INDUCTION OF SOMATIC EMBRYOGENESIS AND DEVELOPMENT OF PLANTLETS FROM IMMATURE ANTHER OF *HEVEA BRASILIENSIS* (CLONE RRII 414)

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In *Hevea brasiliensis*, somatic embryogenesis based regeneration system is the only *in vitro* system which provides a platform for genetic manipulation studies. During somatic embryogenesis, quality of callus is a key factor for the production of embryogenic callus and further regeneration, and therefore improving the quality of primary callus is a key step. The present study investigates the effect of explant cold treatment and BA on callus induction and proliferation. Cold treatment applied before and after culturing up to 48 h did not significantly promote the callus induction and growth, but seems to be similar to untreated control. However, prolonged incubation for 72 h dramatically reduced callus induction rate. Supplementation of BA on callus induction medium enhanced the callus induction frequency as well as callus growth and proliferation with an optimum being at 2.0 mg L^{-1} BA along with 2.0 mg L^{-1} 2, 4-D. Somatic embryogenesis with minimal proliferation of embryogenic callus and further regeneration into whole plants within eight months' time is the unique observation found in this system. Regenerated plantlets were successfully acclimatized and were morphologically normal in appearance. This is the first report on clone RRII 414 plantlets regenerated through somatic embryogenesis and field establishment.

Key words: Callus growth, Callus proliferation, Cold pre-treatment, *Hevea brasiliensis*, Somatic embryogenesis

INTRODUCTION

Conventional breeding in *Hevea brasiliensis* is difficult and time consuming due to its long breeding cycle, large genome, and the highly heterozygous genetic background. However, in the last few decades, systematic genetic improvements made in traditional breeding have resulted in the release of many high yielding hybrid clones. But the growth and productivity of such clones are adversely affected by various biotic and abiotic stresses and there is, thus, a great need for genetic modification to enhance productivity by increasing the tolerance to environmental stresses. *In vitro* approaches hold immense importance in bringing about genetic improvements in this crop. A basic pre-requisite for developing a genetic transformation system is the availability of an embryogenic culture that can easily be used as target tissue in transformation experiments. In *Hevea*, the

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