Cowpea (*Vigna unguiculata* L. Walp.) incorporated experimental diets modulate caecal fermentation and lipid metabolism in rats

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This study was carried out to investigate the *in vivo* effect of cowpea (*Vigna unguiculata* L. Walp.) incorporated experimental diets on caecal fermentation and lipid metabolism in rats. Seven weeks old 36 Wistar rats were fed with four cultivars of cowpea powder (Dawala, Waruni, Bombay and MI 35) incorporated high fat diets (HFD) for six weeks. Rats were divided into six groups and assigned six treatments randomly (DAF, WAF, BBF and MIF; with 20% cowpea powder + 30% fat; and CNN and CNF; two controls with 20% casein, 20% casein + 30% fat, respectively). Total anaerobes, *Lactobacilli* and *Coliform* counts in caecal contents were enumerated and cecum weights were measured at the end of the experimental period. The serum Total Cholesterol (TC), High Density Lipoprotein Cholesterol (HDL-C), Low Density Lipoprotein Cholesterol (LDL-C) and Triacylglycerol (TAG) concentrations were measured at the beginning and at the end of experiment. Data were analyzed using ANOVA procedure in completely randomized design and Duncan's multiple range test. Higher ($p<0.05$) *Lactobacilli and* total anaerobes counts were observed in MIF than CNF. Significantly higher ($p<0.05$) *lactobacillus* population in DAF group was supported by significantly higher caecum weight compared to CNF group. Serum Total Cholesterol (TC), LDL-Cholesterol (LDL-C) and Tryaceiglycerol (TAG) concentration were lower ($p<0.05$) in BBF and MIF than CNF control. DAF, WAF and BBF fed groups had higher ($p<0.05$) faecal weight than CNF control. DAF & BBF fed groups gave significantly higher caecum weights than the control group. These results indicate that, cowpea incorporated diets modulated caecal fermentation and lipid metabolism in rats.

Keywords: caecal bacteria, caecal fermentation, cowpea, hypercholesterolemia, serum lipids

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