Optimization of Phytase Concentration from Aspergillus ficuum for Phytate-bound Phosphorus Release in Cereal Meals

Abstract

In order to determine the optimum phytase dose needed to release phytate-phosphorus in Zea mays, Triticum aestivum and Sorghum bicolor meals, six phytase concentrations (0, 100, 200, 300, 500 & 1 000 μg/kg) prepared from a commercial phytase (Natuphos®) derived from Aspergillus ficuum, were investigated. A dose-dependent increase in phytate-phosphorus release with an increase in phytase concentration was noted. The optimum phytase dose for phytate-phosphorus release from Z. mays, T. aestivum and S. bicolor meals was 700, 567 and 667 μg/kg, respectively. Non-phytate phosphorus concentration at the optima phytase doses were 1.4868, 5.742 and 2.136 g/kg for Z. mays, T. aestivum and S. bicolor meals, respectively; translating into incremental phosphorus release of 166.8, 31.0 and 161.4%, respectively. The optimum dose of A. ficuum derived phytase required for release of phytate-phosphorus is dependent on cereal type.