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The Effects of Prebiotic, Probiotic and Synbiotic Diets Containing Bacillus coagulans and Inulin on Serum Lipid Profile in the Rat

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Abstract : An in vivo trial was conducted to evaluate the effects of Bacillus coagulans, and inulin, either separately or in combination, on lipid profile using a rat model. Thirty-two male Wistar rats were randomly divided into four groups (n=8) and fed as follows: standard diet (control), standard diet with 5% w/w long chain inulin (prebiotic), standard diet with 109 spores/day spores of B. coagulans by orogastric gavage (probiotic), and standard diet with 5% w/w long chain inulin and 109 spores/day of B. coagulans (synbiotic). Rats were fed the treatments for 30 days. Serum samples were collected 10, 20 and 30 days following onset of treatment. Total cholesterol, HDL and LDL cholesterol and triglycerides concentrations were analyzed. Results of this study showed that inulin potentially affected the lipid profile. An obvious decrease in serum total cholesterol and LDL-cholestrol of rats fed with inulin in synbiotic and prebiotic groups was seen in all sampling days. Inulin fed rats also demonstrated higher levels of HDL-cholesterol concentration; however this value in probiotic and control fed rats remains without significant change. According to the results of this study, B. coagulans did not contribute to any lipid profile changes after 30 days. Thus, further in vitro investigations on the characteristic of these bacteria could be useful to gain insights into understanding the treatment of probiotics in order to achieve the maximum beneficial effect.

Keywords : bacillus coagulans, inulin, rat, lipid profile, synbiotic diet
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