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DEVELOPING A PROTOCOL FOR SOMATIC EMBRYOGENESIS OF POMEGRANATE (Punica granatum L.)

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In Sri Lanka, the consumer demand for imported variety of Pomegranates (Punica granatum L.) is higher than local varieties due to their high qualities. Cultivating these imported varieties in Sri Lanka is a good solution to fulfil this increasing demand in the local market and to reduce the importation of P. granatum. For commercial cultivation, availability of high quality planting material with uniform characteristics is very important and micropropagation using somatic embryogenesis is an attractive alternative for mass propagation of P. granatum. Hence, this study was carried out in order to develop an efficient somatic embryogenesis protocol for imported variety of P. granatum using leaf discs of in vitro germinated seedlings as the explants. Seeds from mature, healthy P. granatum fruits were surface sterilized with 30% Sodium hypochlorite for 30 minutes and grown in Plant Growth Regulators (PGRs) free Murashige and Skoog's (MS) medium. Leaf disc explants taken from 45 days old healthy P. granatum plantlets were cultured in different combinations of PGRs, 2,4-D and BAP with 500.0 mg/L L-Gluamine in MS medium and kept under dark conditions in order to identify the most effective culture medium for callus induction, embryonic callus formation and embryonic callus growth. Among these treatments, MS medium with 1.0 mg/L 2,4- D and 500.0 mg/L L-Glutamine was the most effective medium for embryonic callus formation and embryonic callus growth. MS medium with different combinations of PGRs, 2,4-D and BAP with Casein hydrolysate and L-Glutamine was used to identify the most effective culture medium for maturation of somatic embryos. The treatment with 0.0 mg/L 2,4-D, 0.25 mg/L BAP, 500.0 mg/L L- Glutamine 0.0 mg/L Casein hydrolysate and 30.0 g/L sucrose under dark conditions gave the highest percentage of matured somatic embryos.

Keywords: *Embryonic callus, Micropropagation, Punica granatum, Somatic embryogenesis, Murashige and Skoog's medium*