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Cell-wall lectins during winter wheat cold hardening

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Abstract

The polypeptide composition and functional activity of cell-wall lectins from roots of winter wheat (*Triticum aestivum* L., cv. Mironovskaya 808) seedlings during cold hardening were studied. Several phases of lectin activity changes were observed, which indicates their involvement in the development of general adaptation syndrome of the cell. After 0.5-h low-temperature treatment, marked alterations occurred in the profile of protein elution: lectins with mol wts of 78 and 42.5 kD disappeared and new ones with mol wts of 72, 69, 37, and 34.5 kD appeared. It was established that 17.5- and 69-kD lectins and most lectins eluted with glucose were arabinogalactan proteins (AGP), which permitted a supposition that these lectins were involved in the interaction between the cell wall and cytoskeleton. After 7-day-long hardening, total protein content reduced and lectins with mol wts of 69 and 37 kD disappeared, which corresponded to reduced lectin activity by the end of hardening. A transient appearance of 37- and 69-kD lectins, which are AGP, might indicate their involvement in the triggering the development of plant-cell defense responses. © 2006 Nauka/Interperiodica.

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Keywords

Arabinogalactan proteins, Cell wall, Lectins, Low-temperature hardening, *Triticum aestivum*