

# Effect of omega-3 fatty acids on canine atopic dermatitis

**Twenty-nine dogs were included in a double-blinded, placebo-controlled, randomised trial and were orally supplemented for 10 weeks with either flax oil (200 mg/kg/day), eicosapentaenoic acid (50 mg/kg/day) and docosahexaenoic acid (35 mg/kg/day) in a commercial preparation, or mineral oil as a placebo. For each dog, clinical scores were determined based on a scoring system developed prior to the trial. Total omega-6 and omega-3 intake and the ratio of omega-6:omega-3 (omega-6:3) were calculated before and after the trial. The dogs' clinical scores improved in those supplemented with flax oil and the commercial preparation, but not in the placebo group. No correlation was identified between total fatty acid intake or omega-6:3 ratio and clinical scores. Based on the results of this study, the total intake of fatty acids or the omega-6:3 ratio do not seem to be the main factors in determining the clinical response.**

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## INTRODUCTION

Canine atopic dermatitis is a common skin disease in small animal practice (Scott and Paradis 1990). It is defined as an inherent predisposition to the development of immunoglobulin (Ig) E antibodies to environmental allergens, resulting in clinical signs following exposure to these allergens (Halliwell and Gorman 1989). Symptomatic treatment modalities for canine atopic dermatitis include glucocorticoids, antihistamines and fatty acid supplementation (Griffin 1993, Mueller 1993, Scott and others 2001). The only specific treatment for atopic dermatitis is allergen-specific immunotherapy wherein allergens identified by intradermal testing or serum testing for allergen-specific IgE are injected subcutaneously. Allergen-specific immunotherapy must usually be pursued for months before an improvement in clinical signs is seen and it is not effective in all patients (Scott and others 1993, Mueller and Bettenay 1996). For these reasons, symptomatic therapies are often explored. Because adverse reactions to glucocorticoid

therapy are common, more attention has been paid recently to treatments that have been associated with fewer adverse effects, such as antihistamines and fatty acid supplementation (Campbell 1993, Paterson 1994).

Essential fatty acids have been used to treat humans with atopic dermatitis (Price 1984, Biagi and others 1988, Fiocchi and others 1994, Paterson 1995, Henz and others 1999) and allergic asthma (Stenius-Aarniala and others 1989, Okamoto and others 2000), and have been shown to modulate the inflammatory response in humans, mice and rats (Higgs 1985, Horii and others 1991, Schafer and Kragealle 1991, Watanabe and others 1994, Terencio and others 1998). Oral fatty acid supplementation has been noted to decrease the inflammation and pruritus associated with canine atopy (Bond and Lloyd 1992b, Scott and others 1992, Logas and Kunkle 1994). These benefits have been related to supplementation with certain omega-6 fatty acids (gamma-linoleic acid [GLA]) (Scarff and Lloyd 1992), combinations of GLA and omega-3 fatty acids such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) (Bond and Lloyd 1992a, Scott and others 1992), variable doses of omega-3 fatty acids (Logas and Kunkle 1994) or omega-3 supplemented whole diets with fixed omega-6:omega-3 (omega-6:3) ratios (Scott and others 1997).

Emphasis has recently been placed on the use of omega-3 fatty acid supplementation at doses higher than the manufacturer's recommendation in the management of canine atopic dermatitis. Combination supplements of EPA and DHA given in the range of 66 mg/kg/day have been noted to clinically benefit pruritic dogs (Logas and Kunkle 1994). The use of flax oil as a source of potentially beneficial omega-3 fatty acids has also been recommended. To the authors' knowledge, there are no published data in the veterinary literature to substantiate claims of efficacy. The purpose of this randomised, double-blinded, placebo-controlled study