World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:8, No:12, 2014

Indirect Regeneration and Somatic Embryogenesis from Leaf and Stem Explants of Crassula ovata 42-45 (Mill.) Druce: An Ornamental Medicinal Plant

Authors : A. B. A. Ahmed, D. I. Amar, R. M. Taha

Abstract : This research aims to investigate callus induction, somatic embryogenesis and indirect plant regeneration of Crassula ovata (Mill.) Druce – the famous ornamental plant. Experiment no.1: Callus induction was obtained from leaf and stem explants on Murashige and Skoog (MS) medium supplemented with various plant growth regulators (PGRs). Effects of different PGRs, plant regeneration and subsequent plantlet conversion were also assessed. Indirect plant regeneration was achieved from the callus of stem explants by the addition of 1.5 mg/L Kinetin (KN) alone. Best shoot induction was achieved (6.5 shoots/per explant) after 60 days. For successful rooting, regenerated plantlets were sub-cultured on the same MS media supplemented with 1.5 mg/L KN alone. The rooted plantlets were acclimatized and the survival rate was 90%. Experiment no.2: Results revealed that 0.5 mg/L 2,4-D alone and in combination with 1.0 mg/L 6-Benzyladenine (BA) gave 89.8% callus from the stem explants as compared to leaf explants. Callus proliferation and somatic embryo formation were also evaluated by 'Double Staining Method' and different stages of somatic embryogenesis were revealed by scanning electron microscope. Full Strength MS medium produced the highest number (49.6%) of cotyledonary stage somatic embryos (SEs). Mature cotyledonary stage SEs developed into plantlets after 12 weeks of culture. Well-rooted plantlets were successfully acclimatized at the survival rate of 85%. Indirectly regenerated plants did not show any detectable variation in morphological and growth characteristics when compared with the donor plant.

Keywords : callus induction, indirect plant regeneration, double staining, somatic embryogenesis, Crassula ovata
Conference Title : ICMAP 2014 : International Conference on Medicinal and Aromatic Plants
Conference Location : Penang, Malaysia
Conference Dates : December 04-05, 2014