Rubber Science, **25**(2): 183-188, 2012

CHANGES IN PROTEIN PROFILE DURING DIFFERENT DEVELOPMENTAL STAGES OF SOMATIC EMBRYOGENESIS IN *HEVEA BRASILIENSIS*

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Received: 12 September 2012 Accepted: 30 September 2012

Jaysree, P.K., Sajeevan, R.S. and Thulaseedharan, A. (2012). Changes in protein profile during different developmental stages of stomatic embryogenesis in *Hevea brasiliensis*. *Rubber Science*, **25**(2): 183-188.

Somatic embryogenesis is a process by which somatic cells are induced to form bipolar embryos through a series of developmental stages. Since proteins directly influence the cellular metabolism, the changes in protein profile provide a suitable tool for examining the biochemical changes associated with somatic embryogenesis. In plant species, total protein levels increased according to the progression in the developmental stages of somatic embryos and *vice versa* which in turn correlated with the regeneration potential. In the present study, total soluble proteins were studied during the course of somatic embryogenesis pathway in *Hevea* as well as at different stages of the development of somatic embryos. SDS-PAGE analysis of total soluble proteins showed marked differences in its profiles. During different stages of somatic embryogenesis pathway, there was more accumulation of proteins in somatic embryos on a tissue fresh weight basis. Three developmental stages of somatic embryos displayed uniform banding pattern for proteins. However, the relative protein content was decreased as the somatic embryos were more advanced in their development, particularly, at the cotyledon stage. This may probably the reason for the low conversion ability of somatic embryos to plantlets and their further establishment.

Keywords: Electrophoresis, *Hevea brasiliensis*, Protein, SDS-PAGE, Somatic embryogenesis

INTRODUCTION

The ability of somatic plant cells to regenerate into whole plants by the process of somatic embryogenesis by *in vitro* culture is a remarkable phenomenon. Since the initial description of somatic embryo induction in carrot (Steward *et al.*, 1958), this developmental process has been reported for a variety of plant species. In Indian *Hevea* clones, somatic embryogenesis has been achieved from immature anther (Jayasree *et al.*, 1999), immature inflorescence (Sushamakumari *et al.*, 2000) and leaf explants (Kala *et al.*, 2005). In later years, the efficiency of *Hevea* somatic embryo production has improved considerably, however, the process still exhibit low rates of plant regeneration and survival during hardening process.

Morphological and physiological quality of mature somatic embryos affects their germination and subsequent seedling

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