CHAPTER 5

SUMMARY AND CONCLUSION
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The changes in relative body weight, liver weight, hepatic protein content and subcellular fractions of liver were examined in mice with different doses of dieldrin, ranging from 0.1, 0.5, 0.10, 0.20 mg/Kg diet and cythion ranging from 10, 50, 100, 500 mg/Kg diet for duration of 7, 14, 21, 28 and 90 days. The liver and body weight continued to increase up to the 90 days exposure period at different doses of dieldrin. They showed increase with same exposure period of cythion also.

An increase in the amount of protein and the concomitant increase in the activities of drug metabolizing enzymes suggest that dieldrin and cythion (organochlorine, organophosphate insecticide) administration on increased the protein synthesis up to 21 days intoxication. Later on a significant decrease of protein was noted in all mice, during insecticide intoxication. The decrease in the activities of drug metabolizing enzymes with increasing duration treatment of dieldrin and cythion. Variable effects of drug metabolizing enzymes on protein content was noted during dose and duration response studies of dieldrin and cythion.

The effect of dieldrin and cythion on the protein of subcellular fractions, mainly microsomes, mitochondria and cytosol were studied for a period of 07, 14, 21, 28 and 90 days.

The proteins from the microsomal fraction were found to diminish considerably at 14 days and continue to decrease further after 21, 28 and 90 days of experiments. The decrease due to toxic effect of cythion was less in comparison to dieldrin. The mitochondria protein were not significantly altered at these intervals. In contrast, an increase in total proteins of cytosol were observed at 07, 14, 21, 28 and 90 days after insecticide administration.

In nature, pesticides like organochlorine and organophosphate compounds were reported to be toxic to animals. In the present research work the efforts were made to investigate the effect of
pesticides, dieldrin (organochlorine) and cythion (organophosphate) on biochemical aspect of the mice at different time intervals.

Experimental data showed that mice were more sensitive to dieldrin than cythion. It showed that the toxicity of pesticide is directly proportional to the exposure time. The LC50 values decreased as the exposure period increased.

After the treatment of dieldrin showed excitability, restlessness, movement and impairment of the sense of balance, when exposed to cythion mice showed similar changes as that of dieldrin, but the intensity was less with loss of coordination and nervous balance.

Under pesticidal stress condition, animals need sufficient energy. The demand of instant energy is fulfilled from reserve material which may be in the form of carbohydrate, lipid, and proteins. Proteins play a dual important role for the animal, as building material and source of energy.

Sucrose soluble and sucrose insoluble protein contents showed general decrease in liver of mice. In the mice increased protein content (at 14 days) was observed which may be due to protein synthesis at early exposure period. Later on decreased protein content (at 90 days) at longer exposure period.

Protein reduction suggested possible utilization of protein for metabolic purpose and the enhanced proteolysis to meet high energy demand or it may be due to non-activation of protein synthesis. Under pesticide stress condition. Protein were utilized for energy purposes.

Acidic proteins were found to be increased at early hour, which further decreased up to 90 days exposure period, in contrast to above, basic proteins declined up to 14 days, which later on increased up to the end of the experiment.

After pesticide exposure acidic intracellular environment was produced. But in acidic environment, pesticide effect was found to be more. To compensate this acidity, mice at once showed increased in basic protein after 14 days, by reducing acidic proteins. Synthesis of basic proteins up to the end of experiment, was observed. This change in attitude of acidic and basic proteins may be to compensate pH and secondly to reduce pesticide strength as pesti-

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cide can not act effectively in basic pH.

Amino acid were representative of proteolysis. Amino acids were utilized for protein synthesis, to which the products of protein degradation were returned.

In mice free amino acid decrease was observed at 14 days of treatment period. Later on increase in free amino acid content upto the end of the experimental period in liver of mice, after dieldrin and cythion exposure.

Increase proteolysis lead to increase in free amino acid levels. Increased free amino acid may be partly utilized for the protein synthesis and partly for glyconeogenesis through the transamination and transduction reactions to supply the necessary keto acids to act as precurors for the maintainance of carbohydrate metabolism to meet energy demand during stress condition.

Ribonucleic acid and deoxyribo-
nucleic acid content showed slightly increased at 14 days treatment period, which suggested protein synthesis at early hour. Nucleic acid level indicated synthetic state of the cells. RNA and DNA content can be corelated with the rate of protein synthe-
sis. Later on RNA and DNA content were decreased upto the end of the experimental period. Decreased nucleic acid level might be due to protein degradation or increased proteolysis. Fall in RNA was also attributed to reduced protein synthesis due to pesticide stress. To fulfill energy demand, mice preferred glyconeogenesis for protein synthesis and diverted all the metabolites for energy purposes.

Effect of dieldrin and cythion on liver lipoprotein fraction were studied in Mice for 7,14,21,28, and 90 days of experiment. Three classes of liver lipoprotein were isolated and their concentration and chemical composition were determined.

Administration of dieldrin and cythion, were found to decrease the level of VLD-lipoprotein to that of control Mice. Decrease in the levels of the two classes of lipoproteins was less evident.

The concentration of protein was decreased in all calsses of lipoprotein, the largest reduction occuring in the VLD-li-
oprotein and smallest in the LD-lipopro-
tein fraction for dieldrin and cythion treated mice respectively for 90 days.

The reduced level of the HD-lipo-

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proteins was due to a decrease of the protein moieties, so that the ratio of protein to lipoprotein was essentially the same for control and insecticide treated Mice. In other two fractions however, the concentration of the protein moiety decreased to a greater extent.

Effect of dieldrin and cythion on total protein of serum was studied in Mice was found to be effective in decreasing the concentration of total protein in serum of Mice.