PLANT TISSUE CULTURE AS TOOL FOR SUSTAINABLE PRODUCTION OF BENTONG GINGER (*Zingiber officinale* var. Bentong) PLANTLETS

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ABSTRACT

Bentong ginger (*Zingiber officinale* Var. Bentong) is an exotic ginger variety that can only be grown in highlands of Bentong district, Pahang due to the fertile soil and cold temperate climate. This variety of ginger is well-known for its unique characteristics. Morphologically it has larger rhizome, thinner skin and less fibrous pulp compared to the domestic gingers. Bentong ginger also has a higher content of pharmaceutically important compounds (i.e. gingerol and shogaol) when compared with other varieties of Malaysian gingers. However, cultivating this ginger through conventional agricultural practice has several constraints. Almost 40% of the harvested rhizomes are set aside every season to be used as seeds for next cycle of cultivation. This has been a major drawback, hindering the continuous supply of ginger to fulfil the increasing market demand. Thus, in this research, a systematic approach was taken to establish *in vitro* cultures of Bentong ginger plantlets. Prior to introduction into Murashige and Skoog (MS) media, young rhizome shoot bud explants were surface sterilised using few different sterilisation methods. Various responses were obtained from shoot bud explants cultured on MS basal medium supplemented with different concentrations of BAP, NAA, 2,4-D and IAA; either alone or in combinations. Augmentation of MS-medium with 3 mg/l BAP and with 1 mg/l NAA recorded the highest number of shootlets and roots multiplication. This *in vitro* regenerated Bentong ginger plantlets could serve the increasing needs of the planting materials for smallholder farmers. Indirectly, this could also improve the economic wellbeing of local farmers.

Keywords: Bentong ginger, *in vitro* plantlets, rhizome shoot buds, tissue culture, BAP

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