



## Phytase Production by *Aspergillus niger* var. *phoenicis* URM 4924 Using Cane Molasses and Rice Brain

Nascimento, J.C.S.<sup>1</sup>; Souza, F.A.S.D.<sup>1</sup>; Silva, M.F.<sup>1</sup>; Souza-Motta, C.M.<sup>2</sup>; Porto, T.S.<sup>1</sup>; Teixeira, J.A.C.<sup>3</sup>; Porto, A.L.F.<sup>1</sup>

<sup>1</sup> Departamento de Morfologia e Fisiologia Animal, Área de Bioquímica, Universidade Federal Rural de Pernambuco, Recife, Brazil <sup>2</sup> Departamento de Micologia, Centro de Ciências Biológicas, Universidade Federal de Pernambuco, Recife, Brazil. <sup>3</sup> Instituto de Biotecnologia e Bioengenharia, Departamento de Engenharia Biológica, Universidade do Minho, Braga, Portugal

Phytase is a generic term used to describe an enzyme that hydrolyzes phosphomonoester bonds from phytic acid, thereby liberating inorganic phosphorous, consequently increasing the availability of phosphorous for the absorption. It is presumed to be plant storage form of phosphate which also happens to have considerable antinutritive effects for most animals. Phytate, a salt of phytic acid, is the major storage form of phosphorus in typical animal feedstuffs. The aim of this study was evaluate parameters of the medium, such as the concentrations of cane molasses and rice brain in the production of phytase by *Aspergillus niger* var. *phoenicis* URM 4924, using a factorial design. The experiments was carried out according to a 2<sup>2</sup> factorial design with four center points, which were studied at three levels, cane molasses concentration (1.0%, 1.5% and 2.0%) and the rice bran concentration (0.25%, 0.5% and 0.75%). Fermentations were carried out using 250 mL Erlenmeyer flasks, 30° C, 90 rpm, pH 4.0, with addiction of saline solution (gL<sup>-1</sup>: KCl 0.5; MgSO<sub>4</sub>.7H<sub>2</sub>O 1.5; CaCl<sub>2</sub>.2H<sub>2</sub>O 2,0) for 72 hours of production. Phytase activity was determined by quantification of the phosphate released from phytate during the enzymatic reaction using the method of ammonium molybdate. The best conditions for phytase production (12.69 U/mL) occurred using 0.75% of rice brain with 2.0% of cane molasses. These results demonstrate the potential of cane molasses and rice brain in submerged fermentation for the phytase production by *A. niger* var. *phoenicis* URM 4924 that may be added to feeding non-ruminant animals.

Word Keys: phytase, *Aspergillus*, cane molasses, rice brain.

Supported by: CAPES and CNPq