

# How does Christmas affect weight loss programmes in dogs?

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## OBJECTIVES

To determine the effect of the Christmas period on food intake and rates of weight loss in obese dogs on weight programmes.

## METHODS

This was an observational retrospective study of 38 obese dogs attending the Royal Canin Weight Management Clinic, University of Liverpool. Weight loss programmes of all dogs spanned the Christmas period, and owners had completed a food diary, which enabled energy intake from extra food (i.e. treats and table scraps) to be calculated. Rates of weight loss and energy from extra food were

compared across three periods, comprising Christmas (21d starting the weekend before Christmas), pre-Christmas (21d immediately before the Christmas period), and post-Christmas (21d immediately after the Christmas period). Friedman's test (with Conover post-hoc comparisons) was used for statistical analysis.

## RESULTS

Compared with the period before Christmas, energy intake from extra food increased significantly (mean of 30 kcal/kg bodyweight<sup>0.75</sup> increase) during the Christmas period ( $P=0.003$ ), and then decreased by a similar amount (mean 35 kcal/kg bodyweight<sup>0.75</sup> decrease) afterwards ( $P=0.008$ ) periods. However, extra food intake did not differ between the pre- and post-Christmas periods ( $P=0.747$ ). Median rates of weight loss was faster in the pre-Christmas period (0.6%/week; -0.4%/week to 2.2%/week) than for both the Christmas (0.3%/week, -1.7%/week to 2.6%/week,  $P<0.001$ ), and post-Christmas (0.5%/week, -0.4%/week to 1.6%/wk,  $P=0.008$ ) periods. However, there was no difference in rate of weight loss between the Christmas and post-Christmas periods ( $P=0.062$ ).

## STATEMENT

Veterinary professionals should consider careful monitoring weight loss programmes over the Christmas period, to minimise the negative impact of additional food intake at this time.

# n-3 and n-6 polyunsaturated fatty acids influence cartilage degradation in an *in vitro* model for canine osteoarthritis

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## OBJECTIVES

To investigate how polyunsaturated fatty acids affect key factors of cartilage destruction in a canine cell culture system mimicking osteoarthritis.

## METHODS

We used a 2D model of canine osteoarthritis. Canine chondrocytes from healthy donors were incubated either without or with 10  $\mu$ M eicosapentaenoate (EPA), docosahexaenoate

(DHA), arachidonate (AA) or 3.6  $\mu$ M Ibuprofen as positive control for 6 days. Subsequently cells were stimulated with 10 ng/ml interleukin-1 $\beta$  (IL1 $\beta$ ) for another 48 hours to induce osteoarthritic changes, or left unstimulated. We analyzed fatty acid uptake via gas chromatography, nitric oxide production via Griess assay, prostaglandin E (PGE) production via ELISA and relative gene expression of several cartilage matrix proteinases, inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 by RT-qPCR.

## RESULTS

After supplementation, chondrocytes rapidly incorporated EPA, DHA and AA into their fatty acid pools. Stimulation with IL-1 $\beta$  caused a marked increase in most of the inflammatory markers measured. Both n-3 EPA and n-6 AA had similar effects, decreasing the gene expression of matrix metalloproteinase-3, lowering the gene expression of iNOS and the production of nitric oxide. On the other hand, both fatty acids up-regulated the expression of matrix metalloproteinase-13 and, especially AA, increased the release of prostaglandin E. The effects of n-3 DHA turned out to be negligible.

## STATEMENT

Our results provide evidence that not only EPA, but also AA has beneficial effects on inflammatory markers in osteoarthritis. Therefore, the ratio between n-3 and n-6 fatty acids deserves more attention in dietary interventions.