

## Metabolic Syndrome

### Dietary Patterns Are Associated with Metabolic Syndrome in an Urban Mexican Population

E. Denova-Gutiérrez, S. Castañón, J.O. Talavera, K. Gallegos-Carrillo, M. Flores, D. Dosamantes-Carrasco, et al.  
*Journal of Nutrition*, Vol. 140, No. 10; pp. 1855-1863, 2010

Link to full text: <http://jn.nutrition.org/cgi/content/full/140/10/1855>

**Significance:** A diet high in soft drinks, refined grains, corn tortillas, pastries, seafood, and whole grains was associated with risk of metabolic syndrome.

Exploratory factor analysis was used in this study to examine whether particular dietary patterns are related to risk of metabolic syndrome (MetS) in 5240 Mexican adults aged 20–70 y in the Health Workers Cohort Study. In a cross-sectional analysis, dietary patterns in relation to MetS were examined, defined using criteria from the Adult Treatment Panel III. Factor analysis revealed 3 major dietary patterns: prudent, Western, and high protein/fat. The prevalence of MetS was 26.6%. After adjustment for potential confounders, compared with participants in the lowest tertile of the Western pattern, those in the highest tertile had higher odds ratios (OR) for high fasting glucose (OR, 1.67; 95% CI: 1.36–2.06), low serum HDL cholesterol (OR, 1.55; 95% CI: 1.31–1.83), and MetS (OR, 1.56; 95% CI, 1.31–1.88). No significant associations between other patterns and MetS were found.

### Effects of Margarines and Butter Consumption on Lipid Profiles, Inflammation Markers and Lipid Transfer to HDL Particles in Free-living Subjects with the Metabolic Syndrome

A.C.M. Gagliardi, R.C. Maranhão, H.P. de Sousa, E.J. Schaefer, R.D. Santos  
*European Journal of Clinical Nutrition*, Vol. 64, No. 10; pp. 1141-1149, 2010

Link to full text: <http://www.nature.com/ejcn/journal/v64/n10/full/ejcn2010122a.html>

**Significance:** Consumption of plant sterol and no-trans-fat margarines within recommended amounts reduced, respectively, Apo-B concentrations and the ability of HDL to accept lipids in subjects with metabolic syndrome.

This randomized, single-blind study examined the effects of daily servings of butter, no-trans-fat margarine and plant sterol margarine, within recommended amounts, on plasma lipids, apolipoproteins (Apos), biomarkers of inflammation and endothelial dysfunction, and on the transfer of lipids to HDL particles in free-living subjects with the metabolic syndrome. Fifty-three adults with metabolic syndrome (mean age 54 years) received isocaloric servings of butter, no-trans-fat margarine or plant sterol margarine in addition to their usual diets for 5 weeks. There was a significant reduction in Apo-B (–10.4 %, P=0.043) and in the Apo-B/Apo-A-1 ratio (–11.1%, P=0.034) with plant sterol margarine. No changes in plasma lipids were noticed with butter and no-trans-fat margarine. Transfer rates of lipids to HDL were reduced in the no-trans-fat margarine group: triglycerides –42.0%, (P<0.001 vs butter and sterol

margarine) and free cholesterol -16.2% (P=0.006 vs sterol margarine).

## Cardiovascular Disease

### Grape Polyphenols Do Not Affect Vascular Function in Healthy Men

L.A.J. van Mierlo, P.L. Zock, H.C.M. van der Knaap, R. Draijer

*Journal of Nutrition*, Vol. 140, No. 10; pp. 1769-1773, 2010

Link to full text: <http://jn.nutrition.org/cgi/content/full/140/10/1769>

**Significance:** Consumption of grape polyphenols has no major impact on flow-mediated dilation in healthy men.

This randomized, double-blind, placebo-controlled crossover study examined the chronic effect of polyphenol-rich solids derived from either a wine grape mix or grape seed on flow-mediated dilation (FMD) in 35 healthy males. Three 2-wk intervention periods were separated by 1-wk washout periods. The test products were capsules containing 800 mg of polyphenols. At the end of each intervention period, effects were measured after consumption of a low-fat breakfast (~751 kJ, 25% fat) and a high-fat lunch (~3136 kJ, 78% fat). After the low-fat breakfast, the treatments did not significantly affect FMD. The absolute difference after the wine grape solid treatment was -0.4% (95%CI= -1.8 to 0.9; P=0.77) and after grape seed solids, 0.2% (95%CI= -1.2 to 1.5; P=0.94) compared with after the placebo treatment. FMD effects after the high-fat lunch and effects on secondary outcomes also showed no consistent differences between both of the grape solids and placebo treatment.

### Association Between Alcohol Consumption and Carotid Intima–Media Thickness in a Healthy Population:

#### Data of the STRATEGY Study (Stress, Atherosclerosis and ECG Study)

B-C. Zyriax, K. Lau, T. Klähn, H. Boeing, H. Völzke, E. Windler

*European Journal of Clinical Nutrition*, Vol. 64, No. 10; pp. 1199-1206, 2010

Link to full text: <http://www.nature.com/ejcn/journal/v64/n10/full/ejcn2010144a.html>

**Significance:** The STRATEGY study revealed a positive association between alcohol consumption and carotid intima-media thickness in healthy men aged 30–70 years.

