

## Effects of modified egg on dyslipidemia and oxidative stress in type-2 diabetes induced male wistar rats

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Type-2 induced dyslipidemia and oxidative stress is prevalent world over and is being managed through pharmacological treatment. There are some dietary components such as Zn, Cu, Mg Mn, vitamin- E, C, omega-3 fatty acids which have shown to reduce the severity of oxidative stress associated with type-2 diabetes mellitus. In view of this information, the efficacy of modified poultry egg (Patent Application No 2264 Del-2005) enriched with optimum minerals, vitamin E and omega-3 fatty acids was studied on dyslipidemia and oxidative stress of type-2 diabetes mellitus induced rats. In this study, the type-2 diabetes mellitus in the rats was induced by increasing Zn concentration in semi-synthetic diet rich in fat and refined sugar according to Taneja et al., 2006. Accordingly, control diet-I (diet-I-C) consisted of basal diet containing 20mg Zn/kg diet was fed on control group-I and diabetes inducing diet (diet-II-ZS-DB) containing 80 mg/kg semisynthetic diet on group-II for a period of 180 days. The arterial blood pressure and heart rate was significantly higher in group-II than their control counterpart. The blood profile after 180 days of dietary treatment displayed a significant rise in glucose, total lipids, cholesterol, triglycerides, LDL-cholesterol, VLDL- cholesterol whereas HDL- cholesterol showed a reduction in their level. The estimation of minerals in this group of rats revealed a higher Zn and lower Cu, Mg and Mn levels in liver and kidney. Their lipid peroxidation products were higher and the enzyme activities of superoxide dismutase, catalase, glutathione-s-transferase, glutathione reductase, glutathione (reduced) and glucose -6- phosphate dehydrogenase were significantly lower as compared to control group-I. In order to see the efficacy of the modified eggs, some type-2 diabetes mellitus induced rats from the Group-II were separated on day 90 and label as Group- III and fed on modified eggs mixed diet (4 liquid eggs/kg diet mixed with diabetes inducing diet) for another 90 days completing 180 days from the start of the experiment. A significant reduction in the blood pressure and heart rates, serum glucose, serum lipid profile, the lipid peroxidation products and a significant increase in the activities of enzymes per se with reversal of Zn, Cu, Mg and Mn levels closer to the control group were recorded in the Group-III rats. The data suggest that the modified egg can ameliorate the dyslipidemia and oxidative stress in type-2 diabetes mellitus induced rats by improving the mineral status in their body.

### Biography

Kshetrimayum Birla Singh has completed his Ph.D from Panjab University Chandigarh University. He is working as Assistant professor in Pachhunga University College (a constituent college of Mizoram University), Aizawl, Mizoram, India. He has published more than 12 papers in reputed journals.

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