

Omega-3, quercitrin combo could ease bowel inflammation

05/06/2006 - **A combination of omega-3 fatty acids and the flavonoid quercitrin may work to reduce inflammation in the large intestine associated with Crohn's disease and ulcerative colitis, says an animal study from Spain.**

[Omega-3](#) fatty acids have previously been linked to a reduction in markers of inflammation, particularly in relation to cardiovascular disease. For gut health however some studies have reported that omega-3 supplementation may not be so beneficial since this can impair the colonic antioxidant system.

This could be remedied, say the researchers behind the new study, by including an antioxidant compound, such as the flavonoid [quercitrin](#) along with the omega-3s.

The new study, published on-line in the journal *Clinical Nutrition* (doi: 10.1016/j.clnu.2005.12.009), reports the effect of fatty acid supplementation with or without quercitrin to the diet of female rats with inflamed bowels.

Inflammation of the bowel was induced by feeding the rats the compound, dextran sodium sulfate (DSS), which gives an experimental model of inflammatory bowel disease that is said to be histologically and biochemically similar to the human disease.

Fifty rats were divided into five equal groups: The first group (control) ate a normal diet and was not fed DSS; the other four groups' diets were supplemented with either fish oil (FO), soybean oil (SO), FO plus quercitrin, or SO plus quercitrin. After two weeks on these diets, DSS was added to the drinking water of the rats to induce colitis.

The ratio of omega-6 to omega-3 in the crude SO was 15.7, while the fish oil had a ratio of 4.5. The fish oil was formulated to be 96 per cent virgin olive oil with four per cent fish oil, which was equivalent to four milligrams of EPA and two milligrams of DHA every day.

Ten days later, the researchers, led by Julio Galvez and Antonio Zarzuelo from the University of Granada, measured levels of inflammatory responses, including tumour necrosis factor alpha (TNF-alpha), interleukin 1-beta (IL 1-beta), and leukotriene B4 (LTB4).

The researchers found that, compared to the SO group, supplementation with FO reduced TNF-alpha levels by 49 per cent, IL 1-beta levels by 31 per cent, and LTB4 levels by 39.5 per cent.

When quercitrin was added to the FO supplement, levels of TNF-alpha were reduced by 57 per cent, IL 1-beta levels decreased by 62 per cent, and LTB4 levels fell by 45 per cent, compared to the SO group.

However, these values were all higher than those observed in the control group (no induced bowel inflammation).

"We demonstrated in a rat model of experimental colitis that the incorporation of a low amount of fish oil in the diet, enough to change the omega-6 to omega-3 ratio both in the rat diet and in different tissues, was able to exert an intestinal anti-inflammatory effect," wrote the researchers.

The benefits of this is due to a synergetic mechanism between the quercitrin, which can inhibit colonic TNF-alpha and IL 1-beta production, as well as acting as an antioxidant, and the fish oils which inhibit TNF-alpha and LTB4 production.

Adding quercitrin to omega-3 polyunsaturated acids may have an added advantage of improving the stability of the overall supplement, *"since PUFA are susceptible to degradation by oxygen, heat and light,"* said the Granada scientists.

It is not known if such results could be extended to humans and significant further study needs to be performed before such supplements could be recommended for people suffering from inflammatory bowel disease (IBD), said to affect about one person in every 500, which equates to over half a million people in the US, and 150,000 people in the UK.