The current surge of attention to improve the quality of life of an organism is nowadays paying attention to natural therapies. In the present study, CST was supplemented at the dosage of 150 mg kg body weight/day to young and aged rats. The results show biochemical and molecular changes were summarized as follows:

- High amounts of flavonoids and polyphenols content were observed in chloroform extract than methanol and aqueous extracts of *Solanum trilobatum*. The chloroform extract of *Solanum trilobatum* (CST) was thus used for further analysis.

- Significant elevation in the levels of free radicals (superoxide radicals, hydroxyl radicals, and hydrogen peroxide) with subsequent decrease in enzymatic (SOD, CAT, GPx, GST, GR and G6PD) and non-enzymatic antioxidant (GSH, total thiol, ascorbic acid, and alpha tocopherol) status was observed in erythrocytes of aged rats. CST treatment to aged rats decreased the free radical levels and thereby the antioxidant status in erythrocytes.

- Enhanced GSH oxidation with increase in GSSG and decrease in GSH and redox index level observed in erythrocytes of aged rats was reverted upon CST treatment.
Age-associated decline in the hematological indices including erythrocyte count, reticulocyte count, Hb, PCV, MCV, MCH and MCHC was normalized upon CSI treatment.

Increase in protein carbonyl level with decrease in erythrocyte membrane protein when fractionated by SDS-PAGE was observed in aged rat erythrocytes. CSI treatment to aged rats reverted these conditions to near normalcy.

Age-associated decrease in the activities of Na+/K+ ATPase, Ca2+ ATPase and Mg2+ ATPase was observed in erythrocyte membrane of aged rats. CSI treatment improved the activities of these enzymes in aged rat erythrocytes.

Reduction in the levels of protein-bound carbohydrates (hexose, hexosamine and stachic acid) consequently decreased the surface charge levels in erythrocytes of aged rats. CSI therapy increased the levels of glycoproteins thereby improving the level of surface charge in aged rat erythrocytes.

A progressive reduction in diameter, surface area and volume with increase in osmotic fragility observed in erythrocytes of aged rats was reverted to near normalcy on CSI treatment.

Increase in lipid peroxidation level lead to altered lipid profiles and membrane fluidity in aged rat erythrocytes. Administration of CSI to aged rats decreased the lipid peroxidation level and thereby restored the lipid profiles and membrane fluidity.

Erythrocyte intracellular calcium ions were increased and cytosolic calpain level was decreased in erythrocytes of aged rats.
CST administration declined the levels of ionic calcium thereby enhancing the level of cytosolic calpain in aged rats.

- Enhanced binding of Annexin-V-FITC to phosphotidylserine was evidenced in erythrocytes of aged rats. Supplementation of CST to aged rats maintained the erythrocyte membrane asymmetry and thereby decreased the expression of PS on the outer bilayer.

The aforesaid results therefore confirmed that the structure and functions of erythrocytes were damaged in aged rats as a consequence of elevated oxidative stress. Administration of CST was effective in decreasing the free radical mediated damages, which ultimately prevented the early sequestration and premature death of erythrocytes with advancement of animal age.