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"28-Homobrassinolide"- An Approach to Increase Productivity in Brassica Juncea Under Temperature Stress

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Abstract Brassinosteroides (BRs) are well-characterized plant hormones that regulate various components in physiological and metabolic regulation, stress responses and expression of BR genes. Oxidative stress due to high temperature stress lead to production of reactive oxygen species (ROS) such as superoxide radical (O2.), hydrogen peroxide (H2O2) and hydroxyl radical (OH.). Which stimulate and/ or induced synthesis and activities of antioxidant defence system and protect from toxic effects of temperature stress. The aim of present study was to investigate the ameliorative impact of 28-homobrassinolide (28-homoBL) on morpho-physiological attributes and antioxidants of Brassica juncea L. exposed to oxidative stress caused by temperature stress. For this, experiments were carried out at the Plant Physiology Laboratory, Department of Botany, Punjabi University, Patiala. Effect of different degrees of temperature (4 °C and 44 °C) on primed and unprimed seeds of B. Juncea L. with different concentrations of 28-homoBL (10-6, 10-9 and 10-12 M) on growth and biochemical aspects was investigated. All concentrations of 28-homoBL used in present study showed different effect on shoot, root length and activities of antioxidants such as superoxide dismutase (SOD), catalase (CAT), guaiacol peroxidase (GPOD), ascorbate peroxidase (APOX) and glutathione reductase (GR). 28-homobrassinolide pre -sowing treatment mitigate the detrimental effect of temperature on all aspects of growth and physiology by increasing antioxidant activities as compared to control and only temperature stressed seedlings. In conclusion 28-homobrassinolides ameliorates biochemical activities of temperature stressed seedlings by reallocation of nutrients and modulating antioxidant potential to mitigate temperature stress.