

INTERACTIVE EFFECT OF SALICYLIC ACID AND FLUORIDE ON LIPID PEROXIDATION AND ACTIVITIES OF ANTIOXIDATIVE ENZYMES IN AONLA (*EMBLICA OFFICINALIS*) SEEDLINGS

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SUMMARY: The interactive effect of salicylic acid (SA) (0.5 mM) and sodium fluoride (NaF) (1 and 10 mM) was investigated on seedlings, grown *in vitro*, of aonla (*Emblica officinalis*). After 7 days of treatment, NaF reduced the percentage of seed germination, root and shoot length, vigor index, chlorophyll stability index (CSI), membrane stability index (MSI), and pigment content, while SA, alone and in combination with NaF, increased the growth parameters and membrane integrity. The activities of antioxidant enzymes such as superoxide dismutase (SOD), peroxidase (POD), and catalase (CAT) were increased significantly with increasing concentrations of NaF. Furthermore, the increased activity of these enzymes after exposure to SA in combination with NaF indicated adaptive responses occurred in the seedlings. Seedlings showed more lipid peroxidation, with increased malondialdehyde (MDA), with increasing concentrations of NaF, while SA, alone and together with NaF, reduced MDA content significantly. It is suggested that the reduction in MDA content with SA is implicated in improving vigor index, membrane integrity, and pigment content. Thus, SA pre-treated seeds of aonla can show better early growth and seedling survival in areas where high soil fluoride is a major problem.

Keywords: Aonla; Antioxidative enzymes; *Emblica officinalis*; Fluoride; Lipid peroxidation; Malondialdehyde; Membrane stability index; Salicylic acid; Seedling growth.

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