

## CRP May Predict Lung Cancer Risk in Smokers

Elevated levels of the inflammatory marker C-reactive protein (CRP) may greatly assist in identifying smokers who have abnormal airway lesions that are likely to progress to lung cancer, according to a recent report from the British Columbia Cancer Agency.\*

Chronic inflammation is implicated in the development of pre-cancerous and cancerous lesions of the airways and lungs. Until now, however, it has been unclear whether circulating biomarkers of inflammation could predict when abnormal airway lesions are likely to progress to more advanced stages.

At the study's onset, the Canadian team measured CRP levels in 65 former and current smokers, all of whom had at least one site of bronchial dysplasia. Marked by abnormal cell growth in the bronchial tubes, bronchial dysplasia may be a precursor of squamous cell lung carcinoma.



Six months later, the research team measured CRP levels and conducted repeat bronchial biopsies to assess for progressive dysplasia, defined as areas of dysplasia that had worsened by two grades of development or development of new lesions. In the one half of study participants who developed progressive dysplastic lesions after six months, baseline CRP levels were 64% higher than in those without progressive disease. Only one of eight participants with a baseline CRP level of less than 0.5 mg/L developed progressive dysplasia, while 31 of 57 participants with CRP levels greater than or equal to 0.5 mg/L developed progressive disease. Thus, people with higher CRP levels were nearly 10 times more likely to develop progressive disease than those with lower levels.

According to the research team, plasma CRP "appears to have excellent predictive powers in identifying participants with bronchial dysplastic lesions whose lesions progress to more advanced stages of dysplasia." The investigators noted that further studies are needed to assess exactly how CRP influences the pathogenesis of lung cancer.

—Elizabeth Wagner, ND

### Reference

- \* Sin DD, Man SF, McWilliams A, Lam S. Progression of airway dysplasia and C-reactive protein in smokers at high risk of lung cancer. *Am J Respir Crit Care Med*. 2006 Mar 1;173(5):535-9.



## OMEGA-3 FATTY ACIDS BOOST BONE HEALTH

Marine-derived omega-3 fatty acids, particularly DHA (docosahexaenoic acid), increase calcium absorption and deposition in bone, according to researchers in New Zealand.\*

Marine sources of omega-3 fatty acids are rich in DHA and EPA (eicosapentaenoic acid), while plant-derived sources provide alpha-linolenic acid, which serves as the precursor of DHA and EPA in humans.

Forty male rats, 10 in each of four groups, were fed a semi-synthetic diet supplemented with corn oil, evening primrose oil, fish oil, or tuna oil for six weeks. Scientists then assessed calcium absorption, bone mineral density, bone calcium content, and bone biomechanics of the test subjects.

The rats fed tuna oil absorbed significantly more calcium than the control group fed corn oil. In addition, the rats fed fish or tuna oil excreted less calcium compared to the rats fed corn oil. Bone calcium content was significantly higher in the tuna oil group than in the corn oil group. The tuna oil group demonstrated higher bone mineral density of the femur and spine than did the corn oil group. Higher levels of DHA in red blood cell membranes were significantly correlated with higher bone density and bone calcium content.

Marine-derived omega-3 fatty acid consumption thus helped to increase the bioavailability of dietary calcium and support its integration into bone tissue. Tuna oil, which is particularly rich in DHA, appeared to more effectively support bone health than fish oil, in which EPA predominates. These findings suggest that consumption of marine-derived omega-3 fatty acids, particularly DHA, may improve calcium absorption, optimize bone density, and offer protection against conditions such as osteoporosis.

—Linda M. Smith, RN

### Reference

- \* Kruger MC, Schollum LM. Is docosahexaenoic acid more effective than eicosapentaenoic acid for increasing calcium bioavailability? *Prostaglandins Leukot Essent Fatty Acids*. 2005 Nov;73(5):327-34.

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