PURINA
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VETERINARY DIETS

Dietary intervention reduces left atrial enlargement in dogs with early preclinical myxomatous mitral valve disease: a blinded randomized controlled study in 36 dogs (Li et al., 2019)[1].

Introduction

Myxomatous mitral valve disease (MMVD) is the most common heart disease in dogs and is characterized by a slowly progressive mitral valve degeneration, associated with alterations in energy metabolism, oxidative stress, inflammation, and in advanced stages, heart enlargement.

According to the **American College of Veterinary Internal Medicine (ACVIM)**, heart disease and heart failure can be classified in 4 stages. MMVD dogs with a heart murmur due to mitral regurgitation showing no clinical signs of heart failure, are classified as stage B. Depending on the absence or presence of cardiac remodelling, they are further classified into B1 or B2, respectively. Dogs presenting clinical signs of heart failure are included in stage C.

The objective of the study was to evaluate the clinical impact of a diet formulated with a **cardiac protection blend (CPB)** designed to address metabolic alterations, and progression of naturally occurring early preclinical stage of MMVD in dogs.

Study design

A 6-month blinded placebo-controlled interventional study enrolled **19 dogs with early stage of MMVD** and 17 dogs as healthy-controls. All dogs were randomly assigned to either **control diet (CON) or CPB-supplemented diet**. Dogs on cardiac medication at the moment of enrolment were maintained on the same treatment during the study period. Echocardiography was used as a non-invasive method for assessment of cardiac function.

Degree of mitral regurgitation (MR) and different echocardiographic variables - **left atrial diameter (LAD) and aortic root diameter (LA/Ao)** - were measured at baseline, 3 months and 6 months to evaluate the effect of the diet on progression of MMVD.

The study evaluated an innovative heart protection blend (CPB) containing **medium-chain triglycerides (MCTs)** as an alternative energy source to reduce oxidative stress, fish oil (Omega 3 fatty acids) to reduce inflammation and, Vitamin E as antioxidant and other key nutrients such as Taurine and Magnesium to support cardiac function.

Results

During the 3rd and 6th months of study measurements, there were no significant changes in any parameter for healthy dogs independently of the type of diet assigned; whereas for MMVD dogs there was a significant interaction in diet by time.

After 6 months of study, 60% of **MMVD CPB-diet** dogs showed a trend of decreases (2.9%) in both LAD and LA/Ao. And **30%** of **MMVD CPB-diet** dogs showed a reduction of MR **(Figure 1).**

MMVD CON-diet dogs showed a significant increase in LAD (10.8%) and LA/Ao (9.5%) at 6 months, compared to baseline. And **37 %** of **MMVD CON-diet** dogs showed progression of ACVIM stage B1 to B2 while none **MMVD CPB-diet dogs** showed progression of disease stage by the end of the study **(Figure 2).**

CPB had positive impacts in metabolic pathways in MMVD dogs:

- Improved fatty acid use for energy
- Reduced inflammation
- Reduced oxidative stress

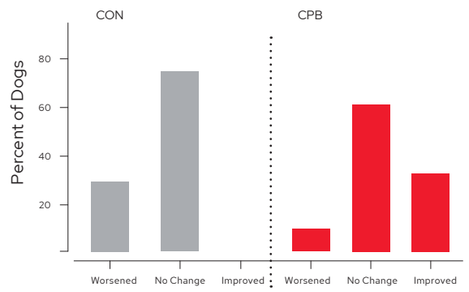

Figure 1. Percentage of MMVD dogs showing changes of at least one grade in mitral regurgitation after 6 months of feeding control diet (CON) or treatment diet (CPB), compared to baseline.

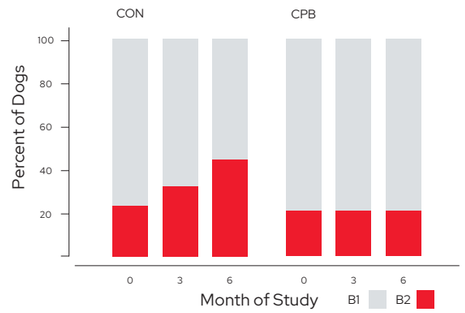

Figure 2. Progression of the disease in control diet (CON) and treatment (CPB) groups showed as percentage of MMVD dogs classified with ACVIM Stage B1 or B2 at 0- 3- and 6- months of the study.

Clinical outcomes

This is the first dietary intervention that investigates the benefits of a cardiac protection blend (CPB) in cardiac diseases, showing a potential clinical application to prevent progressive cardiac disease.

- The CPB diet tested in the study was formulated with multiple nutrients, that when mixed together, could act synergistically, to achieve the reported efficacy.
- This is also the first dietary intervention that investigates the benefits of medium-chain triglycerides (MCTs) in cardiac diseases, showing a potential clinical application to prevent progressive MMVD.
- 60% of MMVD-CPB dogs showed improvement in left atrial enlargement determined by echocardiography.
- LA/Ao and LAD increased in MMVD-CON dogs by an average of 10% over baseline within this 6-month study; whereas MMVD-CPB dogs showed the opposite.
- 30% of MMVD-CPB dogs showed a reduction in mitral valve regurgitation.

Conclusions

The study successfully demonstrated that a blend of nutrients, designed to address metabolic changes associated with MMVD in dogs, was able to slow or reverse cardiac changes within early and preclinical stage of the MMVD disease.

[1]**Li Q, Heaney A**, *et al. Dietary intervention reduces left atrial enlargement in dogs with early preclinical myxomatous mitral valve disease: a blinded randomized controlled study in 36 dogs. BMC Veterinary Research. 2019; 15:425*