

Subject: Journal of Nutrition Media Alert

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July 2011 Media Alert: The Journal of Nutrition

The following articles are being published in the July 2011 issue of *The Journal of Nutrition*, a publication of the American Society for Nutrition. Summaries of the selected articles appear below; the full text of each article is available by clicking on the links listed. Manuscripts published in *The Journal of Nutrition* are embargoed until the article appears online either as in press (Articles in Press) or as a final version. The embargoes for the following articles have expired.

[Clinical trial finds no effect of CLA on body fat in overweight men](#)

[Animal study shows promising effect of a specific nutritional combination on cancer treatment complications](#)

[Prebiotic fiber and starch may decrease severity of inflammatory bowel disease](#)

[Clinical trial finds no effect of CLA on body fat in overweight men](#)

With obesity reaching unprecedented levels worldwide, researchers continue to investigate potential lifestyle choices that might help prevent and possibly treat our ever-expanding national waistline. Of course, decreasing calorie intake and increasing energy expenditure is the most obvious solution. However, discovering foods and food components that help in this weight-maintenance quest remains a research priority. One such substance (actually a group of related substances) are the conjugated linoleic acids (CLAs), a myriad of chemically-similar fatty acids—the two most prominent being the *cis9*, *trans11* form found

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Upcoming Events

June 15-17, 2011. ASN and the Nutrition Society Irish Section [Vitamins in Early Development and Healthy Aging: Impact on Infectious and Chronic Disease](#). Cork, Ireland.

July 9, 2011. Pre-Conference Event: Agri-Medical Research: Providing Dual Benefit for Agriculture and Human Health. [2011 ADSA-ASAS Joint Annual Meeting](#). New Orleans, LA.

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naturally in ruminant-derived foods (e.g., milk and beef), and the *trans*10, *cis*12 form found commonly in supplements marketed for weight loss. Numerous studies have shown effects of CLA, especially the *trans*10, *cis*12 type, on weight and fat loss in animal studies. Findings in humans, however, have been mixed at best, with some data suggesting negative effects of *trans*10, *cis*12-CLA on blood lipids and inflammation. To help shed important light on this topic, a team of Canadian researchers conducted a controlled clinical trial in overweight men with elevated blood lipids. Details about this study are published in the July 2011 issue of *The Journal of Nutrition*.

Overweight or obese, but otherwise healthy, men ($n = 27$; 18-60 y; body mass index ≥ 25 kg/m²) participated in this double-blind, crossover, placebo-controlled study. Treatments consisted of 3.5 g/d safflower oil (control); a supplement containing 1.4 g/d *trans*10, *cis*12- and 1.4 g/d *cis*9, *trans*11-CLA (2.8 g/d total CLA); and a supplement consisting of 2.8 g/d of *cis*9, *trans*11-CLA. The 3 treatment periods were each 8 wk in length, and were separated by 4-wk "washout" periods. Subjects were instructed to keep their dietary and activity patterns constant throughout the experiment. Body weights were measured repeatedly, and body composition at the beginning and end of the study. Following an overnight fast, blood samples were drawn several times in each period for assessment of blood lipids, chronic inflammation, and insulin sensitivity. How much fat was being burned for energy was also measured in a subset of the men.

When compared to the control period, consumption of neither type of CLA supplement influenced body weight, body composition, or blood lipids. In addition, neither CLA supplement affected the rate at which fatty acids were utilized for energy nor was there an effect of CLA on inflammatory markers (e.g., C-reactive protein) or blood glucose regulation. The authors concluded that, although there were no detrimental effects found during CLA supplementation, these data provide no evidence for a role of CLA (at least in these doses) in regulation of body weight and blood lipids in already overweight men with high blood lipid levels. The potential for these effects to be realized in younger individuals at especially risk for becoming overweight remains to be determined.

Reference Joseph SV, Jacques H, Plourde M, Mitchell PL, McLeod RS, Jones PJH. Conjugated linoleic acid supplementation for 8 weeks does not affect body composition, lipid profile, or safety biomarkers in overweight, hyperlipidemic men. *Journal of Nutrition* 141:1286-1291, 2011.

For More Information To contact the corresponding author, Dr. Peter Jones, please send an e-mail to Peter.Jones@umanitoba.ca.

Animal study shows promising effect of a specific nutritional combination on cancer treatment complications

The U.S. Centers for Disease Control and Prevention ranks cancer as our second leading cause of death. The good news is that advances in anti-cancer treatment are credited with reduced complications and prolonged survival. One area of intense scientific interest is the interaction between the immune system and cancer progression, especially during anti-cancer treatments such as surgery, chemotherapy, and radiation. Numerous studies have documented immunosuppressive effects of anti-cancer treatment, often leading to an increased frequency and severity of complications such as infection. Earlier studies in mice experimentally given cancer showed that dietary intervention with a diet high in protein, the amino acid L-leucine, fish oil, and specific oligosaccharides (large sugars) with prebiotic properties, enhanced immunity and reduced inflammation. To gain insight as to how this nutritional combination exerts its effect on immune-related functions (specifically, relating to the digestive tract), a team of researchers studied the effects in a mouse model experiencing chemotherapy-induced infectious complications. Their results are published in the July 2011 issue of *The Journal of Nutrition*.

