



# Dottorato di ricerca- XXXIII ciclo

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## INFLUENCE OF *LACTOBACILLUS KEFIRI* ON GUT IGA SECRETION IN HEALTHY DOGS

**Introduction:** Gut microbiota plays an important role in absorption and metabolism of nutrients and has a trophic and protective function of the host. Commensal bacteria interact with cells of the intestinal immune system and regulate, among other things, the IgA secretion [1]. IgA provides intestinal immune protection, and it is supposed that lack of IgA in dog is correlated with chronic enteropathies [2]. *Lactobacillus kefir* (*Lk*) is a probiotic isolated from kefir grains, fermented milks with a complex symbiotic microbiota, and approved for human use (*Kefibios* – Hulka srl - LKF01). It is able, in mice, to downregulate expression of proinflammatory mediators and to increase anti-inflammatory molecules in gut immune system, regulating intestinal homeostasis, incrementing IgA production and mucin induction [3]. No information about the influence of *Lk* administration on canine intestinal health has been already reported. The aim of this study was to verify the safety of *Lk* in dogs and its effect on the fecal IgA content.

**Methods and material:** The study, authorized by the Animal Welfare Committee – UNIBO (Prot.3885 –July 21<sup>th</sup> 2017), included ten healthy dogs (6 pure breed and 4 mixed breed, 4 males and 6 females, 4.6±3.6 years old, median age 4,8 years old) without history of gastrointestinal diseases. The dogs received *Lk* at the dose of one billion of live microorganism, orally once daily for 30 days. Fecal samples were collected, and immediately frozen, from each dog in four periods (each time for three following days), before the beginning (T0), then in the middle (T15), then at the end (T30) of the *Lk* treatment and 30 days after *Lk* discontinuation (T60). Fecal IgA was measured by a dog specific IgA Elisa test. Results were statistically evaluated with D'Agostino & Pearson omnibus normality test, Friedman's test and Dunn's test.

**Results:** During treatment no dogs showed any side effect and fecal scores were constantly normal. Certain variability on IgA content was present among the three following day samples and a high variability was observed among dogs at each experimental point (T0; T15; T30; T60). Mean value of fecal IgA reached the maximum value at the end of treatment (T30), and then it was reduced at T60, without significant differences. Our results suggest that *Lk* is a safe probiotic in dogs. The study confirms the needs of multiple day replicates to get a reliable information on fecal IgA content, but the variation of fecal IgA during treatment is not statistically significant; this could be due to the small number of patients included in the study or to their age and breed variability. Therefore, further studies are needed to clarify the role of this probiotic on dog's intestinal homeostasis.

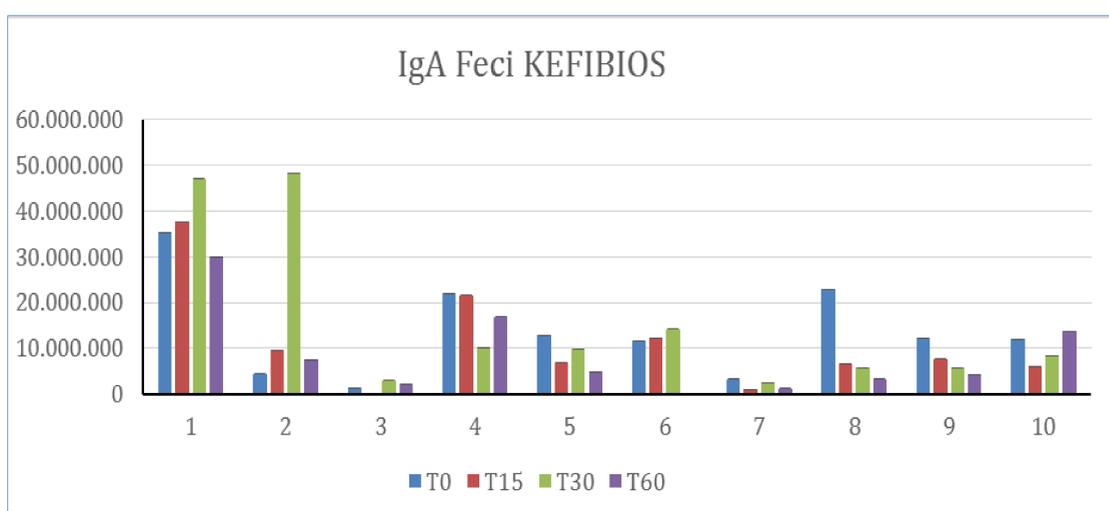


Figure 1 - IgA concentration in fecal samples at T0, T15, T30 and T60 for every dog.

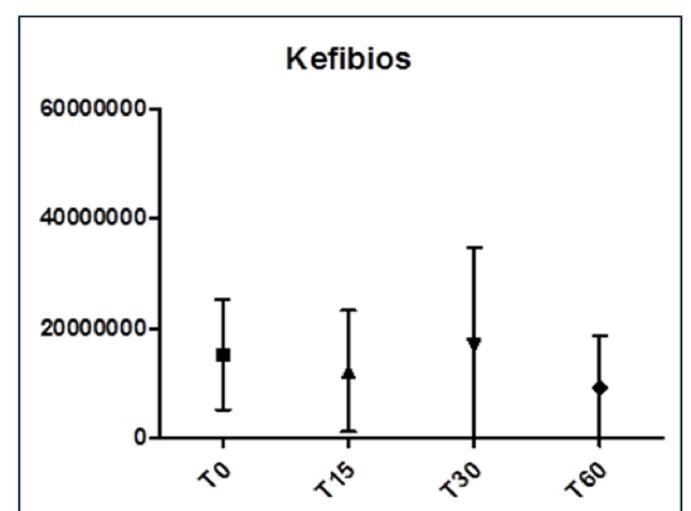


Figure 2 – Means and SD of IgA concentration in fecal samples at T0, T15, T30 and T60 of dogs included.