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(57) Abstract :

IMPACT OF 5-AMINOLEVULINIC ACID ON PB-STRESSED BRASSICA JUNCEA SEEDLINGS: GENE EXPRESSION AND BIOCHEMICAL ANALYSIS The present study is mainly focused on the utilization of potential biomolecule ALA for stress management and plant's growth promotion under extreme environmental conditions. Here, the role of ALA as a mitigation agent in Pb-stressed plants was assessed. It was observed that ALA improved the plant performance in various ways by inducing their defense potential, which was assessed by assessing different parameters. The exogenous treatment of ALA enhanced the growth properties of plants by improving their dry matter and relative water content. Moreover, they also stimulated the pigment levels of plants by triggering their biosynthetic pathways. Most importantly, they boosted their antioxidative defense system to cope with toxic conditions. Also, the secondary metabolic profiles were enhanced in terms of osmoprotectants, osmolytes, sugars, amino acids, glycine betaine, proline and polyphenols. All these metabolites were stimulated as they offered to scavenge properties to metal ions along with strengthening the defense system. Our studies were also validated by molecular analysis that revealed that transcriptional patterns were also modulated due to ALA in positive aspects. Therefore, it is most likely believed that ALA could be used as a most effective strategy to boost the plant defense system, combat Pb toxicity, and improve world agriculture patterns.

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