

CHARACTERIZATION OF LATEX AND RUBBER FROM SELECTED *HEVEA BRASILIENSIS* CLONES

K. Mariamma George, Thomas Sebastian, Reethamma Joseph, K.T. Thomas,
Ramesh B. Nair and C.K. Saraswathyamma

Rubber Research Institute of India, Kottayam – 686 009, Kerala, India.

Submitted: 15 April 2002 Accepted: 30 July 2004

George, K.M., Sebastian, T., Joseph, R., Thomas, K.T., Nair, R.B. and Saraswathyamma, C.K. (2004). Characterization of latex and rubber from selected *Hevea brasiliensis* clones. *Natural Rubber Research*, 17(1): 23-33.

Properties of latex and rubber from 12 exotic *Hevea brasiliensis* clones along with RRH 105 have been studied for different seasons. Clonal difference, seasonal variation and clone to season interaction have been examined. Possible influence of various latex components and other factors on some of the properties are discussed. Most of the clones studied yielded latex with average to high rubber content and the highest DRC was obtained for RRH 105. Majority of the clones yielded rubber with medium to high viscosity and RRH 105 had a relatively higher viscosity. Good correlation was observed between Mooney viscosity and initial Wallace plasticity of rubbers from these clones. Correlation between initial Wallace plasticity and accelerated storage hardening was also significant. ASHT and gel content showed significant indirect relationship. The molecular weight distribution was extremely wide for these rubbers. The molecular weight and the related characteristics showed less variation. Infrared spectroscopic and thermogravimetric analyses of rubber showed only minor variations between the different clones studied.

Key words: Clonal variation, Dry rubber properties, Exotic clones, Latex properties, Seasonal variation.

INTRODUCTION

The breeding programme for *Hevea brasiliensis* aims mostly at improvements in biological characterization such as latex yield, girth increment and resistance to biotic and abiotic stress. However, a high yielding clone with vigorous growth need not always produce latex (rubber) of desirable properties. Hence, latex qualities also require attention in breeding. A major source of variability within and among natural rubber (NR) grades probably is the clone from which the latex is derived (Fuller, 1988). Properties of latices from different clones have been studied previously (Subramaniam, 1975; Saraswathyamma *et al.*, 1990). However, there are very few reports on the physical properties of rubbers from different clones,

which may vary. The colour and composition of latex and the plasticity of rubber tend to be uniform within a clone but differ among clones (Martin, 1961). Environmental and soil factors may also influence both the quantity and composition of latex (Ebi and Kolawole, 1992).

Besides rubber particles, latex consists of non-rubber substances such as lipids, proteins, carbohydrates, acids, amines and some inorganic substances. Some of these non-rubber constituents affect the properties of latex concentrates and the solid rubber derived from field latex. Clonal variations may influence the non-rubber constituents, which in turn affect the properties of latex and bulk rubber.

RRH 105 is the most popular *Hevea*