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Novel phytase enzyme from an environmental *Pseudomonas* sp. strain.

This study analyses a phytase enzyme from a *Pseudomonas* bacterial strain isolated from apoultry manure-amended soil. Phytase enzyme degrades phytate, a hexaphosphorylated, naturally-produced compound common to manure-amended crop soils. Since the 1960's the interest in phytate-degrading microorganisms increased because of the potential to produce phytase enyzme commercially as an additive for animal feeds. This would simultaneously enhance the nutritional value of the feed and decrease phosphorus pollution output. The gene for the phytase enzyme has been found by degenerate PCR, cloned into a plasmid and transformed into *E. coli*. A gene fusion system is used to purify the protein. The activity of the enzyme is determined by measuring the released orthophosphate by the ammonium molybdate method. Phytase activity under varied conditions (such as temperature and metal ion concentration) as well as the enzyme's substrate selectivity will be described. This project outlines a novel enzyme from an uncharacterized organism. The enzyme may be useful to the agricultural community and should enhance our understanding of the phosphorus cycle, especially as it relates to the eutrophication of lakes.

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APPROVED