
DYNAMICS OF A WHEAT CYTOKININ-BINDING PROTEIN DURING SEED GERMINATION

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ABSTRACT

Cytokinins are plant hormones involved in regulation of many important processes in plant growth and development. Notwithstanding much effort have been made into research of these important molecules, several outstanding issues connected with them have still remained. Undoubtedly, one of them is the exact function of cytokinin-binding proteins. One of the most examined members of this protein family is wheat cytokinin-binding factor 1 (CBF-1). CBF-1 was published to be embryo-specific trimeric protein having remarkable affinity for aromatic cytokinins. Based on its behaviour during embryogenesis and germination, CBF-1 has been assumed to act as a regulator of N⁶-benzyladenin-type cytokinin levels. The main aim of our work was to revise CBF-1 dynamics upon cereal seed germination using advanced proteomic methods. For this purpose, target proteomic approach utilizing mass spectrometry and selected reaction monitoring was used. Then, classical two-dimensional electrophoresis followed by imunodetection of CBF-1 was applied as an independent proteomic tool suitable for verifying of achieved results. Simultaneously, cytokinin-binding activity was monitored employing equilibrium dialysis. Surprisingly, data obtained from initial experiments indicate that CBF-1 remains at the same level within first four days of germination. This finding is in sharp contrast to information published earlier and sheds brand new light on this interesting protein.

Key words: cytokinin-binding protein, wheat, seed germination, proteomic approaches

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