

Final thesis submission: Examination - Dr Chloe Cheung - 311060471: Final thesis

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Guidance

Final lodgement of thesis

Student ID

311060471

Student

Dr Chloe Cheung

Degree

Master of Veterinary Clinical Studies

Faculty

[Science](#)

Thesis title

The Effect of Dietary Tryptophan Supplementation, and An Oral Tryptophan Challenge, on Urinary Excretion of 5-hydroxyindoleacetic Acid in Domestic Dogs

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Abstract

Abstract

Chronic enteropathic disease, commonly referred to as Inflammatory Bowel Disease (IBD), is a multi-factorial disease that affects a substantial population, including humans and domestic animals. Over the past two decades, it has been postulated that disturbances in serotonin metabolism may be a pathogenic mechanism for IBD in humans. This thesis explores the unique characteristics of IBD in humans, dogs, and cats and examines the literature regarding interrelationships between serotonin dysregulation and IBD. Additionally, it examines the role of tryptophan metabolism as the sole precursor of serotonin synthesis. Our cross-sectional, prospective study explores the possible influence of tryptophan supplementation on serotonin mechanism. Our findings demonstrated a sustained effect on serotonin metabolism following tryptophan loading, though the change in the 5-hydroxyindoleacetic acid to creatinine ratio did not reach statistical significance compared to baseline. Contrary to previous literature, the ratio did

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not peak at 4 hours post-tryptophan challenge. The second part of the study suggests that using a selective serotonin reuptake inhibitor does not significantly influence the urinary excretion of the serotonin metabolite 5-hydroxyindoleacetic acid in dogs. This study is the first to assess the impact of tryptophan supplementation on serotonin metabolism in dogs, and particularly the impacts of tryptophan supplementation on the excretion of serotonin degradation products in urine. The results provide critical information on potential confounding factors influencing serotonin metabolism in chronic enteropathy in domestic animals. Future prospective studies with a larger sample size are required to compare the serotonin concentrations between dogs with chronic enteropathy and healthy dogs on the tryptophan loading/challenge tests.

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serotonin, IBD, chronic enteropathy, tryptophan, 5-hydroxyindoleacetic acid

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