The role of dietary protein on blood cholesterol level, a raised level of which is a concomitant finding in atherosclerosis, has not yet received sufficient attention from the research workers. It is found that in countries like Africa and South East Asia where the intake of total protein and animal protein is low, the incidence of atherosclerosis is also low.

Again, it is observed clinically that in kwashiorkor (a manifestation of protein malnutrition) there is hypocholesterolemia. Liver disorders in human beings, supposed to be due to protein malnutrition is always associated with hypocholesterolemia. Fatty livers in rats on choline deficiency is associated with a drop in serum cholesterol level.

At the initial stages of cholesterogenesis in the body co-enzyme-A is a vital enzyme and this enzyme depends for its activity on a functioning sulphydryl (SH) group. Researches in recent years have shown that in maintaining the concentration of glutathione and other SH groups containing compounds in different parts of the body, sulphur containing amino acids specially methionine, play a vital role. Thus, a general protein deficiency and a superimposed methionine deficiency is expected to depress cholesterol synthesis resulting in hypocholesterolemia.

Though no accurate mortality statistics from atherosclerotic disorders are available in this country, yet on the whole it is generally accepted that the incidence is quite low compared to some Western countries like U.S.A. or U.K.
This can be interpreted as due to low consumption of fat or protein, as average Indian diet is poor in both these nutrients.

It is frequently mentioned that the incidence of these disorders, however, is rapidly mounting in recent years in India. Many factors control cholesterolgenesis in the body. Various theories regarding the part played by diet have been advanced, but most of them without any scientific investigation. The quantity and quality of fat, its essential fatty acid content, the possible harmful effect of hydrogenation of vegetable oils and many such other factors are all being investigated in many laboratories.

Protein and amino acids have received scant attention although epidemiological, clinical and biochemical evidence are available to demonstrate the important role of these nutrients in cholesterolgenesis. The present investigation was carried out on albino rats and young children to get further evidence on the effects of dietary protein and methionine on cholesterolgenesis.

During the first part of this investigation, effects of protein deficiency on albino rats were studied. The animals were reared on diets containing different levels of protein. The effect of protein deficiency on serum cholesterol level and total liver sulphydryl content was studied. Then the effects produced by methionine supplementation of the diets of the animal were noted. Differences in the glutathione content and the protein-bound sulphydryl content were also investigated.

Methionine deficiency was then induced in the experimental rats by the administration of methionine sulfoximine, an anti-metabolite of methionine. Methionine sulfoximine was synthesised in the laboratory. In this condition
the serum cholesterol level, total liver sulphydryl content, glutathione content and protein-bound sulphydryl content were studied.

In the third part of this investigation, observations were made on children. Determination of serum cholesterol level, protein and albumin levels and assessment of liver functions were done in two groups of children in the first stage. In one group healthy children were included. In the second group children suffering from protein malnutrition were included. Twelve frank cases of kwashiorkor were also included in this group.

In the second stage, protein malnourished children were divided into three groups, one served as the control group and the other two as experimental groups. One experimental group received animal protein supplementation in the form of skimmed milk and the other experimental group received vegetable protein supplementation in the form of Bengal gram (Cicer arietinum). The supplementation was done for one year after which serum cholesterol level, serum protein and albumin levels were determined for each subject in all the three groups. Liver function was also assessed for each individual in all the three groups.

In the last part of the thesis attempt has been made to come at a logical conclusion from the results obtained in the previous parts.