Indian Journal of Natural Rubber Research, **11**(1&2) : 98-100, 1998

COMPARISON OF HEAT STABLE PROTEIN CONTENTS IN BARK TISSUES OF HEALTHY AND TAPPING PANEL DRYNESS AFFECTED *HEVEA BRASILIENSIS*

Plants develop different physiological and biochemical adaptations in response to various biotic and abiotic stresses, the most common ones being changes in normal metabolic activity, accumulation of low molecular weight protective compounds (sugar alcohols, glycine betaine, *etc.*) and transcriptional activation of a large set of genes which leads to accumulation of new proteins having a role in imparting tolerance (Close *et al.*, 1993; Chandler and Robertson, 1994; Uma *et al.*, 1995; Xu *et al.*, 1996; Jayaprakash *et al.*, 1996).

There are many kinds of stress-induced proteins in plants. In some cases different stresses (such as salinity, drought or cold stress) induce synthesis of the same set of proteins (Close *et al.*, 1993; Wisniewski *et al.*, 1996). One of the common stress-related proteins is HS 70 family, which belongs to a class of molecular chaperons (Anderson *et al.*, 1994). These proteins, which are expressed in plants in response to abiotic stress and resist heat induced coagulation, are known to have a protective role. Another family of proteins that are associated with abiotic stress in plants is LEA (late embryogenesis abundant) proteins which are expressed in large quantities in response to dehydration and temperature stresses (Baker *et al.*, 1988; Close *et al.*, 1989; Xu *et al.*, 1996; Jayaprakash *et al.*, 1996). It has been hypothesized that the presence of large amounts of stress proteins such as HS 70 and LEA may impart tolerance to abiotic stresses (Wisniewski *et al.*,1996; Xu *et al.*, 1996). It has also been suggested that such proteins may be involved in the response of plants to biotic stress (Xu *et al.*, 1996).

Tapping panel dryness (TPD) or brown bast in *Hevea brasiliensis* is considered as a physiological disorder and researchers are beginning to treat it as a biotic stress. Many kinds of biochemical and physiological responses have been observed in TPD affected trees of *Hevea* (Vijayakumar *et al.*, 1990; Dian *et al.*, 1995). Recently, Krishnakumar *et al.* (1996) reported some of the common biochemical responses under TPD conditions. But little is known about the involvement of stress related proteins in this syndrome in *Hevea*. Hence, the present experiments were conducted with the objective to examine if the concentrations of stress-related, thermostable proteins were different in the soft bark tissues of healthy and TPD affected *Hevea* trees.

Normal and TPD affected trees of clone RRII 105 were selected and marked separately and monitored regularly to confirm their status. Soft bark with laticiferous vessels (2-5 mm thick) adjacent to the cambium were collected from affected and healthy trees and were powdered in liquid nitrogen and stored at –80°C. For extracting total buffer soluble proteins, the tissue was