance their functionalities; however, their effect on the colonic metabolism of PSs is yet unknown. To shed light on this, a randomized, double blind, crossover study with postmenopausal women ($n = 42$, 58 ± 4 years) was carried out with the aim of evaluating GOS effects on PS colonic metabolism. Volunteers consumed 250 mL of a PS-enriched beverage (1%, *w/v*) daily with or without GOSs (1.8%, *w/v*) for 6 weeks, and feces samples were collected before and at the end of each intervention period. The contents of PS (sitosterol, sitostanol, campesterol, campestanol and stigmasterol) and its metabolites (ethylcoprostanol from sitosterol, methylcoprostanone from campesterol and ethylcoprostanol from stigmasterol) were measured by CG-MS [2]. Statistically significant increments ($p < 0.05$) in sterol concentrations (mg/g freeze-dry feces) were observed after the consumption of any of the beverages (with vs. without GOS addition) expressed as median (percentile 25; 75%): 8.29 (1.49; 17.27) vs. 10.79 (2.14; 19.30) for sitosterol, 12.95 (2.65; 20.66) vs. 14.47 (4.91; 21.56) for ethylcoprostanol, 2.84 (1.34; 4.91) vs. 3.16 (1.27; 4.80) for sitostanol, 1.09 (0.34; 2.03) vs. 1.41 (0.47; 2.11) for campesterol, 0.15 (0.03; 0.40) vs. 0.18 (0.03; 0.45) for methylcoprostanone, 0.46 (0.20; 0.80) vs. 0.44 (0.23; 0.82) for campestanol and 0.07 (0.00; 0.19) vs. 0.09 (0.02; 0.23) for stigmasterol. No significant changes were observed in ethylcoprostanol contents after the consumption of the beverage with or without GOSs (0.01 (−0.01; 0.02) vs. 0.002 (−0.02; 0.02)). No significant differences in net increments were observed between beverages. These results indicate that the presence of GOSs in PS-enriched beverages does not modify the colonic biotransformation of PSs.

Supplementary Materials: The following are available online at https://www.mdpi.com/article/10.3390/foods_2020-07809.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Clinical Research Ethics Committee of Hospital Universitario Puerta de Hierro-Majadahonda (Madrid, Spain) (ClinicalTrials.gov number NCT03469518).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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