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The Lutoid Fraction and the Stability of Hevea Latex

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The discovery of the lutoid particles as a discrete phase in latex by Homans and van Gils and the subsequent separation of an unstable yellow fraction (YF) containing a large proportion of non-rubber substances has indicated the cause of the variation, among latices, in stability towards spontaneous coagulation. This has been confirmed by observations on sterile and variously preserved latices, in which the YF's preferentially flocculated and coagulated leaving white fractions which remained liquid for considerably longer periods.

Surface active material isolated from a YF by saponification was found to exhibit low interfacial tension (I.T.) against benzene and to give an I.T./concentration curve similar to that for potassium oleate.

Latices from different sources were fractionated and the distribution, between the fractions, of alcohol extractables, acids, nitrogen, ash, phosphorus and magnesium was similar to that obtained by Homans and van Gils. Potassium distribution was in a similar proportion.

The unstable latices had larger YF's which coagulated sooner than those from the stable latices. An unstable G.1 yellow fraction had a magnesium content more than twice that of the others and a P/Mg ratio of 0.8 compared with about 2.0 for the others.

Preferential coagulation of the YF can be facilitated, on the theory of van Gils, by the rapid and local formation of highly surface active divalent ion soaps of long chain fat acids. It is suggested that the level of instability in latex is due to the size and composition of the YF present, especially to the amounts of magnesium, long chain acids and the rate of hydrolysis of the lipids.

Discussion

Some observations were reported which suggested that there might be some connection between the amount of lutoid fraction and the incidence of brown bast.

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