8. CONCLUSIONS

From the present study we can conclude that oral administration of high fat diet in New Zealand White rabbits results in highly significant increase in dyslipidaemia as compared to baseline levels, along with a highly significant decrease in the level of antioxidant (SOD) as compared to the baseline levels.

Oral administration of lycopene in the dose 10 mg/kg body weight as well as oral administration of lycopene in the dose 20 mg/kg body weight has highly significant hypolipidaemic activity when compared with high fat diet. There was a highly significant hypolipidaemic activity with oral administration of lycopene in the dose 20 mg/kg body weight as compared to oral administration of lycopene in the dose 10 mg/kg body weight in the case of serum triglycerides and serum VLDL levels. This conclusion may be ascertained from the relevant data for lipid parameters other than that of HDL.

The level of serum HDL which was reduced as compared to the baseline levels with high fat diet, was raised highly significantly with concurrent administration of lycopene 20 mg/kg body weight when compared with high fat diet.

The level of blood antioxidant (SOD) which was reduced highly significantly with high fat diet, was raised highly significantly with concurrent oral administration of lycopene both in 10 mg/kg as well as 20 mg/kg body weight as compared to the high fat diet.

The level of serum nitric oxide which was reduced with high fat diet, was raised significantly with concurrent oral administration of lycopene 10 mg/kg body weight, and was raised highly significantly with concurrent oral administration of lycopene 20 mg/kg body weight, as compared to the high fat diet.

There was however no significant difference in fasting blood sugar levels with concurrent oral administration of lycopene 10 mg/kg body weight and with concurrent oral administration of lycopene 20 mg/kg body weight, as compared to high fat diet.

This suggests that although lycopene has very prominent therapeutic potential to be used as an antioxidant and lipid lowering agent, it may not have any potential hypoglycaemic use.
Considering its antioxidant effect and its effect on serum nitric oxide levels, lycopene may have a significant role in various cardiovascular diseases.

There is a significant increase in serum nitric oxide levels with administration of lycopene 10 mg/kg body weight as compared to the high fat diet, and highly significant increase in serum nitric oxide levels with administration of lycopene 20 mg/kg body weight as compared to the high fat diet. Considering the dearth of safe antihypertensive drugs in pregnancy, lycopene, being a nutraceutical with favourable adverse effect profile, can be tried in the patients of eclampsia. Clinical studies can be planned to evaluate the role of lycopene as a sole agent in the patients of mild hyperlipidaemia and mild hypertension.

Further understanding of the mechanism of action of lycopene, its bioavailability, interaction with other compounds and recommended intake are needed to give a better understanding of lycopene for safer human use; either alone or as an adjuvant to the existing pharmacotherapy to decrease the cardiovascular morbidity and mortality.

Future studies about its biological activity or studies regarding its concurrent administration along with other compounds are needed.

In view of the availability of very few studies regarding the intake of lycopene for comparatively longer periods, which may give knowledge regarding its maximal permissible intake, such studies, too, are needed.