

## PREFACE

During last ten years our laboratory in the university, department of Zoology, Shivaji University, Kolhapur, India has been engaged in extensive studies on salivary glands. Since the discovery of large number of polypeptide secretion from the salivary glands the study has gained more attention. Many workers started to study salivary glands from various rodents, higher mammals and birds. Their studies were directed to find out effects of various hormones on salivary gland secretion.

Since Liu and Lin, 1969, scientists turned their studies to find out role of insulin in growth and secretion of salivary glands. The studies were carried out only in the parotid and submandibular gland. The sublingual gland was neglected in the past, though it adds large amount of acidic glycoproteins in the secretion.

In the study of effects of insulin on salivary glands the concentration was given to work out the carbohydrate metabolism, RNA and DNA metabolism. In diabetic condition in addition to impairment of glucose metabolism other metabolic disorders also take place like i) formation of lipid peroxides in tissue cells, ii) accumulation of free fatty acids in plasma iii) formation of ketone bodies. We have selected two enzymes to study the effects of these disorders on salivary glands, esterase and lipase. Esterase is a lysosomal enzyme. The increase in lysosomal enzymes in liver and blood is shown by

many workers during ketosis and in response to lipid peroxides. How lipid peroxides are formed in diabetic condition can not be explained now, further work like vitamin E and insulin treatment or induction of diabetes by structural or physiological means is essential, because the lipid peroxides might have been formed due to the toxic effects of chemically induced diabetes.

Lipase enzyme is involved in the metabolism of fatty acids. Tissue specific lipases are involved in the removal of lipids from chylomicron. There are three types of lipases, triglyceride lipase, lipoprotein lipase and pancreatic lipase. Triglyceride lipase and lipoprotein lipase are involved in the removal of fatty acids from plasma. These lipase activities are insulin dependent. The present investigation does not tell what type<sup>of</sup> lipase is studied; for this further kinetic studies like substrate specificity, pH optima etc. is essential.

The present investigation describes the effect of induced diabetes on salivary gland esterase and lipase activity. It is divided into five chapters and bibliography. The first two chapters stand for introduction and material and methods, third chapter describes and discusses changes in major salivary glands esterase activities in induced diabetes. Fourth chapter describes effect of diabetes on lipase activities. Fifth chapter summerizes and concludes the present investigation.