EFFECTS OF CONCURRENT RONIDAZOLE AND PROBIOTIC THERAPY IN CATS WITH *TRITRICHOMONAS FOETUS*-ASSOCIATED DIARRHOEA

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This was a prospective double-blinded placebo controlled trial designed to determine if there was a beneficial effect to giving a probiotic in addition to ronidazole for the treatment of *Tritrichomonas foetus*-associated diarrhoea in cats. The probiotic used was Pro-Kolin Enterogenic (PKE) which contains the probiotic *Enterococcus faecium*, several prebiotics, alpha-glucan butyrogenic, and a patented mucopolysaccharide starch.

Tritrichomonas foetus (*T. foetus*) is a protozoal parasite that is a common cause of refractory large bowel diarrhoea in cats in the UK[1].The disease is most commonly seen in purebred, young cats[1]. The most sensitive method of detection is PCR [2], and ronidazole is usually effective in its treatment [3]. However, ronidazole is not a licensed drug, it can cause serious side effects in cats (such as neurological signs)[4] and it is thought to be teratogenic.

Probiotics, with or without the addition of antibiotics, have been shown to be useful in the treatment of some gastrointestinal diseases in people[5], cats[6], and dogs[7], and no adverse side effects have been reported. Pro-Kolin Enterogenic (PKE) is a commercially available product which contains the probiotic *Enterococcus faecium*, several prebiotics, alpha-glucan butyrogenic, and a patented mucopolysaccharide starch. Alpha-glucan is a resistant starch and ingestion has been shown to induce pronounced changes in the colonic environment, reducing damage to colonocytes, improving mucosal integrity and reducing colonic and systemic immune reactivity[8]. In addition, mucopolysaccharide starch has been shown to have a protective effect in animals with enteritis induced by indometacin (a model of Crohn's disease), by reducing intestinal and systemic inflammation[9].

The trial involved using ronidazole at 10-30mg/kg once daily orally for 2 weeks. The cats were also started on either a placebo or probiotic on the same day as ronidazole (classified as day 1) and this was continued for 4 weeks. A total of 26 cats met the inclusion criteria; 13 in group A and 13 in group B. Group A was the placebo and Group B was the probiotic.

All of the cats in the study were pure-bred cats. The mean age of cats in group A was 9.8 months (range 3-28 months) and the mean age in Group B was 10.8 months (range 2-24 months). There was no significant difference between the ages ($P>0.05$). All cats, with the exception of one in Group A had concurrent infections detected by faecal polymerase chain reaction. The duration of follow up was 2-32 weeks, and there was no significant difference between the mean duration of follow-up between the groups ($P>0.05$)

Both groups improved significantly over the course of treatment with regards to faecal scoring and body weight ($P<0.05$). However, cats that received the probiotic were significantly less likely to have a relapse in clinical signs ($P=0.021$). There were 8 relapses in Group A and only 2 relapses in Group B. No side effects were noted in the trial.

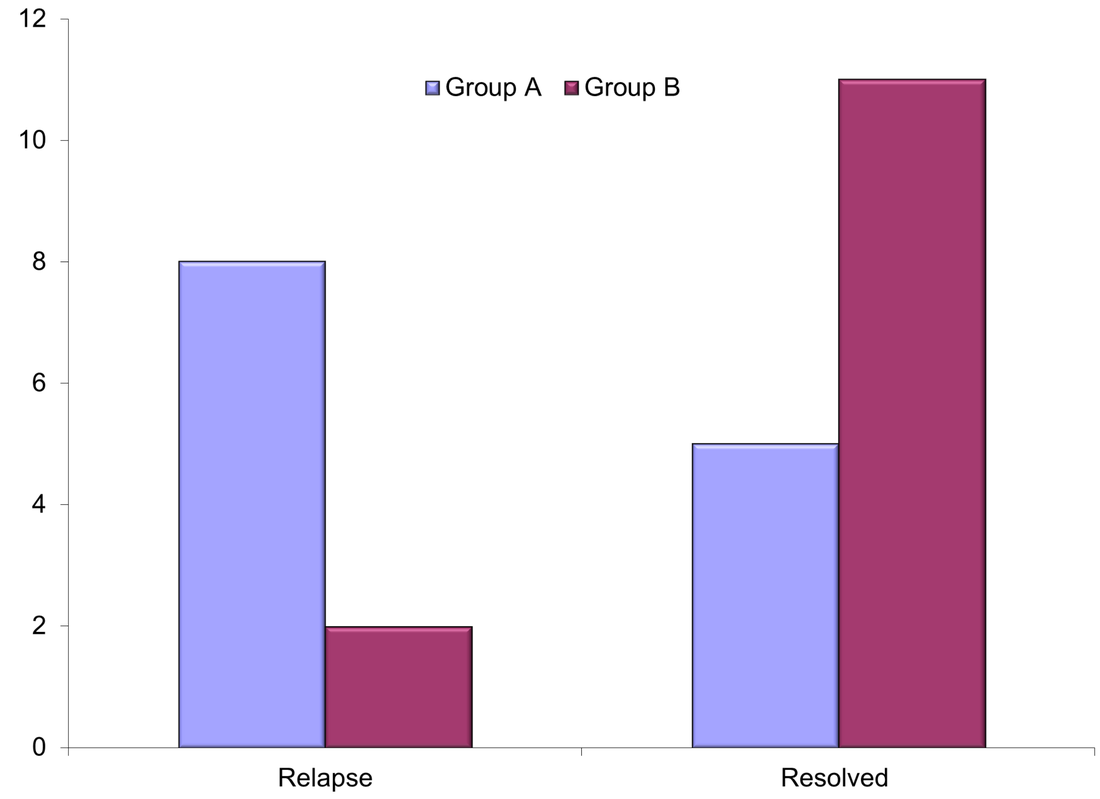

Figure 1: Bar Chart showing the number of cats which had recurrent clinical signs (relapses) and those which had resolution of clinical signs (resolved) during the follow up period ($P=0.021$). The mean follow up period for group A was 19 weeks and Group B was 20 weeks.

Probiotics can have antimicrobial activities through a variety of mechanisms, including the production of bacteriocins/defensins, competitive inhibition with pathogenic bacteria, inhibition of bacterial adherence or translocation, and a reduction in luminal pH. [10]

Tritrichomonas foetus primarily affects young, pedigree cats[11] as seen in this study. In this study, relapses were common and occurred in 38.5% of cats, (61.5% in Group A and 15.4% in Group B). One previous study used ronidazole at 30 to 50 mg/kg q12h for 14 days, which resulted in resolution of diarrhoea, and no relapses were identified in the 6 month follow up period[3]. The lower doses in the current study was chosen due to concerns of side effects and previous reports of efficacy with a lower dose[4,11]. Another reason for an increase in the relapse rate seen in the current study may be the development of resistance to ronidazole, which has been shown in vitro[12].

This study demonstrated that although 10-30mg/kg orally q24hr of ronidazole for 2 weeks for the treatment of *Tritrichomonas. foetus*-associated diarrhoea is associated with no side effects and resulted in an improvement in clinical signs, the addition of probiotics decreased the risk of a relapse following the end of treatment. Further studies are warranted to investigate the mechanism by which probiotics reduce the incidence of clinical relapses.

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