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HISTOCHEMICAL CHANGES IN EMBRYOGENIC AND NON-EMBRYOGENIC CALLI OF *HEVEA BRASILIENSIS*

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It is well established that the accumulation of storage products is a reliable marker for the classification of embryogenic cells. The present study characterizes embryogenic and non-embryogenic calli of *Hevea brasiliensis* through histochemical localization of storage reserves. Inoculation of immature anthers on callus induction medium induced type I (soft and watery) and type II (semifriable / compact) callus. Observations showed that embryogenic callus consists of small cells with prominent nuclei, while non embryogenic calli were characterized by large cells having prominent nuclei. Histochemical examination revealed the accumulation of significant amount of storage starch, lipids and proteins which were dispersed throughout the cells of embryogenic calli, particularly, at later stage than in early phase, whereas low level accumulation of major storage reserves was detected in non-embryogenic calli.

Keywords: Embryogenic callus, *Hevea brasiliensis*, Histochemical characterization, Non- embryogenic callus, Storage reserves

INTRODUCTION

Rubber tree (*Hevea brasiliensis*) is the widely cultivated species as a commercial source of natural rubber. Over the past years, tremendous advancement has been made in latex yield through conventional breeding and by introducing several modern clones with high yield potential. However, many desirable secondary traits are limited due to the narrow genetic base. Genetic transformation provides a viable alternative approach for genetic improvement in this perennial tree species. However, an essential pre-requisite to the success of this approach is the availability of a suitable target tissue for genetic transformation whereby plants can be regenerated from single transformed cells through somatic embryogenesis. Embryogenic callus is generally considered to be a highly desirable target tissue for genetic transformation because of high population of totipotent cells for single cell origin of somatic embryos (Merkle *et al*., 1995).

Induction of embryogenic callus is the first and crucial step during somatic embryogenesis, which largely determines the success of embryogenesis. In most of the hard wood species, embryogenic callus formation is very difficult and *Hevea* is not an exception (Blanc *et al*., 1999). Screening

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