

Physiological roles of histidine acid phytase from *Pantoea* sp. 3.5.1.

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Abstract

Microbial phytases represent a potential alternative way to produce myo-inositol phosphate isomers with therapeutic properties, whereas the chemical synthesis of these compounds is inefficient and costly. The aim of this work is to study the physiological role of histidine acid phytase in *Pantoea* sp 3.5.1 cells. Promoter region of the phytase gene was studied and potential binding sites for transcription factors RpoD15 and MetJ were identified by the methods of bioinformatic analysis. Genomic locus carrying the phytase gene was characterised and compared with the same genomic loci of other enterobacteria. It was found that the isolated and purified phytase from *Pantoea* sp. 3.5.1 refers to the Agp- group of histidine acid phytases and has dual physiological role in the bacterial cell. As glucose-1-phosphatase it is involved in glycolysis processes. The data obtained by stereospecificity analysis helped to identify that phytase from *Pantoea* sp. 3.5.1 is the enzyme that carries out phytate hydrolysis by the second path and forms D/L-myo-inositol-1,2,4,5,6-pentakisphosphate as the end product.

Keywords

Glucose-1-phosphatase, Myo-inositol phosphates, *Pantoea*, Phytase