

POSTER PRESENTATION

IMPACT OF EMS TREATMENT ON SUGARCANE CALLUS GROWTH, PROLINE CONTENT AND CELL WALL MODIFICATION DURING OSMOTIC STRESS

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Abstract

Ethyl methanesulfonate (EMS) can enhance genetic variability on the sugarcane genome resulting in the induction of advantageous traits such as drought tolerance. The present study was undertaken to gain detailed information on the effect of EMS treatment and osmotic stress on the growth, proline content, water content and cell wall modification in sugarcane callus. Results indicated that EMS treatment resulted in a significant decrease in the number of callus clumps and callus fresh weight. Furthermore, EMS treatment induced hydrogen peroxide and proline content production. Callus water content and dry weight were positively correlated to cellulose biosynthesis. The EMS treated callus showed enhanced hemicellulose biosynthesis under osmotic stress when compared to the control. An increase in hemicellulose might be a response to cellular component damage due to EMS treatment. These results suggest that cell wall modification is important for maintaining cell water content during osmotic stress, however, further work will be conducted to confirm the results at whole plant.

Keywords: ethyl methanesulfonate, dry weight, callus water content, cellulose, hemicellulose