

In vitro assessment of the digestive performance of two microbial enzymatic blends in a junk food context

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Abstract:

The increasing use of dietary supplements for digestive health, particularly those containing exogenous enzymes, reflects significant consumer interest in enhancing gastrointestinal function. This study evaluates the efficacy of two fungal-origin enzyme blends, Poolzyme® MULTI and Poolzyme® DAIRY, under challenging dietary conditions representative of real-world scenarios, including meals high in fats, proteins, and lactose. These conditions reflect dietary habits that may lead to digestive inefficiencies, emphasizing the potential role of these enzyme blends in promoting digestive health and improving nutrient bioavailability. The INFOGEST protocol, a standardized method simulating oral, gastric, and intestinal digestion, was employed to evaluate the effects of these enzyme blends. The results demonstrated that both enzyme blends significantly improved the digestion of key macronutrients. Poolzyme[®] MULTI, containing amylase, protease, lactase (βgalactosidase), lipase, and cellulase, enhanced protein hydrolysis, thereby increasing the bioavailability of essential and branched-chain amino acids. It also facilitated the conversion of complex carbohydrates into simpler sugars and of triglycerides into free fatty acids. Poolzyme® DAIRY, formulated with lactase (β -galactosidase), protease, and lipase, effectively reduced lactose content and improved both fat and protein digestion resulting in higher levels of free fatty acids and branched chain amino acids, respectively. These findings underscore the effective hydrolytic effect of the tested fungal-derived enzyme supplements to improve nutrient digestion, even in the context of nutritionally challenging meals high in fats, proteins, and lactose. The study highlights the relevance of non-animal enzyme blends in addressing digestive challenges and enhancing overall digestive health.