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Comparative biochemical analysis of wild introgression lines in response to short-term exposure to salinity

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The two high-yielding rice BC_2F_{6-7} (backcross populations of *O. sativa* (IR58025A/KMR3) x *O. rufipogon)* introgression lines (ILs) were used to analyze biochemical changes in response to salinity stress for 24 h on 10th day. Plants were grown in normal Hoagland's media for 10 days, treated with 150 mM NaCl for 24 h and were analyzed for chlorophyll, proline, antioxidant enzymes and sugar content. The results revealed ~two folds reduced concentrations of chlorophyll and ~three folds increased level of proline in K198 (salt-sensitive) under salt stress conditions. The salt-tolerant K478 showed chlorophyll reduction by ~one fold and proline increase by ~two folds in salt treated samples. The antioxidant enzyme activity in these contrasting introgression lines under short-term exposure to salt stress exhibited significant difference. An increased activity of superoxide dismutase and ascorbate peroxidase was recorded under salt stress conditions whereas, a decreased trend of catalase activity was observed in both the ILs. Peroxidase activity on the other hand, showed an increased trend in K478 (salt-tolerant) and decreased in K198 (salt-sensitive) under 150 mM 24 h NaCl treatment. A highly significant result was noticed in the content of total and reducing sugars and starch. The reduction over control in total sugar content was less in K478 and high reduction was recorded in K198. This further indicated possible salt tolerance of K478 in comparison to that of K198.

Key words : Introgression lines, Salinity, Total sugars, Reducing sugars, Starch, Antioxidant enzymes

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