



Microbial Phytase as a Strategy to Improve Phytate Degradation and Mineral Utilization in Equine Nutrition

Qurat ul ain Sajid^{1,*}, Muhammad Umair Asghar¹, Barbara Król¹, and
Mariusz Korczyński¹

¹Wrocław University of Environmental and Life Sciences, Faculty of Biology and Animal Sciences, Department of Animal Nutrition and Feed Science, 51-630, Wrocław, Poland

Abstract

Ensuring efficient mineral absorption remains a persistent challenge in equine nutrition due to the limited capacity of horses to degrade phytate-bound nutrients in plant-based feeds. Recent interest in enzyme-based supplementation highlights microbial phytase as a promising tool to enhance the release of phytate-complexed minerals. This study examines the concept of super-dosing phytase supplementing the enzyme at levels substantially above conventional doses as a strategy to maximize phytate hydrolysis and improve mineral availability in the equine digestive tract. Elevated phytase activity may promote earlier and more extensive degradation of phytate, supporting improved phosphorus and calcium absorption and increasing the bio accessibility of key trace elements. Furthermore, reducing intact phytate may alleviate its inhibitory effects on digestive efficiency, potentially improving protein and carbohydrate utilization. Enhanced mineral uptake resulting from super-dosing could also contribute to lower faecal mineral output, supporting more sustainable nutrient management in equine production systems. Collectively, these insights suggest that phytase super-dosing represents a promising nutritional approach for optimizing mineral efficiency and mitigating environmental losses in horses.

Key Words: Microbial phytase, super-dosing, equine nutrition, mineral utilization, phytate hydrolysis, phosphorus availability, enzyme supplementation.

