

Sathyagowri, S. and T. H. Seran
Department of Crop Science, Faculty of Agriculture, Eastern University, Chenkady

Paper: Sustainability

Embryogenic response of aerial stem of ginger (*Zingiber officinale* Rosc.) cultured in different media

Ginger (*Zingiber officinale* Rosc.) is a herbaceous perennial which is valued as an important spice and medicinal crop throughout the world, and it is vegetatively propagated through rhizome buds. This study was done to find out the optimal hormonal combination for the initiation of somatic embryos in aerial stem explants of ginger (*Zingiber officinale* Rosc.). The aerial stems at the basal portion were collected from the field grown local variety of ginger and rinsed thoroughly in running water followed by distilled water and then dipped in 70% ethanol for 1 min. Subsequently, surface sterilization was done using 20% of CloroxTM prior to culture on MS medium. The sterilized explants (1 cm long) were vertically excised into two halves and cultured on MS medium with two different BAP concentrations with or without 0.1 mg/l NAA or IAA.

The results showed that initial swelling and greening of explants exhibited during first week of culture and the size of the explants increased two third folds after four weeks in culture containing BAP alone, while others showed a low degree of swelling. The size increase may be due to active cell division and expansion resulted by exogenous supply of growth regulator. Further, it was noted that the explants cultured in medium solely contained BAP only produced whitish yellow globular structures which have the potential to become somatic embryos. The degree of embryogenic response was increased with the increase in BAP concentration from 1 mg/l to 2 mg/l. The BAP in combination with NAA or IAA led the explants to initiate shoot buds and roots which led to produce plantlets via organogenesis.

Moreover, histological study revealed the origin and development of somatic embryos directly from the aerial stem explants without intervening callus stage. The meristematic cells of the explants further differentiated into embryogenic cells. Continuous division of these cells produced the globular mass of proembryoids and differentiation of these structures led to the formation of somatic embryos for mass propagation of ginger under *in vitro* conditions.