

In-Vitro Stability of *Aspergillus terreus* Phytases in Relation to Different Physico-Chemical Factors

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Abstract : *Aspergillus* has good secretory potential for phytases. Morphologically and microscopically identified *Aspergillus terreus* (*A. terreus*) (n=20) were screened for phytase production and non-toxicity. Phytases produced by non-toxicogenic *A. terreus* under optimum conditions were quantified. Phytases of highest producer *A. terreus* were evaluated for stability after exposure to temperature (35, 55, 75 and 95°C) and pH (2, 4, 6 and 8). Effect of metal ions (Fe^{+3} , Ba^{+2} , Ca^{+2} , Cu^{+2} , Mg^{+2} , Mn^{+2} , K^{+1} and Na^{+1}) was assessed on phytase activity. Log reduction in phytase activity was calculated. The highest activity units of phytase produced by *A. terreus* were 271.49 ± 8.14 phytase unit / mL (FTU/ mL). The lowest reduction in phytase activity was 50.20 ± 7.36 (18.5%) and 68.22 ± 10.3 FTU/mL (25.13%) at 35°C and pH 6, respectively for 15 minutes. The highest reduction 259 ± 0.84 (95.5%) and 211.99 ± 4.39 FTU/mL (78.1%) was recorded at 95°C for 60 minutes and pH 2.0 for 45 minutes exposure, respectively. All metal ions negatively affected phytase activity. Phytase activity was inhibited minimum (45.32 ± 28.54 FTU/mL, 16.69%) by K^{+1} (1 mM) and maximum (231.48 ± 3.68 FTU/mL, 80.8%) by Cu^{+2} (10 mM). It was concluded that *A. terreus* phytase stability and activity was dependent on physio-chemical factors.

Keywords : stability, phytase, *aspergillus terreus*, physio-chemical factors and metal ions

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