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BIOCHEMICAL AND IONIC COMPOSITION OF LATEX INFLUENCING YIELD ATTRIBUTES AND PRODUCTIVITY IN *HEVEA BRASILIENSIS*

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Natural rubber (cis-1, 4-polyisoprene) is synthesised as rubber particles suspended in latex, which constitutes the cytoplasm of latex producing cells. In the present study, sucrose, thiols and ionic composition of latex were correlated with flow characteristics and yield in seven *Hevea* clones. Thiols in the latex showed significant positive correlation with total latex volume and significant negative correlation with plugging index. Level of sucrose showed significant positive correlation with initial flow rate, total volume and yield of the latex. Among the ionic components, inorganic phosphorus (Pi) showed significant positive correlation with initial latex flow rate, total volume and yield while calcium (Ca) showed significant negative correlation with total volume and yield. The biochemical or inorganic ions present in the latex did not show any significant correlation with the physiological disorder namely tapping panel dryness (TPD).

Keywords: *Hevea brasiliensis*, Latex ionic composition, Tapping panel dryness.

The two major factors influencing the yield in *Hevea brasiliensis* are latex flow characteristics and *in situ* regeneration of latex between two successive harvesting dates (Sethuraj, 1981). It was shown that biochemical and biophysical properties of latex govern its flow and *in situ* regeneration (Jacob *et al.*, 1989). The role of biochemical factors such as sucrose and thiols and their importance as yield components in *H. brasiliensis* had been established (Eschbach *et al.*, 1984; Jacob *et al.*, 1986). Sucrose is the primary precursor for rubber biosynthesis (isoprene) and its higher concentrations in the latex indicate either an increased supply (Tupy and Primot, 1976) or low metabolic utilisation in the laticiferous tissues (Prevot *et al.*, 1984) during isoprene synthesis. Thiols present in latex scavenge the reactive oxygen species (ROS) produced during cell metabolism. Thiols can also activate some key enzymes such as invertase and pyruvate kinase that increase the metabolic activity of isoprene synthesis in the laticiferous tissues and thereby influencing the regeneration of latex (Jacob *et al.*, 1986).

Mineral ions play an important role in the latex formation in laticiferus tissues (Hamzah *et al.*, 1975). They alter the latex flow characteristics, act as cofactors of enzymes involved in rubber biosynthesis and influence the latex regenerative pathway.

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