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**RESEARCH INTO CAUSES OF DIARRHOEA
ASSOCIATED WITH THE HILL'S
PRESCRIPTION DIET CANINE Z/D® ULTRA
ALLERGEN FREE**

**A thesis presented in partial fulfilment of the requirements for the
degree of Master of Science in Animal Science at Massey University,
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Abstract

The history, manufacture, physical and immunological characteristics, nutritional adequacy, formulation, taste and digestibility of protein hydrolysates were reviewed. Studies were then undertaken to investigate the cause of the diarrhoea reported to occur in dogs fed an early formulation of Hill's Prescription Diet Canine z/d® ULTRA Allergen Free.

It was hypothesised that the digestibility of Canine z/d® ULTRA Allergen Free was poor and therefore contributing to the diarrhoea. To test this hypothesis a study was designed to assess the apparent ileal digestibility of the Canine z/d® ULTRA Allergen Free diet using a rat model of apparent ileal digestibility. The results of this study showed the apparent ileal digestibility of the Canine z/d® ULTRA Allergen Free diet was high and it was concluded that the digestibility of the diet does not predispose dogs to diarrhoea.

The reported high osmolarity of protein hydrolysate diets was considered a potential contributing cause to the diarrhoea. To test this hypothesis, the osmolarity of the Canine z/d® ULTRA Allergen Free diet was compared to a standard maintenance diet and to a diet formulated for the treatment of diarrhoea. The osmolarity of the Canine z/d® ULTRA Allergen Free diet was approximately twice that of the osmolarities of the other two diets. This difference was statistically significant ($p < 0.05$), and the data from this study suggest that the hydrolysate diet was sufficiently hyperosmolar to be capable of damaging the mucosa. Although of interest, these observations do not, however, allow a conclusion that the reported diarrhoea is due to hyperosmolarity.

Lastly, breath hydrogen tests were performed to investigate whether carbohydrate malabsorption, abnormal orocolic transit times or small intestinal bacterial overgrowth played a role in the cause of the reported diarrhoea. The breath hydrogen concentrations of dogs fed the hydrolysate

diet remained within reference intervals confirming the high carbohydrate digestibility observed in the rat model of apparent ileal digestibility and providing no support for abnormal orocolic transit or bacterial overgrowth of the small intestine as causes for the reported diarrhoea.

In conclusion, the results of the studies in this thesis do not provide a clear explanation for the cause of the diarrhoea reported to occur with the Canine z/d® ULTRA Allergen Free diet.

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