In this 33-d study, female mice were randomized to one of three groups receiving (1) a control diet without any other treatment, (2) a control diet, chemotherapy treatment (to induce neutropenia, characterized by low levels of circulating immune cells) and infection with *Pseudomonas aeruginosa* (a common pathogenic bacteria in cancer patients), or (3) the experimental diet, chemotherapy treatment, and infection with *P. aeruginosa*. After the study, blood samples were taken to determine the degree of neutropenia and investigate whether there was an effect of the

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diet on inflammation. Liver and lung tissues were also analyzed to determine whether they harbored *P. aeruginosa*, and thus whether the bacteria had been able to move from the digestive tract into the rest of the body.

Chemotherapy treatment significantly lowered white blood cell count regardless of dietary treatment. However, intervention with the experimental diet reduced incidence and intensity of *P. aeruginosa* infection in liver and lungs. In addition, the experimental diet generally lowered the levels of circulating proinflammatory mediators, which were correlated with the presence of *P. aeruginosa* in the liver. The authors concluded that dietary intervention with this specific nutritional combination significantly reduced the incidence and severity of bacterial infection. These results may represent an opportunity to develop new applications in cancer patients, with the aim to reduce infections and other complications.

Reference Faber J, van Limpt K, Kegler D, Luiking Y, Garssen J, van Helvoort A, Vos AP, Knol J. Bacterial translocation is reduced by a specific nutritional combination in mice with chemotherapy-induced neutropenia. *Journal of Nutrition* 141:1292-1298, 2011.

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Prebiotic fiber and starch may decrease severity of inflammatory bowel disease

Crohn's disease and ulcerative colitis are two clinical manifestations of inflammatory bowel disease (IBD) characterized by inflammation of the digestive tract. Because there is no known cure for IBD, patients are usually treated with anti-inflammatory medications (e.g., steroids). However, these pharmacological therapies are not always successful for the long-term management of the disease, and often result in unwelcome side effects. Consequently, IBD patients frequently turn to alternative and complementary approaches, including nutraceuticals and pre- and probiotic foods that promote healthy bacteria in the damaged digestive tract. Whereas probiotics (such as live-culture yogurts) actually contain living bacteria, prebiotics (such as certain dietary fibers and digestion-resistant starch) help support healthy microbial growth in the intestinal tract. An international team of scientists led by Dr. Josep Bassaganya-Riera has recently added new information to this field by demonstrating that certain dietary fibers and resistant starch decrease intestinal inflammation in mice. The paper describing this study is published in the July 2011 issue of *The Journal of Nutrition*.

The researchers studied two types of laboratory mice: a healthy "wild-type" variety and one with a mutation resulting in intestinal inflammation due to impaired immune function (IL-10^{-/-} mice). Mice were randomized to consume either a control diet or one containing 4 g dietary fiber/100 g diet. Several different types of fiber were tested, as were two combinations. Mice were followed for 47 d, during which time they were monitored daily for clinical signs of disease associated with intestinal inflammation. At the conclusion of the study, samples of the intestinal tract, lymph nodes, and spleen were removed, examined for the presence of inflammatory lesions, immune cell distribution, and pro- and anti-inflammatory substances.

Consumption of three types of fiber (resistant starch, inulin, and soluble corn fiber) as well as a combination of resistant starch and Biogum reduced noticeable signs of intestinal disease in the IL-10^{-/-} mice. There were also significant effects of several of the fiber types on immune function and colonic gene expression related to inflammation. For instance, in the control mice, soluble corn fiber, resistant starch, and inulin decreased interferon gamma (IFN γ) production, and consumption of resistant starch enhanced the spleen's ability to produce interleukin-10 (IL-10) in wild-type mice. Together, these findings suggest that various types of dietary fiber and indigestible starches may suppress intestinal inflammation in a coordinated manner by targeting immune cell function and modulating gene expression in the intestine. Additional studies are needed to determine if these beneficial effects are also experienced by patients with IBD.

Reference Bassaganya-Riera J, DiGuardo M, Viladomiu M, deHorna A, Sanchez S, Einerhand AWC, Sanders L, Hontecillas R. Soluble fibers and resistant starch ameliorate disease activity in interleukin-10-deficient

mice with inflammatory bowel disease. *Journal of Nutrition* 141:1319-1325, 2011.

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