

The Pre-Coagulation of Hevea Latex in Wet Weather

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In wet weather, excessive lump formation and clotting are found with certain latices, as is well known, and in many cases bactericides such as formaldehyde do not prevent this pre-coagulation. The cause can only be due to rain water, either by a dilution mechanism or by the introduction of bark substances into the latex.

It has been shown that dilution with distilled or rain water delayed the onset of spontaneous coagulation but that the addition of a cold water extract from the bark of *Hevea brasiliensis* very rapidly produced the flocculation of about 20% of the latex. This effect was obtained also when the extract was first sterilised, when the acid extract was made alkaline with caustic soda and when the latex contained small amounts of formalin. Sequestering agents did not altogether prevent this clotting.

The water extract of bark was found to consist mainly of carbohydrate and phlobotannin and one sample of dry extract contained 1.08% nitrogen, 3.66% phosphorus, 5.67% potassium, 0.65% magnesium and 1.18% calcium.

To confirm that bark substances play a part in pre-coagulation, latex was collected from wet trees, out of contact with the bark, by scraping this off and collecting over wax. Latex thus obtained remained liquid in corked tubes for about 30 hours after collection, compared with about 5 hours for latex collected through and over the bark.

Since sterile and alkaline bark extract caused the flocculation of latex it is unlikely that the presence of bacteria, enzymes or acids was responsible, and since carbohydrates would not produce acids by bacterial action in such a short time, it is suggested that pre-coagulation in wet weather is due to the contamination of latex with water-soluble bark substances, most probably the tannins but possibly also by the addition of certain enzyme activators to the latex. The mechanism of this pre-coagulation would seem to be the rapid flocculation of the

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initial flowings or the yellow fraction either by precipitation and agglutination of the protective proteins by the tannins, or by the activation of the native latex destabilising enzymes.

Discussion

Many observations were reported by members present on the coagulation caused by the introduction of particles of bark into the latex and the tendency for certain clones, notably Avros 49, to have unstable first flowings and whose latices pre-coagulated when the trees were even slightly wet.

The effects of water on latex is obscure but it was mentioned that small amounts increased the viscosity of latex. In this connection it was pointed out that latex of Manihot (Ceara) is coagulated merely by the addition of water.

