1. Leprosy has been known to the mankind since ancient times as one of the most difficult diseases to cure. Nowadays antileprotic drugs which are used singly and in combinations completely cure leprosy. But their precise metabolic function in curative action has not yet been fully understood. In order to probe these aspects of the antileprotic drugs their action in different tissues in mice has been analysed.

2. Three major antileprotic drugs namely dapsone, rifampicin and clofazimine were used in the investigation. In view of the paucity of information about its metabolism, clofazimine has been chosen for intensive analyses.

3. Absorbance and fluorescence characteristics of clofazimine and rifampicin were analysed. Clofazimine exists in more than one protonic forms in polar solvents whereas rifampicin is relatively stable. Both these drugs have weak fluorescence and are little affected by the solvent changes.

4. Retention of clofazimine has been investigated in different tissues of mice. The highest deposition was in adipose tissue while liver and kidney have significant amounts of the drug. The pattern of retention is related to the lipophilic nature of the drugs and their mobilisation. Ascorbic acid content in these tissues in mice treated with clofazimine reveal its probable role in drug metabolism. Assay of the general metabolic enzyme alkaline phosphatase in serum depicts the possible correlation with metabolism of the drug. The initial rise in the enzyme activity has been related to the shock reaction and later rise to the recovery of the metabolic functions.

5. Cytosolic enzymes glucose-6-phosphate dehydrogenase and lactate dehydrogenase were assayed in liver and kidney tissues of
clofazimine treated mice. Changes in G6PD activity in liver has been correlated with its role in HMP pathway and NADPH production. But similar explanation cannot be extended to the kidney tissue because of oscillatory results. The increase in LDH activity in both liver and kidney tissues suggests the possible shift of the energy metabolism to anaerobic pathways like glycolysis.

6. The role of dapsone, rifampicin and clofazimine on mitochondrial swelling was investigated. It was observed that all these drugs have profound effect on iso-osmotic as well as phosphate induced swelling of mitochondria.

7. Mitochondrial enzymes namely malate dehydrogenase (MDH), glutamate dehydrogenase (GDH) and succinate dehydrogenase (SDH) were assayed in tissues of mice treated with clofazimine. While MDH and SDH activities were inhibited by the drug there is enhancement in CDH activity. The role of the drug in mitochondrial activity can be explained by its probable action on TCA cycle and possibly on electron transport chain. The later effect has also been probed by in vitro addition of the drugs to the mitochondria.