

## **CIRCULATING REGULATORY T CELLS (Treg) IN OBESE LABRADOR RETRIEVER DOGS: PRELIMINARY RESULTS**

Anna Teresa Palatucci (1,2), Diego Piantedosi (3), Vlenia Pernice (4), Paolo Ciaramella (3), Giuseppe Terrazzano (2,4), Jacopo Guccione (3), Giuseppina Ruggiero (4), Laura Cortese (3)

(1) Università degli Studi della Basilicata, Dottorato di Ricerca in Scienze. (2) Università degli Studi della Basilicata, Dipartimento di Scienze. (3) Università degli Studi di Napoli Federico II, Dipartimento di Medicina Veterinaria e Produzioni Animali. (4) Università degli Studi di Napoli Federico II, Dipartimento Scienze Mediche Traslazionali.

Obesity is the most common nutritional disorder in dogs. This feature has been described to be more evident in Labrador Retriever, in which the association between a 14-base-pair deletion in the canine proopiomelanocortin (POMC) gene and increased body weight has been recently reported (1, 2). Both obesity and over-nutrition have been largely associated with impaired immunity and low-grade inflammation in human and mouse models (3, 4, 5). Moreover, a causal role for impaired Treg-dependent mechanisms in the pathogenesis of inflammation and insulin resistance, associated with increased body weight, has been referred in men and mice (6). In this regard, a reduced number of Treg has been observed in visceral adipose tissue and in blood of obese humans (6). However, it is not defined whether canine obesity may affect circulating Treg cells and whether their number might be associated with markers of systemic inflammation. The aim of this study is to investigate whether in adult obese Labrador Retriever may be present a correlation between Treg cells and the pro-inflammatory activity. Twenty dogs were enrolled in the study and were categorized into two broad groups based on body condition score (BCS): a control group (CTR: BCS 4–6) and an overweight/obese group (OB: BCS  $\geq$  7). Both control and overweight/obese dogs were considered clinically healthy basing on review of the medical record at the time of sample collection, as well as the evaluation of complete blood count (CBC) and serum biochemistry panels. The levels of CD3<sup>+</sup>CD4<sup>+</sup>, CD3<sup>+</sup>CD8<sup>+</sup> T cells, CD4/CD8 ratio, CD21<sup>+</sup> B cells were analyzed in peripheral blood. In order to evaluate Treg number and pro-inflammatory activity, the expression of CD4, CD25 and Foxp3 as well as IFN- $\gamma$  production has been analyzed by immune-fluorescence technique and flow cytometry analysis. Intriguingly, preliminary results showed a statistically significant reduction of Treg and a slight increase of IFN- $\gamma$  production when comparing obese to non-obese dogs. In conclusion, these results may represent new insights into the immunological dysregulation frequently associated to obesity in human and still undefined in dogs.