

Effect of cytoskeleton modifiers on the lectin activity during plant acclimation to low temperatures and under ABA treatment

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Abstract

Effects of inhibitors of microtubule polymerization, 1 mM colchicine and 15 μ M oryzalin, and a microtubule stabilizer, 7% dimethyl sulfoxide, on the activities of soluble and cell-wall lectins were studied in unhardened (23°C) and cold acclimated (3-7 days at 2-3°C) winter wheat (*Triticum aestivum* L.) 7-day-old seedlings. Three wheat cultivars differing in their frost tolerance were compared. Seedlings were grown in the presence of 30 μ M ABA or without hormone in the medium. Cell-wall lectins were more sensitive to the cytoskeleton modifiers than soluble lectins. Colchicine and oryzalin enhanced lectin activity, whereas dimethyl sulfoxide suppressed it. Plant hardening and ABA treatment reduced the sensitivity of cell-wall lectins to the cytoskeleton inhibitors, probably due to appearance of the subpopulation of cold-stable microtubules. An increase in the activity of cell-wall lectins under the conditions resulting in the cytoskeleton degradation could be a compensatory mechanism directed to cytoskeleton stabilization, with genotype-dependent manifestation of this mechanism.

Keywords

Abcisic acid, Cell wall, Cold acclimation, Cytoskeleton, Lectins, *Triticum aestivum*