

In vitro digestion of two age-tailored dairy products in the aging gastrointestinal tract

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For older adults (> 65 years old), undernutrition is a severe health problem that can impact the quality of life, induce or aggravate the development of diseases, and reduce life expectancy. Undernutrition can be defined as an inadequate intake of dietary energy and proteins combined with a low muscle mass. Diet-induced muscle mass and strength loss in older adults may be due to insufficient protein intake. Therefore, older adults need to increase the amount of high-quality ingested proteins, particularly foods rich in leucine, to promote muscle health. However, it is still unclear if changes in protein digestibility and absorption kinetics in old age may affect the anabolic effect of high-protein foods. The objective of this study was to investigate the in vitro digestion of two aged-tailored dairy products. A dairy dessert containing 10 % proteins and a spreadable cream cheese containing 24 % proteins were formulated with a ratio of whey proteins to caseins of 80 to 20 % (as opposed to milk, i.e., with a ratio of whey proteins to caseins of 20 to 80 %). This enrichment in whey proteins was used to increase the intake of branched amino acids, like leucine, to stimulate muscle protein synthesis in older adults. The rheological properties of these products were measured and related to their sensory properties (i.e., oral comfort) assessed by a panel of over 65 years-old subjects. Finally, the food matrix breakdown in the stomach and protein digestion have been studied with an in vitro digestion model adapted to the physiology of older adults. This new model results from an international consensus reached within the framework of the European project EAT4AGE in collaboration with the international research network INFOGEST. This study should improve our knowledge of the digestion of age-tailored dairy products in the aging gastrointestinal tract and help formulate innovative nutrient-dense food products that improve the bioavailability of proteins.