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Effect of *in vitro* and *in vivo* induction of polyethelene glycol-mediated osmotic stress on hybrid taro (*Colocasia esculenta* (L.) Schott)

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ABSTRACT

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Taro hybrid TSL (Topi X Satasankha), along with its parental lines, was evaluated for stress tolerance under *in vitro* and *in vivo* polyethelene glycol (PEG) -mediated osmotic stress conditions. Aseptic cultures were raised *in vitro* under control and PEG-mediated stress conditions. Stress index for survival and growth parameters like rooting ability in cultures and number of leaves produced per plantlet revealed the better response of hybrid lineTSL than its parental lines. The plantlets were hardened and transferred to pots for evaluation of morpho-physico-biochemical parameters under PEG-mediated osmotic stress conditions. Significant variations were observed in stress index for plant height, number of leaves, leaf area, % relative water content (RWC), chlorophyll stability index (CSI), % injury by dessication and yield. Decline in biochemical traits like protein content but increase in catalase and peroxidase activities was observed under the osmotic stress conditions. Less variation in morpho-physico-biochemical characters were recorded in TSL under stress conditions as compared to its parents. The hybrid line-TSL showed tolerance to osmotic stress with a minimum yield reduction. TSL can be used for the future breeding program for the development of drought tolerant lines and can become the source of favorable genes for drought tolerance in taro.

Keywords: hybrid taro, *in vitro*, *in vivo*, PEG-6000, osmotic stress, stress index

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