SUMMARY
The purpose of present study was an attempt to investigate the toxic effects of fluoride on the soft tissues like liver, kidney and intestines, and also in blood. The present study has shown that in rats given drinking water supplemented with 100 ppm of fluoride resulted in certain changes in these tissues. The extra fluoride has been retained considerably in these two tissues, as reflected by higher levels of fluoride in these tissues in fluoride treated rats. However the kidney appeared to retain more fluoride than liver. This accumulation of abnormal amounts of fluoride seem to affect the growth of tissues and body of the animal, as reflected by the decrease in the growth rate, gain in body weight and tissue weights.

Fluoride toxicity resulted in hyperglycemia and hypertriglyceridemia and accumulation of lipids, mainly triglycerides, in the liver and a decrease in the kidney total lipids and lipid fractions. The cause of hyperglycemia was investigated by assessing the hepatic glycogenolysis by determining the hepatic glycogen level and the activities of enzymes of glycogenolysis namely phosphorylase and glucose-6-phosphatase. The level of hepatic
glycogen was not altered and the activities of phospho-
rylase and Glucose-6-phosphatase in the liver were found
to be increased and decreased, respectively by fluoride
treatment. The absorption of glucose from the intestines
was also decreased. It is concluded that the peripheral
utilization of glucose might be affected in fluoride toxic-
city, a point which needs a further study.

Although the various possible mechanisms for in-
duction of fatty liver were not investigated in the present
study, the results of the present study suggests that there
may be some impairment in the secretion of hepatic trigly-
cerides in the serum. Inspite of this hyper triglyceridemia
was observed in fluoride treated rats probably reflecting
the slower rate of removal of circulating triglycerides in
the extrahepatic tissues.

The activity of alkaline phosphatase was found
to be decreased in the small intestines, increased in liver
and with no alteration in the serum, in fluoride-treated
rats. The higher alkaline phosphatase activity needed for
new bone formation in fluoride toxicity is not reflected
in elevated level in serum. Probably the liver is able to
extract this enzyme but defective extractory function of
the liver might have resulted in higher level of this enzyme in liver. The increased activity of the acid phosphatase in serum, liver and intestines probably reflects the damage to the tissues in fluoride toxicity.

This study revealed that high intakes of fluorides could induce certain changes in soft tissues like liver, kidney and intestines. Further work is needed to pursue these finding to elucidate the detailed mechanism(s) of fluoride induced toxicity in soft tissues.