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Cholesterol metabolism biomarkers response and lipid lowering efficacy of a statin combined with a low-fat fermented milk enriched with plant sterols in elderly patients

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Statins are frequently used to reduce plasma cholesterol levels in the elderly. However, some are statin-intolerant or unresponsive, and higher-intensity monotherapy may not be appropriate for all. The combination of a statin to plant sterols (PS), or ezetimibe, has been reported to provide greater reduction in LDL-C level, than monotherapy. This “add-on” effect has been evaluated with several PS-enriched food matrices, in hypercholesterolemic individuals (LDL-C>3.35 mmol/L), but, studies in the elderly are very scarce. Therefore we conducted a study to evaluate the additional effect of a PS-enriched fermented milk (PS-FM) on serum lipids and cholesterol synthesis (lathosterol and desmosterol) and absorption (sitosterol, campesterol and cholestanol) markers, in the elderly (N=35; 88.6% women; age [68-92]), on stable statin therapy, with baseline LDL-C <3.35 mmol/L. All participants were living in nursing care facilities for the elderly, meeting the criteria of compliance to a regular dietary pattern. A fasting blood sample was collected at baseline (t0), after 3 weeks (t1) and 6 weeks (t2) of daily (lunch) intake of the 2g PS-FM, and after 6 weeks of washout (t3), for the analysis of serum lipids and cholesterol synthesis and absorption markers (GC/MS-SIM). A significant reduction in LDL-C was observed after t1 (0.15 mmol/L) and t2 (0.27 mmol/L) (P<0.05). Serum campesterol and sitosterol increased significantly (P<0.001) (t0-t2), reflecting the PS intervention; this increase has contributed to the inhibition of cholesterol absorption, as shown by the decrease in cholestanol levels. A reciprocal, less pronounced, increase in the cholesterol synthesis markers was observed (P<0.001), reflecting a homeostatic up-regulation. Despite the progressive loss of homeostasis characteristic of ageing, overall, the results show that elderly people treated regularly with statins (targeted at the inhibition of the cholesterol synthesis), may still have clinical benefit from the association of non-statin lipid-lowering interventions (targeted at the intestinal absorption of cholesterol).

Biography

Isabel Maria Andrade has completed her PhD in Health Sciences from Coimbra University School of Medicine. She is also MSc in Environmental Health and MSc in Cellular Biology. She lectures Biochemistry, Molecular and Cellular Biology, Food Chemistry, and Food Microbiology at the Coimbra Health School, Portugal. She is fellow member for the Portuguese Biochemistry Society and the Portuguese Biotechnology society. She has published several scientific papers (and book chapters) mainly on the domain of cholesterol metabolism and also, more recently on another public health research focus of her interest, health literacy. She is also a reviewer in reputed scientific journals. She develops several partnership projects under the domain of healthy ageing. She has also worked as a consultant for various project companies developing environmental impact assessment studies.

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