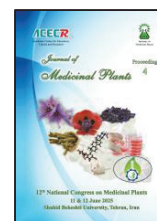




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Evaluating the Role of *Bacillus subtilis* in Alleviating Salt Stress in *Lepidium sativum*

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ABSTRACT

Garden cress (*Lepidium sativum*), a rapidly growing annual herb belonging to the Brassicaceae family, is widely cultivated for its culinary and medicinal applications. Native to Southwest Asia and Egypt, this plant is valued for its distinctive peppery flavor and its richness in essential vitamins and minerals, offering notable nutritional and health benefits. Its versatility and adaptability have made it a favored choice in agricultural practices worldwide. To assess the effects of *Bacillus subtilis* on garden cress, a greenhouse experiment was conducted using a randomized block design with 14 treatments, including seven salinity levels, and four replications. These treatments involved varying salinity doses with the bacterium applied either individually or in combination. The results demonstrated a significant enhancement in garden cress's salinity tolerance in the presence of *Bacillus subtilis*, allowing it to withstand salinity levels of up to 14 dS/m. This study highlights the potential of biological treatments to support the sustainable cultivation of medicinal plants, particularly in saline soils, thereby addressing agricultural challenges in regions like Iran

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