

## Purification and Characterization of Phytase from a Local Poultry Isolate of *Aspergillus flavus* MT899184

- E. A. Onibokun,
- A. O. Eni &
- S. U. Oranusi

### Abstract

The need for exogenous phytase in animal feed processing is increasing due to its ability to breakdown anti-nutrients in grains which constitute a large proportion of animal feeds. This study investigated the production of phytase using indigenously isolated *Aspergillus* sp. and the characterization of the purified phytase. The *Aspergillus* sp. was isolated from a poultry site using phytate screening medium (PSM). Quantitative estimation of phytase production was carried out using  $2 \times 10^8$  spores/100 mL basal medium containing 0.5% sodium phytate as substrate at 30 °C and 150 rpm for 5 days under submerged fermentation condition. The extracted crude enzyme was purified using ammonium sulphate and gel filtration chromatography using Sephadex G-75 gel. The enzyme was characterized by investigating the effect of temperature, pH, and nutrient sources on the purified enzyme. Molecular identification confirmed the isolate as *Aspergillus flavus* (accession number of MT899184). The total activity observed in crude fraction (609 U/mL) reduced to 187.5 U/mL in the ammonium sulphate fraction and then to 77.6 U/mL in the Sephadex G-75 fraction. Optimum temperature and pH were 40 °C and 6, respectively. The enzyme remained active for 5 min at both 70 °C and 80 °C. However, at 100 °C, all activity was lost. Glucose was the preferred carbon source and had higher activity (0.185 U/mL) but was unable to utilize sucrose. This study concludes that this isolate may be exploited for industrial production of phytase which has great application in animal feed industries.

Keywords : Phytase Phytate Animal feed *Aspergillus flavus* Sephadex G-75