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Session MOLECULAR MECHANISMS OF CELL FUNCTIONS

PLASTIC RESPONSE OF *IRIS PUMILA* SMALL HEAT SHOCK PROTEIN HSP17.6 TO EXPERIMENTAL WARMING *IN SITU*

Katarina Hočevar,[1] Ana Vuleta,[1] Sanja Manitašević Jovanović[1]

[1]*Institute for Biological Research "Siniša Stanković" - National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia*

Introduction: Global warming profoundly impacts ecological communities as higher temperatures affects growth and metabolism of individuals, altering their survival and reproductive success. To anticipate plant response to future temperature increase, two natural populations of *Iris pumila* inhabiting sun-exposed environment were subjected to an open-top chamber (OTC) experiment and investigated for the amount of Hsp17.6.

Methods: One half of all randomly selected circle-shaped clones of *I. pumila* were experimentally warmed, by 1-2°C, using clear-sided OTC, while the other half was exposed to ambient temperature conditions. In spring and summer, over a two-year period, ramets of each clone growing inside and outside of OTC were analyzed for the Hsp17.6 content.

Results: Immunoblot analysis revealed the presence of two Hsp17.6 isoforms, whose quantities were greater in ramets growing inside the OTCs than in those growing outside. The mean response profiles of both protein isoforms were parallel over time and the total amount of Hsp17.6 reached its maximum in the summer. A repeated-measures profile analysis revealed significant treatment and season effect for both Hsp17.6 isoforms, whereas year effect was significant only for the higher molecular weight isoform. Furthermore, profile analysis of the between-population effects showed that the mean response profiles, for both isoforms, differ between populations.

Conclusion: A small temperature increase can alter both the level and shape of the mean response profiles of Hsp17.6 in *I. pumila*, suggesting the species' capability to acclimate to increasing temperatures by plastic response of small heat shock proteins, the plants' key molecular chaperones associated with enhanced thermotolerance.

Key words: global warming; open-top chamber (OTC); plastic response; Hsp17.6; *Iris pumila* L.

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