

## **Changes in Phytate Content in Whole Meal Wheat Dough and Bread Fermented with Phytase Active Yeasts**

### **Abstract**

The degradation of inositol hexakisphosphate (IP6) was evaluated in whole meal wheat dough fermented with baker's yeast without phytase activity, different strains of *Saccharomyces cerevisiae* (L1.12 or L6.06), or *Pichia kudriavzevii* with extracellular phytase activity to see if the degradation of IP6 in whole meal dough and the corresponding bread could be increased by fermentation with phytase-active yeasts. The IP6 degradation was measured after the dough was mixed for 19 min, after the completion of fermentation, and in bread after baking. Around 60–70% of the initial value of IP6 in the flour (10.02 mg/g) was reduced in the dough already after mixing, and additionally 10–20% was reduced after fermentation. The highest degradation of IP6 was seen in dough fermented with the phytase-active yeast strains *S. cerevisiae* L1.12 and *P. kudriavzevii* L3.04. Activity of wheat phytase in whole meal wheat dough seems to be the primary source of phytate degradation, and the degradation is considerably higher in this study with a mixing time of 19 min compared with earlier studies. The additional degradation of IP6 by phytase-active yeasts was not related to their extracellular phytase activities, suggesting that phytases from the yeasts are inhibited differently. Therefore, the highest degradation of IP6 and expected highest mineral bioavailability in whole meal wheat bread can be achieved by use of a phytase-active yeast strain with less inhibition. The strain *S. cerevisiae* L1.12 is suitable for this because it was the most effective yeast strain in reducing the amount of IP6 in dough during a short fermentation time.