

Apples and cardiovascular health—Is the gut microbiota a core consideration?

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There is considerable scientific evidence that a diet rich in fruits and vegetables improves human health. Apples are a good source of polyphenols and fiber and are widely consumed worldwide. An important proportion of apple bioactive compounds escape digestion in the upper intestinal tract and reach the colon where they can be fermented by the colonic microbiota. Results from our group have shown that apples from different varieties can induce substantial changes in microbiota composition and metabolic activity in in vitro batch culture models. In particular one apple variety significantly increased Bifidobacteria, Proteobacteria and Faecalibacterium prausnitzii populations, as well as butyrate levels and polyphenol microbial metabolites. In a human nutrkinetic study we previously demonstrated the existing correlation between faecal bacteria and specific microbial plasma and urine catabolites derived from apple. Based on these results we have performed a randomized, controlled, crossover, dietary human intervention study (NCT01988389) in 40 mild hypercholesterolaemic subjects, which showed that a daily consumption of 2 apples for 8 weeks can decrease the risk of cardiovascular disease by reducing total

and LDL-cholesterol, improving vascular function, reducing circulating vascular cell adhesion molecule, beneficially modulating gut microbiota and increasing microbially-derived small phenolic compounds. Modulation of bile acids profiles is one of the physiological processes linking gut microbiota metabolism to the beneficial effect of whole healthy foods, such as apples. We are currently investigating the role of microbial modulation of bile acids in response to a range of beneficial functional foods, through a specifically designed mechanistic human dietary intervention, including apples, within the CABALA_Diet&Health project framework (JPI- HDHL-healthy diet for healthy life, grant n. 696295).

Speaker Biography

Francesca Fava has completed his/her PhD at the University of Reading in 2008. She previously worked at the Istituto Clinico Humanitas, Rozzano (MI). She is a permanent researcher at Fondazione Edmund Mach, Centro Ricerca ed Innovazione, Department of Food Quality and Nutrition, Nutrition and Nutrigenomics Unit, since 2011. Her main research interest is to study diet-microbe interactions through human studies and in vitro models. She is author of 42 research publications, with H-index=15 and over 5000 citations; she has been serving as an editorial board member of the International Journal of Food Science and Nutrition.

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