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In-vitro plant regeneration via somatic embryogenesis and multiple shoot production in an elite ginger cultivar

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Abstract. Direct production of somatic embryos from the meristematic tissue of elite ginger cultivar 'Garubathan' have been developed and more frequently plant regeneration with multiple shoots has been obtained through secondary embryogenesis. Different ex-plants were incubated in the Murashige – Skoog (MS) media with varied concentration of 2,4-D and BAP and sucrose for direct induction of embryogenic calli and promotion of multiple shoots. The rapid initiation and development of somatic embryos were noticed from the meristematic tissue ex-plants cultured in the MS medium with 2% sucrose, 10% coconut milk pulsed with 2,4-D 1mg/l and BAP 1mg/l. The frequency of secondary embryogenic cells production was also higher when cultured in the medium. Response of embryogenic calli regeneration and multiple shoot production varied depending on the strength of the MS medium and concentration of BAP and a consistent production of multiple shoots was achieved on ¾ strength MS medium with BAP 5mg/l. Scanning electron microscopy and histological examination of embryogenic calli revealed a clear organised globular and bipolar structures, which hold great promise for germplasm conservation and genetic manipulation of ginger.