Everyday Nutrition Solutions You Can Use

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IN THIS EDITION

STUDY SHOWS INCREASED HEME IRON INTAKE DOES NOT CONTRIBUTE TO OXIDATIVE STRESS AND INFLAMMATION, TWO IMPORTANT RISK FACTORS FOR DIABETES AND HEART DISEASE.

Recent research results support the claim that partially substituting refined carbohydrates with lean proteins in protein-rich diets may benefit weight loss and the risk for cardiovascular disease. But the concern that increased red meat intake may contribute to the risk of coronary heart disease and type 2 diabetes remains prevalent. One supposition supporting this concern is that iron from red meat may increase iron stores causing oxidative stress and inflammation. To assess this supposition, researchers at the University of Western Australia designed a study to determine whether an increased intake of about 5 ounces per day of unprocessed lean red meat, partially replacing carbohydrate-rich foods, would negatively influence markers of oxidative stress and inflammation.

Participants were divided into two groups. For an 8 week period, individuals in the control group maintained their usual diets while those in the red meat group partially replaced energy from carbohydrates with energy from unprocessed lean red meat. The objective for the group was an increase of about 7-8% of total energy intake from lean red meat. BMI did not differ between groups at baseline and did not change during the study interval. Energy and nutrient intakes did not differ between groups at baseline. During the study, the red meat group had higher intakes of protein and iron and lower intakes of carbohydrates.

The groups did not differ in markers of iron status at baseline. At 8 weeks, the red meat group showed significantly lowered serum iron concentrations and serum transferrin saturation compared to the control group. This was an unexpected result but the authors suggest that the human innate control of iron absorption, preventing iron overload, is responsible.

Red meat and heme-iron intake has been associated with y-glytamyltransferase (GGT), a risk factor for cardiovascular disease, type 2 diabetes, and mortality from cardiovascular disease. Data from this study showed that an increase in lean red meat intake (approximately 4-5 ounces/d cooked meat) and heme iron intake (3.2mg/d total iron) does not elevate GGT.

The authors conclude that the results of this study are inconsistent with the suggestion that a modest increase of heme-iron intake from red meat increases oxidative stress. In fact, the partial substitution of carbohydrates with lean red meat reduced some markers of inflammation and caused no significant change in others. This result indicates a decreased risk for oxidative stress and inflammation, both markers for heart disease and type 2 diabetes.

Citation:
Increased Lean Red Meat Intake Does Not Elevate Markers of Oxidative Stress and Inflammation in Humans.

Hodgson JM, Ward NC, Burke V, Beilin LJ, Puddey IB. The Journal of Nutrition, 2007 Feb;137(2):363-7.

To read the abstract, go to Increased Lean Red Meat Intake Does Not Elevate Markers of Oxidative Stress and Inflammation in Humans.

ANIMAL SOURCE FOODS IMPROVE VITAMIN B_{12} STATUS IN KENYAN SCHOOL CHILDREN

Low plasma vitamin B_{12} concentration has been associated with anemia, neuropsychiatric abnormalities and altered neurological function. Like the populations of many other countries with low intake of animal source foods (ASF), Kenyan school children have a high prevalence of low plasma vitamin B_{12} concentrations. Other than the lack of accessibility to ASF, another possible explanation for vitamin B_{12} deficiency is malabsorption of the food-bound vitamin due to infection with *Helicobacter pylori* or bacterial overgrowth. If this is the case, feeding interventions with ASF would not be effective for improving vitamin B_{12} status.

In this study conducted by representatives of several universities, vitamin B_{12} status was investigated as a sub-study within the Global Livestock Collaborative Research Support Program. Twelve primary schools were randomly assigned to one of four groups: 1) control - no food provided (n=120), 2) githeri snack - a vegetarian stew of maize, beans, and vegetables (n=133), 3) githeri + milk snack (n=131), and 4) githeri + meat snack (minced beef) (n= 119) for a two year period. Supplemental feeding took place five days per week during school time, which was nine months per year in intervals of three months in school and one month off.

The children in the groups ranged from 6 to 14 years of age and were moderately stunted. The degree of stunting differed among groups, at baseline, with the greatest number of children with acute stunting in the githeri + meat group. The highest prevalence of low plasma vitamin B_{12} concentrations, at baseline, was also in the githeri + meat group. At baseline for all groups, the intake of vitamin B_{12} was substantially less than the estimated average requirement and correlated with the percent of energy from ASF.

After one and two years respectively, children in the githeri + milk group and the githeri + meat group had the fewest children with the low plasma vitamin B_{12} concentrations. The prevalence of deficiency during the interval of the study changed from 55.6% to 4.5% in the githeri + meat group and 41.0% to 8.9% in the githeri + milk group. These results show the probablility that low plasma vitamin B_{12} concentrations in these rural Kenyan school children are caused by inadequate intake of ASF and not malabsorption.

Citation:
Low Plasma Vitamin B12 in Kenyan School Children Is Highly Prevalent and Improved by Supplemental Animal Source Foods. mcLean ED, Allen LH, Neumann CG, Peerson JM, Siekmann JH, Murphy SP, Bwibo NO, Demment MW. The Journal of Nutrition, 2007 Mar;137(3):676-682.

To read the abstract, go to Low Plasma Vitamin B_{12} in Kenyan School Children Is Highly Prevalent and Improved by Supplemental Animal Source Foods.

NEWSLETTER TOOLS

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