

Dietary fibre and gut microbial metabolism: a role in health and performance?

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Dietary Fibre is key component of recommended healthy diets and higher intakes are associated with a reduced risk of common cancers and cardiometabolic diseases. Fibre is defined as edible carbohydrate polymers that are not hydrolysed by endogenous enzymes in the small intestine. Upon reaching the large intestine, fibre is available as a substrate for fermentation by saccharolytic gut microbial species, which generates short-chain fatty acids (SCFAs) as the principal end products.

SCFAs are absorbed from the gut lumen and can contribute to energy homeostasis by serving as an available substrate at different organ sites, including skeletal muscle. Furthermore, a substantial proportion of SCFAs are used as precursors for hepatic fatty acid synthesis and gluconeogenesis which alters the metabolite composition of peripheral blood.

This talk will evaluate the evidence demonstrating that SCFAs mediate metabolic cross-talk between the gut microbiota and skeletal muscle. It will discuss the direct and indirect mechanisms through which raising gut-derived SCFAs modulates exercise performance and skeletal muscle mass. Finally, it will highlight the various dietary approaches and associated challenges of promoting gut production of SCFAs in athletic populations.