

Oxidative Stress Mitigation by Jasmonic Acid Application in Pigeon Pea

Poonam Sharma*, Geetika Sirhindi,
Harpreet Kaur and Mudaser Ahmad Mir

Department of Botany, Punjabi University, Patiala-147 002, Punjab, India

Abstract In the present study, oxidative stress was induced in Pigeonpea by application of Copper sulphate in laboratory conditions. Jasmonic acid (JA) treated as well as untreated seedlings were grown in copper (Cu) treatments for 15 days. Data for antioxidant enzymes and vitamins was recorded which includes activities of three key ROS scavenging enzymes viz., superoxide dismutase (SOD), catalase (CAT), peroxidases (POX), vitamin A, C and E. JA treatment led to increase in superoxide dismutase, catalase and peroxidases under Cu stress as compared to the control distilled water grown seedlings. Biochemical analysis revealed widespread rebalancing of ROS scavenging enzymes after stress and JA treatment. In control plants, SOD and CAT activity increased upon induction of Cu stress, while in JA treated plants SOD activity decreased significantly. JA application caused remarkable increase in POX activity, while under stress an increase in vitamin A, C and E was also observed in JA treated seedlings grown in Cu stress. The study concludes that JA is capable of alleviating oxidative stress caused by Cu in Pigeonpea through increasing activity of antioxidant enzymes like SOD and CAT and vitamins.