Indian Journal of Natural Rubber Research, **12**(1&2) : 92-99, 1998

BIOCHEMICAL COMPOSITION OF SOFT BARK TISSUES IN *HEVEA* AFFECTED BY TAPPING PANEL DRYNESS

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Krishnakumar, R., Sreelatha, S., Thomas, M., Gopalakrishnan, J., Jacob, J. and Sethuraj, M.R. (1999). Biochemical composition of soft bark tissues in *Hevea* affected by tapping panel dryness. *Indian Journal of Natural Rubber Research*, **12**(1&2) : 92-99.

Tapping panel dryness (TPD) syndrome is a serious problem affecting the productivity of *Hevea* plantations. There is complete shut down of rubber biosynthesis in the laticiferous cells of fully dry trees. The biochemical composition of the live laticiferous tissues of TPD affected and healthy *Hevea* trees was compared in the present study. The TPD affected laticiferous tissues contained comparatively higher levels of sugars, phenols and soluble proteins than healthy tissues. Also there was significantly higher activity of peroxidase and lower activity of polyphenol oxidase in the affected than in the healthy tissues. The results showed that lack of availability of sucrose was not the cause for TPD. The high peroxidase activity and the accumulation of phenols in the laticiferous tissue indicate possible oxidative stress in the TPD affected bark tissues. It appears that oxidative damage of laticiferous vessels may be responsible for the complete shut down of the rubber biosynthetic machinery, possibly by altering the energy metabolism in fully dry trees.

Key words : Biochemical composition, *Hevea brasiliensis*, Oxidative stress, Tapping panel dryness

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INTRODUCTION

High yielding clones of natural rubber (*Hevea brasiliensis*) are often susceptible to a physiological disorder called tapping panel dryness (TPD). It is hypothesised that this disorder occurs when harvesting of the latex from the trees exceeds the physiological capacity for its regeneration. It is estimated that TPD leads to approximately 15 to 20 per cent decrease in yield (Commere *et al.*, 1989). The common symptoms of TPD include an excessive late dripping of latex with a simultaneous drop in the dry rubber content of the latex in the initial phase. Total inhibition of rubber biosynthesis occurs and no latex is produced towards the final phase.

Investigations to analyse the cause of this disorder were restricted largely to latex biochemistry and general physiology only (Prematillaka *et al.*, 1985; Vijayakumar *et al.*, 1990; Dian *et al.*, 1995). Cytological disorders associated with the development of TPD