Summary
The concentrations of total and free carnitine in serum, liver, heart and urine were grossly decreased in the aged rats. Administration of L-carnitine elevated the levels of total and free carnitine significantly in the aged animals.

General biochemical parameters which include haemoglobin, protein, ceruloplasmin were markedly lowered whereas levels of glucose, urea, ketone bodies, uric acid and creatinine were grossly elevated in aged rats. Administration of L-carnitine reversed these effects significantly in these animals.

With respect to urinary excretion of urea, uric acid, creatinine and ketone bodies, a marked elevation in these levels was noted in aged rats. Subsequent to carnitine therapy, a marginal decline in the former three parameters was visible, whereas, the level of ketone bodies was further increased upon L-carnitine administration for 14 days.

As regards, metabolizing enzymes, a steep increase in activities of ALT, AST, ALP, ACP, LDH and CPK was observed in the old animals. L-carnitine treatment for 14 days markedly reduced the activity of these enzymes, although a marginal decline was observable even after 7 days of carnitine treatment.

The levels of fibrinogen and platelet aggregation were significantly raised whereas prothrombin time was lowered in the aged rats and upon
carnitine therapy, this trend was reversed, with a pronounced effect being seen on 14 days of carnitine treatment.

The concentration of lipids such as cholesterol, triglycerides, phospholipids, free fatty acids in serum, liver, heart and erythrocyte membrane of the aged rats was grossly elevated and subsequently upon L-carnitine administration, a marked reduction in these levels was observed and this effect was more prominent on 14 days of the treatment.

With respect to the level of lipoprotein cholesterol, a significant lowering of HDL-cholesterol whereas, a marked elevation of LDL and VLDL - cholesterol was noted in old rats. Therapy with carnitine for 7 days marginally reversed this trend, with a marked reversal being observed after 14 days of carnitine administration.

The activity of plasma LCAT and CEH in liver and heart was lowered whereas that of CES in liver and heart was raised in the aged rats. Treatment with L-Carnitine for 14 days brought about a significant increase in the former and decrease of the latter enzyme.

Similarly, as regards the other lipid metabolizing enzymes - the level of LPL in liver and heart was markedly declined whereas that of PL and HMG CoA reductase in liver and heart was grossly elevated in aged animals. Subsequently upon L-Carnitine therapy, a reversal of this trend was observed.
The levels of TBARS in serum erythrocyte membrane and lipoprotein fractions was steeply increased in aged rats. Only a moderate decrease in these levels was visualised after 14 days of L-carnitine treatment.

Parallel to this trend, a marked elevation in concentrations of total TBARS, lipofuscin pigment, conjugated dienes and Xanthine oxidase in liver and heart was noted in the aged rats. Carnitine administration for 14 days significantly declined these levels.

On the other hand, activities of antioxidant enzymes - CAT, SOD, GPx and GST in haemolysate, liver and heart demonstrated a marked decline in aged rats, which upon carnitine therapy was markedly increased.

Similarly, the levels of non enzymatic antioxidants such as vitamin C and E in serum, liver and heart was grossly decreased and subsequent to carnitine treatment, a marked elevation was noticed.

The levels of GSH, TSH and PLP were grossly reduced in ageing rats and this was increased significantly after carnitine therapy for 14 days. Level of taurine which was reduced in the aged rats was further decreased upon L-carnitine administration for 14 days.

The activity of total ATPase, Na⁺-K⁺-ATPase, Mg²⁺-ATPase, and γ GT in erythrocyte membrane, liver and heart was mildly lowered whereas that of Ca²⁺ ATPase and 5'-nucleotidase was significantly increased in aged rats.
Carnitine therapy for 14 days moderately elevated the former and markedly reduced the latter enzymes.

The levels of DNA and RNA in liver and heart which were sharply reduced in ageing was significantly elevated upon L-carnitine therapy for 14 days.