

Research Article

An appraisal of the gut health modulatory effects of a calf faecal-origin probiotic *Lactobacillus salivarius* CPN60 using Wistar rats with dextran sulfate sodium-induced colitis

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Abstract

BACKGROUND

Probiotics of varied origins are being developed for augmenting the gut health of human and animals. The present study aimed to evaluate the effect of a calf-origin probiotic supplement on the gut health of Wistar rats for both healthy and colitis conditions.

RESULTS

Forty-eight rats were randomly distributed into four equal groups. The 42-day study involved feeding basal diet alone (CON) or diet supplemented with the calf-origin *Lactobacillus salivarius* strain CPN60 (PRO). The third (CONc) and fourth (PROc) groups of rats also received the same dietary treatments (CON and PRO, respectively) but were subjected to dextran sulfate sodium (DSS)-induced colitis after 32 days of feeding. The results of a digestion trial conducted after 5 days of DSS administration revealed no influence of probiotic on the digestibility of nutrients. However, the reduced digestibility of protein and fat seen in the CONc rats was improved in the PROc group. The concentrations of lactate and acetate, propionate and butyrate, as well as total short-chain fatty acids (SCFA), were increased ($P < 0.05$) in the caecal and colonic digesta upon probiotic supplementation, together with significantly reduced colonic ammonia levels. Furthermore, there were reductions ($P < 0.05$) in acetate, butyrate and total SCFA levels in the caecal contents as a result of colitis. Probiotic supplementation increased ($P < 0.05$) lactobacilli and bifidobacteria counts in the colon, whereas clostridia and coliform counts were reduced ($P < 0.05$). These were reversed by the probiotic supplementation.

CONCLUSION

Dietary supplementation of *L. salivarius* CPN60 had a positive effect with respect to improving the overall gut health of healthy rats, as well as that of rats exposed to experimental colitis. © 2020 Society of Chemical Industry

Citing Literature