

DETECTION AND ISOLATION OF GOOD QUALITY DNA FROM THE LATEX OF *HEVEA BRASILIENSIS*

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Received : 24 May 2011 Accepted : 28 October 2011

Thulaseedharan, A., Sajeevan, R.S. and Saleena, A. (2012). Detection and isolation of good quality DNA from the latex of *Hevea brasiliensis*. *Natural Rubber Research*, 25(1): 77-85.

The laticiferous system of natural rubber (NR) *Hevea brasiliensis* has abundant transcripts of several genes, mainly those involved in rubber biosynthesis and plant defense. So far no detailed study to understand the mechanism behind this transcript abundance has been made. There is little evidence for the presence of DNA or active nuclei in large numbers in the latex expelled during tapping. There is also no protocol available for the isolation of genomic DNA from NR latex which contains large amounts of DNase. The present study explore the presence of genomic DNA in *Hevea* latex expelled on tapping and isolation of the same following a modified CTAB based DNA isolation protocol. Initially, the whole latex was treated with CTAB buffer and DNA isolation was carried out. Further different fractions of latex after separated by centrifugation. High molecular weight DNA was obtained from the bottom fraction. No DNA was obtained from the whole latex or from the serum fraction of any of the treatments. The quality and concentration of the isolated DNA was better when latex was pre-treated with a latex specific DNA isolation buffer and the DNA was isolated from the bottom fraction. The DNA isolated was fully digested with DNase1 treatment. When this DNA was used as template for PCR using hevein gene specific primers, the amplified products were similar to those amplified from leaf DNA. This is the first report on detection of genomic DNA from NR latex and developing a successful protocol for the isolation of good quality genomic DNA from the latex of *Hevea brasiliensis*.

Keywords: DNA isolation, *Hevea brasiliensis*, Natural Rubber latex, PCR amplification

INTRODUCTION

Natural rubber (NR) is produced in the latex vessels present in the bark of the rubber tree, *Hevea brasiliensis* (Kekwick, 1989). NR latex is a milky cytoplasm which is exuded from specialized cells called latex vessels or laticifers. The detailed ultra structure of *Hevea* latex vessels indicates that the expelled latex is part of a specialized hydrated and progressively degenerating cytoplasm (Auzac and Jacob, 1989). The latex vessels of *H. brasiliensis* are specialized cells

derived from the fusiform initials of the cambium (De-Fay *et al.*, 1989) and they contain the machinery to convert simple sugars into rubber particles (cis-1,4-polyisoprene) (Chow *et al.*, 2007), which is about 35% of the latex.

Being cytoplasm, NR latex contains several gene transcripts with abundance of those involved in rubber biosynthesis and plant defense genes (Kush *et al.*, 1990; Chow *et al.*, 2007; Ko *et al.*, 2003). While several cellular organelles are seen in the latex, there