

Metabolic signatures resulting from postprandial intake of milk or yoghurt in men: effect of age

Jinyoung KIM¹, Dominique DARDEVET¹, Corinne MARMONIER³, Véronique FABIEN-SOULÉ⁴, Guy VERGERES², Sergio POLAKOF¹

¹ *Université Clermont Auvergne, INRA, UNH, Unité de Nutrition Humaine, CRNH Auvergne, F-63000 Clermont-Ferrand, France*

² *Agroscope, Schwarzenburgstrasse 161, 3003 Berne, Switzerland*

³ *CNIEL, 42 rue de Châteaudun, 75009 Paris, France*

⁴ *Syndifrais, 42 rue de Châteaudun, 75009 Paris, France*

Abstract: Dairy products are a major part of human diet thanks to their nutritional richness and the variety of products through technical process such as fermentation. Although their impact on health is positively perceived, the precise effects on human metabolism remain unclear due to the complex properties of dairy products and human metabolism. It is required to comprehend metabolic signatures depending on not only each dairy product but also different populations such as men vs women and adults vs elderly. The discovery of dairy intake biomarkers would facilitate to clarify the effects of dairy consumption on human metabolism. This project relies on a randomised, controlled, cross-over clinical study with 3 objectives: 1) to determine the metabolomic signatures resulting from acute ingestion of milk or yoghurt in men and discover novel biomarkers for their intake, 2) to characterise the metabolomic differences between adults and elderly populations, 3) to investigate the impact on metabolomic signatures of dairy and fermented products exclusion. 14 healthy adults (20-35y) and 14 healthy elderly (65-80y) men, regular consumers of dairy products (1-2 portions/d) will be recruited. The selected subjects go through 4 weeks of observation period with regular diet. 3 weeks with no dairy and limited fermented products follows, then 2 days without dairy and fermented products. Then subjects must consume 600ml of milk or yoghurt for 24h observation of postprandial kinetics. Throughout the protocol (observation, controlled-diet, and kinetic periods), serum, urine and faeces samples are taken and analysed by biochemical approaches to assess glucose and lipid homeostasis, inflammation status, and hormonal alteration, and by non-targeted metabolomic approaches such as LC-MS and GC-MS to identify potential milk or yoghurt intake biomarkers.