

THE EFFECT OF PROBIOTIC BACTERIA ON SERUM CHOLESTEROL LEVELS IN RATS (*Rattus norvegicus*)

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Cardiovascular disease is one of the widely studied chronic diseases, which causes death and disabilities throughout the world. Epidemiological studies have shown that higher the serum total cholesterol or low-density lipoprotein cholesterol, the greater the risk of heart diseases. In addition to genetic predisposition, dietary factors play an important role in determination of an individual's health. Several investigators have reported that the supplementation of diet with fermented milk products containing probiotic bacteria can reduce the serum total cholesterol. Therefore, this study was planned to find out the effect of feeding probiotic yoghurt on the establishment of probiotic bacteria in the gastrointestinal tract (GIT), serum total cholesterol and faecal coliforms in rats under Sri Lankan conditions.

Eighteen male Wistar rats were obtained at the age of eight weeks. The rats were divided into three groups, six in each. Group one rats received only cholesterol-enriched diet (CED) while group two and three rats received CED plus standard yoghurt and CED plus probiotic yoghurt ad libitum for eight weeks respectively. Feed intake was monitored daily and the body weights were recorded weekly. Blood samples were collected at fortnightly intervals and the serum samples were analysed for the total cholesterol, tryglycerides and HDL cholesterol while the serum total bile acids were determined at the beginning and the end of the feeding trial. At the end of the 8th week of feeding, faecal samples were collected and the counts of *L. acidophilus*, bifidobacteria and coliforms were determined.

The body weight gain, feed intake and feed conversion efficiency did not show any significant difference among the treatment groups ($p > 0.05$). After eight weeks of experimental period, the group fed with probiotic yoghurt showed significantly lower ($p < 0.01$) serum total cholesterol levels than the other groups while there were no significant alterations in the serum total bile acids between the groups. The serum HDL cholesterol of group 3 and group 1 were significantly lower ($p < 0.01$) than the group 2. The number of faecal *L. acidophilus* and *Bifidobacterium* spp. were significantly higher ($p < 0.05$) while faecal coliforms were significantly reduced ($p < 0.05$) in the group fed with probiotic yoghurt when compared with other groups. According to these results it clearly shows that feeding of yoghurt containing probiotic bacteria for eight weeks significantly reduces serum total cholesterol and non-beneficial coliforms through the establishment of probiotics in the GIT in rats. Furthermore, this study establishes the fact that the reduction of serum total cholesterol is mainly due to arresting of cholesterol absorption through direct binding and not by the alternate mechanism of deconjugation of bile acids.