

NEW HOT PAPERS - 2009

November 2009



Philip C. Calder talks with *ScienceWatch.com* and answers a few questions about this month's New Hot Paper in the field of Agricultural Sciences.



Article Title: Polyunsaturated fatty acids, inflammatory processes and inflammatory bowel diseases

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Journal: MOL NUTR FOOD RES

Volume: 52, Issue: 8, Page: 885-897, Year: AUG 2008

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SW: Why do you think your paper is highly cited?

This paper is a review article that begins by describing the respective roles of omega-6 and omega-3 fatty acids in inflammation and the mechanisms of action involved. The article then goes on to review the evidence from animal models and from human studies that marine omega-3 fatty acids, as found in fish oil, exert an anti-inflammatory effect in inflammatory bowel diseases and that this is associated with clinical improvement.

This is currently an area of interest and I believe that my article is highly cited because it collates and integrates the basic science with the clinical studies and attempts to review the entirety of the human clinical trial data. Thus it represents a broad-ranging but integrated state-of-the-art summary of the field at its time of writing. This is clearly an attraction to others. I believe that the article presents a new integrated synthesis of knowledge from the basic sciences and from clinical trials.

SW: Would you summarize the significance of your paper in layman's terms?

The paper describes the ways that omega-3 fatty acids from fish and fish oils act to dampen inflammation and the evidence that this effect occurs. One application of the effect of omega-3 fatty acids is in inflammatory bowel diseases, in which the hosts' inflammatory response is targeted against the hosts' gut wall, causing extensive damage which has an impact on the health of the host.

Animal models mimicking the human disease show that omega-3 fatty acids both reduce the likelihood of developing the disease and can also treat existing disease. There are a number of human studies of omega-3 fatty acids in patients with inflammatory bowel diseases. These confirm that anti-inflammatory effects do occur

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in these patients. However, only some of the studies show a clinical benefit. We do not yet know why some studies fail to show any clinical benefit.

SW: How did you become involved in this research, and were there any problems along the way?

I have been involved in fatty acid research for over 20 years and my work has evolved against the background of available funding for research, technical developments in analytical tools, and progress in scientific knowledge and understanding. Much of my research has focused upon fatty acid interaction with the immune and inflammatory systems and this article stems from this core interest.

SW: Where do you see your research leading in the future?

My research on the effects of fatty acids, especially omega-3 fatty acids, in the context of immunity and inflammation and in relation to cardiovascular disease, inflammatory diseases, and allergy and asthma will continue. The work will focus both on human studies and on improving our understanding of underlying mechanisms using model systems.

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KEYWORDS: NF-KAPPA-B; TUMOR-NECROSIS-FACTOR; FISH-OIL SUPPLEMENTATION; RANDOMIZED CONTROLLED-TRIAL; ACTIVATED RECEPTORS ALPHA; BLOOD MONONUCLEAR-CELLS; ULCERATIVE-COLITIS; EICOSAPENTAENOIC ACID; CROHNS-DISEASE; GENE-EXPRESSION.

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