

**ASSESSING WATER STRESS CONDITIONS OF  
TOMATO (*Lycopersicon esculentum* Mill.) BY USING THE  
POLYETHYLENE GLYCOL AS OSMOTIC INDUCER**



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## ABSTRACT

This experiment was carried out to determine the effect of water stress on *in vitro* organogenesis of tomato KC-1 cultivar. First experiment was aimed to observe the seed germination percentage and seedling performance on MS media containing 2 mg/l BAP supplemented with different concentration of (0, 30, 60, 90 g/l) Poly ethylene glycol (PEG) to induced water stress artificially. MS media fortified with 0 g/l (control) PEG treatment exhibited better seed germination percentage (87.78%) and seedling performance while the minimum value of seed germination (21.93%) was noted under 90 g/l PEG treatment at 20 days after culture. Inferential statistics form of regression analysis proved the negative association between PEG concentration and all the estimated parameters such as shoot length, root length, fresh weight, dry weight, chlorophyll a, chlorophyll b and total chlorophyll content of the *in vitro* grown tomato seedlings. Pearson correlation was determined the strength and direction of associated that exists between two continuous variables. The results indicated that there was a significant positive correlation between the each two independent variables.

Response of cotyledon and hypocotyl of tomato KC-1 under different water stress levels was also studied for *in vitro* organogenesis. Cotyledon and hypocotyl explants were excised from 4 weeks old tomato seedling which was grown under *in vitro* condition and they were cultured for callus induction on MS medium containing 2 mg/l BAP supplemented with different concentrations of PEG (0, 30, 60 and 90 g/l). *In vitro* response percentage of cultured explants, which is sign to produced callus and colour of initiated callus were determined at 4 weeks of culture. Results revealed

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