

# PHYTOCHEMICAL SCREENING OF *HEVEA BRASILIENSIS* LEAVES: A COMPARATIVE STUDY ACROSS CLONES AND EXTRACTION SOLVENTS

M. Shaheen, Julie Maria Jose, Shera Mathew and N. Savitha

Rubber Research Institute of India, Kottayam-686 009, Kerala, India

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Plants are traditional sources of several bioactive compounds like alkaloids, flavonoids, tannins, saponins, terpenes and phenolic compounds. In this study, three different clones of *Hevea brasiliensis*, namely RR11 105, RR11 414 and RR11 430, were selected and subjected to successive solvent extraction using methanol, isopropanol, acetone and cyclohexane, followed by GC-MS/MS analysis for the identification of various bioactive compounds. The chromatogram was recorded and matched with the NIST library for identification of compounds. Qualitative assays confirmed the presence of alkaloids, flavonoids, phenolics, tannins, saponins and terpenoids across all clones. Extraction efficiency differed among solvents, with methanol consistently yielding the highest recovery of compounds. Notable compounds identified included friedelinol,  $\beta$ -D-glucosyloxyazoxymethane, loliolide, para-vinylguaiaicol and 2,3-dihydrobenzofuran, which are associated with antioxidant, anti-inflammatory, antimicrobial, anticancer and biopolymer precursor activities. These findings establish *Hevea* leaves as a promising source of bioactive secondary metabolites and the use of these compounds in various fields needs to be explored, especially in drug development and to gain an understanding of the metabolic pathways in plants.

**Keywords:** Bioactive compounds, Clonal variation, GC-MS/MS, *Hevea brasiliensis*, Phytochemicals, Solvent extraction

## INTRODUCTION

*Hevea brasiliensis*, commonly known as the Para rubber tree, is the primary source of natural rubber and belongs to the Euphorbiaceae family. The rubber tree is a fast-growing species and the most economically significant member of the *Hevea* genus. It holds substantial economic value due to the milky latex extracted from its bark, which serves as the main source of natural rubber. As a latex-producing crop,

the bark of the rubber tree is regularly tapped to harvest this vital material. Owing to its economic significance, rubber cultivation is expanding across many countries to meet the growing demand for natural rubber. This expansion not only supports global supply but also helps to explore unused lands, strengthen rural livelihoods, stimulate local economies and increase foreign exchange earnings through export. Additionally, *Hevea brasiliensis* is