

Cholesterol-lowering effects of *Bacillus coagulans* B37 and *Bacillus pumilus* B9 Strains in a Rat Animal Model

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Abstract—The purpose of the study was to elucidate the effect of *Bacillus* strains on plasma lipid fractions in a rat animal model. An experiment was conducted for the 56 d period in thirty six adult male albino Wister rats divided equally into four groups. After 7 d adaptation period, all the groups were fed with cholesterol enriched diet for 14 d. Thereafter, one group (T1) was fed on sterile skim milk along with cholesterolemic diet for the next 21 d. The two experimental groups (T2 and T3) received cholesterolemic diet plus spore biomass of *B. coagulans* B37 and *B. pumilus* B9, respectively, suspended in sterilized skim milk @ 8-9 log cfu/ ml for the next 21 d. The control group was supplied with clean water along with cholesterolemic diet for 21 d. All the rats were fed on the basal diet along with water during a 14 d post-treatment period. After the adaptation period, the blood samples were collected from the experimental rats at every 7 d interval up to 42 d and plasma separated and subjected to the determination of different plasma lipid fractions. General Linear Model procedure was applied to each set of data of different plasma lipid fractions and Fisher's least significant difference test was applied to determine statistical significance of the difference for the effects of treatments among different groups. The oral administration of both *B. coagulans* B37 and *B. pumilus* B9 resulted a decrease ($P<0.05$) in plasma cholesterol, low density lipoprotein (LDL)-cholesterol concentrations and atherogenic index in the experimental rats. The results suggest that *B. coagulans* and *B. pumilus* have cholesterol-lowering effects in a rat animal model.

Keywords: Probiotics; *Bacillus coagulans*; *Bacillus pumilus*; rats; cholesterol; LDL-cholesterol; atherogenic index; cholesterol-lowering effects.
