Chemical and Physical Treatment Effects on Induction of Somatic Embryogenesis of Explants Cultured on MS Medium Containing Thidiazuron

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ABSTRACT

This project seeked to optimise the chemical and physical factors as parameters that induce somatic embryogenesis (SE) of *D.* × *tokaiensis* leaf explants grown on Murashige and Skoog (MS) medium supplemented with 1.0 mg/L thidiazuron (TDZ). The chemical parameters utilised were pH of value of 3, 4, 5, 6 and 7, while the physical parameters are varying light intensity, dark, dim, diffused and direct lighting as well as varying sub-culturing frequencies, at a period of 2 weeks, 4 weeks and 8 weeks. Observation of the cultures was performed at day 15 and 30. The cultures were photographed at day 30 and the induction of somatic embryogenesis (SE) was examined via the counting of number of embryos formed. The results obtained were then tested for significance using Analysis of Variance (ANOVA) and Fisher's Least Significant Difference (LSD) test with a 95% confidence level. The resultant somatic embryos were then transferred on to MS medium without TDZ and the various stages of somatic embryos, globular, heart, torpedo, cotyledonary and germinating plantlets were photographed. The explants sub-cultured at a 2-week interval, exposed to direct lighting and grown on pH 4 resulted in the induction of the highest number of somatic embryos. Experimental methodology of the exposure of explants to the varying light intensity could be modified by utilising specific wavelengths of light instead of white light. In addition to that, histological and molecular studies could be carried out, to further determine the effect of the chemical and physical factors at a cellular and molecular level.