**The Role of Adipokines in Canine Cranial Cruciate Ligament Rupture**

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**Abstract**

**Introduction:**

Cranial cruciate ligament rupture (CCLR) has an increased prevalence in dogs that are overweight. The role played by adipose tissue has not yet been defined. Given that adipocytes synthesise and release adipokines, which can result in inflammation and increased tissue degradation a humoral role for adipose tissue has been postulated.

**Objectives:**

This study aims to assess gene expression for key adipokines, inflammatory mediators, and cartilage degradation markers in cranial cruciate ligaments (CCLs) from dogs with CCLR, and to determine any relationship with disease.

**Methods:**

25 ruptured CCLs samples were collected from CCLR dogs. Gene expression for adiponectin, leptin, visfatin, MCP-1, TNF-α, IL-6, aggrecan-1, collagen-1 and MMP-13 in CCLs were determined by qRT-PCR. After logarithmic transformation, Pearson’s correlation was used to determine associations between gene expression of the molecules studied together with age and weight, whilst Kendall’s tau was used for comparisons with body condition score and lameness score.

**Results:**

The most highly expressed adipokines in CCLs were MCP-1 and visfatin. Leptin was negatively correlated with aggrecan-1 (r=-0.82, *p*=0.01). Visfatin was positively correlated with MMP-13 (r=0.45, *p*=0.05) and negatively correlated with body condition score (r=-0.41, *p*=0.02). Moreover, IL-6 was positively correlated with collagen-1 (r=0.53, *p*=0.02) and negatively correlated with bodyweight (r=-0.52, *p*=0.02).

**Conclusions:**

Our data indicates that canine ligament contains cells that can express adipokines. Moreover, our data suggest an association between gene expression for key adipokines and markers of cartilage degradation, and also with clinical measures. A larger scale study is now underway to take this work forward.

**Key words:** obesity, adipokines, cruciate ligament, biomarker, canine