Biochemistry (Moscow) 2016 vol.81 N8, pages 785-793

Structural characteristics and catalytic mechanism of Bacillus β-propeller phytases

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Abstract

© 2016, Pleiades Publishing, Ltd.ß-Propeller phytases of Bacillus are unique highly conservative and highly specific enzymes capable of cleaving insoluble phytate compounds. In this review, we analyzed data on the properties of these enzymes, their differences from other phytases, and their unique spatial structures and substrate specificities. We considered influences of different factors on the catalytic activity and thermostability of these enzymes. There are few data on the hydrolysis mechanism of these enzymes, which makes it difficult to analyze their mechanism of action and their final products. We analyzed the available data on hydrolysis by ß-propeller phytases of calcium complexes with myo-inositol hexakisphosphate.

http://dx.doi.org/10.1134/S0006297916080010

Keywords

calcium-binding site, calcium–phytate complex, catalytic mechanism, myo-inositol hexakisphosphate, β-propeller phytases