B-48: Effects of salinity on growth and photosynthetic characteristics of cell suspension cultures from *Alternanthera philoxeroides* (Mart.) Griseb

Rasika G Mudalige
(*Dept of Botany, Univ of Peradeniya*)

This study examined the effect of 100 mM NaCl on growth and photosynthetic characteristics of light-grown cell suspension cultures of *Alternanthera philoxeroides* (Mart.) Griseb. Cells were grown in control (Murashige & Skoog media with 1% sucrose) or salt (same media with 100 mM NaCl). Growth of cells were determined by measuring fresh weight. Oxygen exchange was measured using an oxygen electrode. Symplastic volume was determined by labelling the cells with H^3_2O and C^{14}-sorbitol. Osmotic potential of cells and media was determined by an osmometer. Development of photosynthetic proteins was studied using western blot analysis. Final fresh weight of salt-treated cells was 20% less than that of the control. Salt-treated cells and control had a turgor potential of 0.7 MPa, at 24 h after subculture. This positive turgor potential accompanied by a decrease in osmotic potential of salt-treated cells indicated that a significant osmotic adjustment occurred in the first 24 h. The concentration of Chl and 2 photosynthetic proteins, Rubisco small subunit (SSU) and light harvesting Chl binding protein (LHCP) declined when cells were transferred to 1% sucrose. As sucrose concentration declined, the concentration of Chl, Rubisco SSU and LHCP increased in both cultures. The rate of recovery was slower in salt-treated cells compared to the control, but the final concentrations of Chl, and proteins were similar in both. The net photosynthetic rate in these cells correlated with the concentration of Chl, Rubisco SSU and LHCP. The repiration rate of salt-treated cells remained slightly higher than that of the control cells, suggesting higher energy demand by them.