

## **Cultivation conditions for phytase production from recombinant escherichia coli DH5 $\alpha$ .**

### **ABSTRACT**

Response surface methodology (RSM) was used to optimize the cultivation conditions for the production of phytase by recombinant *Escherichia coli* DH5 $\alpha$ . The optimum predicted cultivation conditions for phytase production were at 3 hours seed age, a 2.5% inoculum level, an L-arabinose concentration of 0.20%, a cell concentration of 0.3 (as measured at 600 nm) and 17 hours post-induction time with a predicted phytase activity of 4194.45 U/mL. The model was validated and the results showed no significant difference between the experimental and the predicted phytase activity ( $P = 0.305$ ). Under optimum cultivation conditions, the phytase activity of the recombinant *E. coli* DH5 $\alpha$  was 364 times higher compared to the phytase activity of the wild-type producer, *Enterobacter sakazakii* ASUIA279. Hence, optimization of the cultivation conditions using RSM positively increased phytase production from recombinant *E. coli* DH5 $\alpha$ .

**Keyword:** Phytase; Recombinant; Optimization; *Escherichia coli*; Response surface methodology; Cultivation conditions.