CONTENTS

List of Abbreviations ................................................................. (i)
List of Figures ..................................................................... (ii)
List of Tables. ...................................................................... (iii)

1. INTRODUCTION ................................................................. 1
   1.1 Objectives of the Present Investigation ....................... 58

2. EXPERIMENTAL ................................................................. 60
   2.1 Materials ...................................................................... 60
      2.1.1 Chemicals ................................................................. 60
      2.1.2 Animals ................................................................. 61
      2.1.3 Diet preparation ......................................................... 61
   2.2 Methods ...................................................................... 62
      2.2.1 Preparation of oxidized cholesterol ....................... 62
      2.2.2 Isolation and purification of tocotrienol rich fraction from refined edible grade rice bran oil ....................... 62
      2.2.3 Experimental Design .............................................. 63
         2.2.3.1 Experimental Group No. 1 .......................... 63
         2.2.3.2 Experimental Group No. 2 .......................... 63
      2.2.4 Analytical Procedures ............................................. 64
         2.2.4.1 Collection of blood .......................................... 64
         2.2.4.2 Isolation and quantification of lesional area in aorta ...... 65
         2.2.4.3 Preparation of liver homogenate ....................... 65
         2.2.4.4 Fractionation of plasma lipoproteins ..................... 66
         2.2.4.5 Determination of cholesterol .......................... 67
         2.2.4.6 Determination of triglycerides .......................... 68
         2.2.4.7 Determination of lipid peroxide levels in plasma .......... 70
         2.2.4.8 Assay of lipid peroxide levels in rabbit liver homogenates
by thiobarbituric acid reaction ........................................70

2.2.4.9 Determination of plasma LDL oxidation .........................71

  2.2.4.9.1 Isolation of LDL from plasma .................................71

  2.2.4.9.2 Measurement of the resistance of LDL to oxidative modification ........................................71

2.2.4.10 Protein estimation ..................................................72

2.2.4.11 Statistical analysis ..................................................72

3. RESULTS ........................................................................73

  3.1 Average Body Weight of Rabbits, Consumption of a Diet

      Containing 0.33% Cholesterol, 0.33% Cholesterol Plus 16.2 mg% Tocotrienol Rich Fraction and 0.33% Cholesterol Plus 6.97 mg% Tocomin Per Rabbit Per Day During 22.4 Weeks of Feeding ..........73

  3.2 Impact of Tocotrienol Rich Fraction and Tocomin on Plasma Lipids, Plasma Lipoprotein Lipids, Plasma Lipid Peroxides and Plasma LDL Oxidation in Hyperlipidemic Rabbits Treated For 22.4 Weeks ........................................73

      3.2.1 Impact on plasma lipids .............................................73

      3.2.2 Effect on plasma lipoprotein lipids .............................76

      3.2.3 Impact on the ratios of HDL-C/TC, HDL-C/LDL-C, TC/HDL-C and LDL-C/HDL-C ........................................76

      3.2.4 Impact on plasma lipid peroxide levels ........................76

      3.2.5 Effect on ex vivo and in vitro LDL oxidation ..................80

  3.3 Impact of Tocotrienol Rich Fraction and Tocomin on Fatty Streak Lesions in the Aortas of Hyperlipidemic Rabbits Treated For 22.4 Weeks ........................................80

3.4.1 Average body weight

3.4.2 Average consumption of diet, cholesterol, oxidized cholesterol and TRF after 5 weeks of feeding

3.4.3 Impact on plasma and lipoprotein lipids after 5 weeks of treatment

3.4.4 Effect on plasma and lipoprotein lipids after 10 weeks of treatment

3.4.5 Hypocholesterolemic impact on liver TC after 10 weeks of treatment

3.4.6 Antioxidant effect on plasma lipid peroxide levels

3.4.7 Impact on hepatic peroxidase level

3.4.8 Antioxidant impact on base line levels of diene conjugation, lag phase and rates of conjugated diene formation in LDL

3.4.9 Impact of TRF on aortic fatty streak lesions

4. DISCUSSION

5. SUMMARY

6. BIBLIOGRAPHY