

Evaluation of Probiotic Supplementation in Dogs With Chronic Kidney Disease

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Probiotic supplementation has been suggested as an adjuvant therapy to improve the balance of the gut microbiota contributing to intestinal barrier integrity and metabolic control of human patients with chronic kidney disease (CKD). However, there is no information about the potential benefits of probiotics in dogs with CKD. The aim of this study was to investigate the effects of a commercial probiotic formulation for companion animals on kidney function and uremic toxins levels in dogs with CKD.

Sixteen dogs with CKD (IRIS stage II and III) were recruited to a double-blind, placebo-controlled, randomized study. At the time of inclusion, the dogs were already on a renal diet and continued with the same diet added with placebo (n=8) or the commercial probiotic (Fortiflora® Nestle Purina PetCare) (n=8).

All animals were subjected to a physical exam, an analytical control (complete blood count, blood biochemistry panel, and urinalysis), and blood pressure measurement at the beginning of the treatment (T0), one month later (T30), and at the end of the procedure (T60). In addition, plasma uremic toxins (indoxyl sulphate [IS] and p-cresyl sulphate) were measured at T0 and T60.

No changes in body weight or body condition score were found during the study in any of the study groups. Probiotic administration resulted in a significant decrease in plasma concentration of symmetric dimethylarginine (SDMA) both at T30 and T60 (28.0 ± 3.9 vs. 27.3 ± 3.2 $\mu\text{l/dl}$, $p=0.031$, $p=0.008$ respectively) when compared with T0 (30.4 ± 3.6 $\mu\text{l/dl}$). Urine specific gravity and UPC did not change during the study. Systolic blood pressure (SBP) tended to increase in the placebo group at T30 and the differences were significant at T60 (163 ± 11 mm Hg vs. 144 ± 6 mm Hg, $p=0.033$). However, no increase in SBP was found in the probiotic group. There was a significant reduction in IS in dogs on probiotics (0.27 ± 0.10 mg/dl, $p=0.04$) at T60 when compared with T0 (0.41 ± 0.15 mg/dl). No adverse effects were registered in dogs receiving probiotics.

Based on the results, it can be concluded that this probiotic is safe for dogs with CKD. In addition, when compared with the placebo group, the dogs receiving probiotics did not experience an increase in SBP. Moreover, the dogs receiving probiotics showed a significant decrease in plasma SDMA and IS. Thus, the available data support a beneficial effect of probiotics in dogs with CKD.

DISCLOSURES

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