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BIOCHEMICAL AND HISTOLOGICAL FEATURES OF SOMATIC EMBRYOGENESIS IN *HEVEA BRASILIENSIS*

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Basic studies were carried out to improve somatic embryogenesis in *Hevea*. These investigations called for histological and biochemical analyses of plant material and culture media in relation to water, atmospheric gases in culture vessels, minerals, polyamines, phenols and growth regulators. Mechanisms of somatic embryogenesis are partially outlined with the help of histological and biochemical evidences at each step of culture. In primary culture, water parameters and mineral analyses indicated that initiation of exchanges between medium and explant has to be enhanced. During callus development metabolism of ethylene and polyamines is very active and must be controlled by adjustment of growth regulators by the type of medium support and/or by inhibitor supply. Disorganisation of the oxidative metabolism has been studied in relation to browning of the callus. Adjustment of culture medium to enhance somatic embryogenesis has been correlated with the setting up of a specific water status in the embryogenic callus. Embryogenesis can be expressed in two different forms depending on cultural conditions and genotype. Enhancement of the basic knowledge led to systematic embryogenesis from the clones PB 260, PB 235, PR 107 and RRIM 600.

Key words : *Hevea brasiliensis*, Growth regulators, Histology, Somatic embryogenesis, France.

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INTRODUCTION

Over the past decade there has been a marked increase in *in vitro* plant production of all plant groups, particularly woody perennials whose production was minimal in the early 1980s (Boxus, 1989). Because of the many advantages, this trend towards the skilled use of *in vitro* culture techniques to complement or provide a substitute for classical nurseries is likely to continue. The demand would be even greater if the high cost of some types of *in vitro* production was not a limiting factor. This is one of the reasons for the growth of research on plant regeneration from calli and cell cluster suspensions.

Vegetative multiplication by *in vitro* culture would appear to be more ideal for trees than for herbaceous plants for propagation and for plant breeding since the

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