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# Use of Phytase Active Yeasts and Lactic Acid Bacteria Isolated from Sourdough in the Production of Whole Wheat Bread

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## Abstract

In this study, sourdough samples were collected from different locations and lactic acid bacteria (LAB) and yeasts were isolated, identified and their phytic acid degradation capabilities were investigated. The isolated phytase positive LAB and yeast strains were identified by FTIR (Fourier Transform Infrared Spectroscopy) and LAB's 16s rRNA gene and yeast's 26s rRNA gene sequencings. Phytase positive strains were used as a starter culture in whole wheat bread production. In order to determine the culture effect on of whole wheat bread samples, some physicochemical, nutritional, sensory, and textural properties were characterized. The spectrophotometric phytase activity was calculated as 703.1–1153.8 U/mL for LAB isolates, and 352.2–943.4 U/mL for yeast isolates. Two different yeast species (*Saccharomyces cerevisiae*, *Pichia membranifaciens*) and five different LAB species (*Weissella viridescens*, *Pediococcus pentosaceus*, *Pediococcus acidilactici*, *Lactobacillus brevis*, *Lactobacillus parabuchneri*) were identified based on the FTIR-based identification and molecular subtyping methods. The phytic acid content significantly was decreased in culture added whole wheat breads compared to control one produced with only commercial yeast. The greatest reduction in phytic acid level (43.4%) was observed in the bread produced by *S. cerevisiae* + *Pediococcus pentosaceus* culture combination.

**Keywords:** Phytic acid, lactic acid bacteria, yeast, sourdough, whole wheat bread, mineral

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