THERMOSENSITIVITY OF LIP OXYGENASE AND PHOTOSYNTHESIS PIGMENTS OF WINTER WHEAT


Holodniy Institute of Botany of the National Academy of Sciences of Ukraine, Kyiv, Ukraine
Institute of Bioorganic Chemistry and Oil Chemistry of the National Academy of Sciences of Ukraine, Kyiv, Ukraine

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The effects of temperature regime on the pigment spectrum and lipoxygenase activity of the frost-resistant winter wheat *Triticum aestivum* L. cv. Volodarka seedlings were analyzed. After short-term cooling (+4 °C, 2 h) the amount of chlorophyll *a* in 7-day-old seedlings decreased. The chlorophylls *a* + *b* /carotenoids ratio increased under high temperature treatment (+40 °C, 2 h.) from 10.9 to 18.5. In 14-day-old seedlings a low temperature resulted in some rise of chlorophyll *a* content, the chlorophylls *a* / *b* ratio raised from 2.13 to 2.97 while the content of chlorophyll *b* and carotenoids diminished. Two isoforms of lipoxygenase: LO-1 (pH 7.0) and LO-2 (pH 6.0) were revealed in the seedling leaves, in roots — one 9-LO (pH 6.5). After high temperature and cross stress lipoxygenase activity increased both in the leaves and in the roots. After cooling 9-LO from roots some decrease of its activity was shown. The revealed changes in the pigment spectrum and lipoxygenase activity are regarded as components of adaptive response to changes in temperature regime. These results open the possibility to use the quantitative ratios of photosynthetic pigments and lipoxygenase activity as markers for selection for creating new high technology crop varieties.

*Key words:* *Triticum aestivum* L., lipoxygenase, pigments, temperature resistance.


16. **Nemchenko A., Kunze S., Feussner I.** Duplicate maize 13-lipoxygenase genes are
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