

The aim of this study was to investigate the role of endogenous nitric oxide in protective effects of He-Ne laser on salt stressed-tall fescue leaves. Salt stress resulted in significant increases of membrane injury, reactive oxygen species (ROS) production, polyamine accumulation, and activities of SOD, POD, and APX, while pronounced decreases of antioxidant contents, CAT activity and intracellular Ca^{2+} concentration in seedlings leaves. He-Ne laser illumination caused a distinct alleviation of cellular injury that was reflected by the lower MDA amounts, polyamine accumulation and ROS levels at the stress period. In contrast, the laser treatment displayed a higher Ca^{2+} concentration, antioxidant amounts, NO release, antioxidant enzyme, and NOS activities. These responses could be blocked due to the inhibition of NO biosynthesis by PTIO (NO scavenger) or LNNA (NOS inhibitor). The presented results demonstrated that endogenous NO might be involved in the progress of He-Ne laser-induced plant antioxidant system activation and ROS degradation in order to enhance adaptive responses of tall fescue to prolonged saline conditions.

Putative schematic of endogenous NO molecules mediate He-Ne laser illumination-induced adaptive responses in leaves of salt stressed-tall fescue seedlings through the modulation between ROS levels and plant antioxidant system.

