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Phytohormones producing *Preussia sp.* BSL-10 induce phytohormonal changes in tomato (*Solanum lycopersium cv.*) under diverse temperature .

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Abstract

Global climate change resulted in unwarranted change in global temperature and caused heat and cold stress, which are considered major threats to agriculture productivity around the world. The use of plant growth-promoting microbes is an eco-friendly strategy to counteract such stresses and confer tolerance to the plants. In the current study, previously isolated endophytic fungi *Preussia sp.* BSL-10 has been found to produce phytohormones such as IAA and GA and as such, endophyte *Preussia sp.* BSL-10 was found to induce tolerance against heat and cold stress. The results showed that under both heat and cold stress the plant growth parameters such as shoot, root length, shoot fresh weight and root fresh weight are higher in *Preussia sp.* BSL-10 treated plants as compared to free *Preussia sp.* BSL-10 control plants. In addition, the stress-sensitive endogenous ABA levels were significantly increased in *Preussia sp.* BSL-10 host plant. The current results suggest that the phytohormone-producing endophyte *Preussia sp.* BSL-10 can increase plant resistance to heat and cold stress, in turn improving agricultural productivity.

Keywords: Global climate change, growth-promoting microbes, phytohormones, fungal endophyte

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