

Efficient Microspore Isolation Methods for High Yield Embryoids and Regeneration in Rice (*Oryza sativa* L.)

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Abstract : Through anther and microspore culture methods, complete homozygous plants can be produced within a year as compared to the long inbreeding method. Isolated microspore culture is one of the most important techniques for rapid development of haploid plants. The efficiency of this method is influenced by several factors such as cultural conditions, growth regulators, plant media, pretreatments, physical and growth conditions of the donor plants, pollen isolation procedure, etc. The main purpose of this study was to improve the isolated microspore culture protocol in order to increase the efficiency of embryoids, its regeneration and reducing albinisms. Under this study we have tested mainly three different microspore isolation procedures by glass rod, homogenizer and by blending and found the efficiency on gametic embryogenesis. There are three types of media viz. washing, pre-culture and induction was used. The induction medium as AMC (modified MS) supplemented by 2, 4-D (2.5 mg/l), kinetin (0.5 mg/l) and higher amount of D-Manitol (90 g/l) instead of sucrose and two types of amino acids (L-glutamine and L-serine) were used. Out of three main microspore isolation procedure by homogenizer isolation (P4) showed best performance on ELS induction (177%) and green plantlets (104%) compared with other techniques. For all cases albinisms occurred but microspore isolation from excised anthers by glass rod and homogenizer showed lesser numbers of albino plants that was also one of the important findings in this study.

Keywords : androgenesis, pretreatment, microspore culture, regeneration, albino plants, *Oryza sativa*

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