

عنوان مقاله:

Metallophosphoesterases of *Chlamydomonas reinhardtii* and Analyses of Their Transcription Levels Under Phosphate Deficiency

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خلاصه مقاله:

Phosphorous (P) is an important macroelement for all organisms. However, there is a finite amount of P on Earth, therefore, new enzymes and technologies are needed for better P use in agriculture. Metallophosphoesterases are a large group of evolutionarily related proteins that are important in biotechnology. We found fourteen putative Metallophosphoesterase (MPA) genes in the genome of *Chlamydomonas reinhardtii*. Our RT-PCR analyses showed that some of these genes were constitutively expressed, and some were upregulated under phosphate deficiency. These results and bioinformatic analyses suggest that two of the genes (MPA₁₁ and MPA₁₃) are transcribed in high levels and the putative polypeptides are predicted to be secreted to extracellular space, making them ideal to be used in biotechnological applications. Phylogenetic analyses show that MPA₁₁ and MPA₁₃ are related to known phytases from plant species, suggesting MPA₁₁ and MPA₁₃ might have specific phytase activity. In light of these results, we discuss the potential of *C. reinhardtii* as a phytase producing organism for agricultural and industrial use.

کلمات کلیدی:

.Phosphate nutrition, Phytase, Phytic acid, Phosphate

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