The Effect of Grain-Free vs. Grain-Inclusive Dry Dog Food on Triiodothyronine Levels in Mice

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Grain-Free foods are becoming an issue in veterinary science today (Bentley, personal communication, Sep. 6, 2024). Grain-free dog foods have been known to cause conditions such as hyperthyroidism (a disorder characterized by the overproduction of thyroid hormones and glands) and dilated cardiomyopathy (a disease of the cardiac muscle that is the leading cause of heart failure in dogs) in dogs to worsen (Weintraub, 2024; Quest, 2022; Webster, 2020). Thyroid hormones are known for maintaining vital bodily functions such as metabolism and growth (Cleveland Clinic, 2022). This novel experiment, utilizing BALB/c mice as model organisms, tested to see if these Grain-free foods have any effect on the specific thyroid hormone, Triiodothyronine (T3) which is specifically in control of an animal's metabolism. The hypothesis of this project was that if the mice are fed a diet composed of 100% Grain-Free dry dog food, then their levels of Triiodothyronine will decrease. An ANOVA test was run to analyze the results of the ELISA kits that were used to test the concentration of the T3 hormone. Because the p-value of the results of this ANOVA test was over 0.05, it meant that the data was not statistically significant, supporting the null hypothesis of this study.

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