

**A STUDY ON PHOSPHOLIPIDS AND THEIR SIGNIFICANCE  
IN NATURAL RUBBER**

**S. Kasinathan, P. A. J. Yapa**  
*(Rubber Research Institute, Agalawatte)*

*and* **K. Balasubramaniam**  
*(Dept. of Biochemistry, Faculty of Medicine,  
University of Colombo, Colombo 8)*

This paper deals with the isolation and analysis of phospholipids in natural rubber latex and their possible effects on the biochemical properties of latex and technological properties of natural rubber.

The types of rubbers selected for analysis were acid coagulated rubber, auto-coagulated rubber, polybag collected rubber and rubber obtained from latex treated with NaF. In addition, phospholipid content in

## SECTION E

various fractions obtained by high speed centrifugation of latex was studied. Phospholipids were extracted from rubber by solvent extraction and separated by TLC.

The rubber latex treated with NaF solution was found to contain a higher phospholipid content than that of the untreated latex. Of the 3 main fractions obtained by centrifugation of latex, the rubber phase had the highest phospholipid content. Chromatographic analysis indicated the presence of 7 spots, and 3 of them were identified as phosphotidyl choline, phosphotidyl-ethanolamine and phosphotidyl-serine.

The phospholipase D was found to be present in the serum of *Hevea* latex and it was observed that the enzyme was destroyed or inhibited during bacterial growth in field latex.

The phospholipase D activities in sera obtained by (a) centrifugation of latex (C-serum) (b) freezing and thawing latex (F-serum) (c) freezing and thawing pallets of centrifuged latex (B-serum) were determined. The highest activity was found in F-serum. The kinetic behaviour of phospholipids at various temperatures, pH value and various inhibitor systems was studied.

Choline chloride, ethanolamine and phosphotidyl choline accelerated the vulcanization reaction of crepe rubber. Crepe rubber to which these phospholipids had been added also exhibited better raw rubber and technological properties than the control crepe rubber.

The raw rubber properties and technological properties of polybag rubber and NaF treated rubber, were better than the control rubber.