This analysis of the Stress Atherosclerosis and ECG Study (STRATEGY study) investigated the relation between alcohol intake and intima–media thickness (IMT) in a selectively healthy population. In a cross-sectional study, laboratory values, anthropometric data, nutrition habits and physical activity were assessed in 106 men and 107 women, evenly distributed between 30 and 70 years. In men, a significant positive correlation between daily alcohol consumption and IMT was observed (P<0.0001), whereas in women the positive correlation was not significant. The type of beverage consumed did not affect this finding. The mean IMT was significantly higher in men with an alcohol intake above the upper limit of 20 g/day than in men with an alcohol intake <20 g/day (P<0.001). According to a stepwise linear regression model adjusted for age, conventional risk factors, nutrition and physical activity, the IMT increases by 0.0253 mm per 21.4 g/day intake of alcohol in men (P<0.05).

## **Effect of Increased Consumption of Whole-Grain Foods on Blood Pressure and other Cardiovascular Risk Markers in Healthy Middle-Aged Persons: A Randomized Controlled Trial**

P. Tighe, G. Duthie, N. Vaughan, J. Brittenden, W.G. Simpson, S. Duthie, et al.

*American Journal of Clinical Nutrition*, Vol. 92, No. 4; pp. 733-740, 2010

Link to full text: <http://www.ajcn.org/cgi/content/full/92/4/733>

**Significance:** Daily consumption of 3 portions of whole-grain foods can significantly reduce cardiovascular disease risk in middle-aged people mainly through blood pressure–lowering mechanisms.

The effects of consumption of 3 daily portions of whole-grain foods (provided as only wheat or a mixture of wheat and oats) on markers of cardiovascular disease (CVD) risk were assessed in a randomized controlled dietary trial in middle-aged healthy individuals. After a 4-wk run-in period with a refined diet, volunteers were randomized to a control (refined diet), wheat, or wheat + oats group for 12 wk. A total of 233 volunteers were recruited; 24 withdrew and 3 were excluded. Systolic blood pressure (SBP) and pulse pressure were significantly reduced by 6 and 3 mmHg, respectively, in the whole-grain foods groups compared with the control group. Systemic markers of CVD risk remained unchanged apart from cholesterol concentrations, which decreased slightly but significantly in the refined group. The observed decrease in SBP could decrease the incidence of coronary artery disease and stroke by 15% and 25%, respectively.

## **Lipids**

### **Dietary Interventions that Lower Lipoproteins Containing Apolipoprotein C-III are More Effective in Whites than in Blacks: Results of the OmniHeart Trial**

J.D. Furtado, H. Campos, A.E. Sumner, L.J. Appel, V.J. Carey, F.M. Sacks

*American Journal of Clinical Nutrition*, Vol. 92, No. 4; pp. 714-722, 2010

Link to full text: <http://www.ajcn.org/cgi/content/full/92/4/714>

**Significance:** Dietary efforts to lower triglyceride and apo C-III may be more effective in whites than in blacks.

This randomized, 3-period feeding study [OmniHeart (Optimal Macronutrient Intake Trial to Prevent Heart Disease)], compared the concentration of and dietary effects on apo C-III–containing lipoproteins in 89 blacks and 73 whites. Lipoprotein concentrations were measured in the subjects who consumed self-selected diets (baseline) and after 3 healthful diets emphasizing carbohydrate, unsaturated fat, or protein. Participants had prehypertension or hypertension, and 79% were overweight or obese. At baseline, blacks had lower apo C-III in total plasma, VLDL, and LDL than did whites. Unsaturated fat and protein diets lowered plasma apo C-III (16% and 18%, respectively) and triglyceride (12% and 21%, respectively) in whites but not in blacks, reducing racial differences. Blacks had a lower concentration of atherogenic LDL with apo C-III at baseline and after study diets (34–41% lower,  $P < 0.02$ ). The molar ratio of apo E to apo B was higher in blacks than in whites in total plasma and LDL at baseline and after the study diets.

## Physicochemical Properties of Oat $\beta$ -glucan Influence its Ability to Reduce Serum LDL Cholesterol in Humans: A Randomized Clinical Trial

T.M.S. Wolever, S.M. Tosh, A.L. Gibbs, J. Brand-Miller, A.M. Duncan, V. Hart, et al.

*American Journal of Clinical Nutrition*, Vol. 92, No. 4; pp. 723-732, 2010

Link to full text: <http://www.ajcn.org/cgi/content/full/92/4/723>

**Significance:** The physicochemical properties of oat  $\beta$ -glucan should be considered when assessing the cholesterol-lowering ability of oat-containing products.

This double-blind, parallel-design, multicenter clinical trial determined whether consumption of 3 g high-molecular weight (MW) oat  $\beta$ -glucan/d would reduce LDL-cholesterol and whether LDL-cholesterol lowering was related to the log(MW x amount of oat  $\beta$ -glucan solubilized in the intestine (C)) of oat  $\beta$ -glucan. Subjects with LDL-cholesterol 3.0 and 5.0 mmol/L (n=367 enrolled; n=345 completed) were randomly assigned to receive cereal containing wheat fiber (n=87) or 3g high-MW (2,210,000g/mol, n=86), 4g medium-MW (850,000g/mol, n=67), 3g medium-MW (530,000g/mol, n=64), or 4g low-MW (210,000g/mol, n=63) oat  $\beta$ -glucan/d (divided doses, twice daily) for 4 wk. LDL-cholesterol was significantly less with 3g high-MW, 4g medium-MW, and 3g medium-MW oat  $\beta$ -glucan cereals than with the wheat-fiber cereal by 0.21 (5.5%; 95%CI: -0.11, -0.30), 0.26 (6.5%; 95%CI: -0.14, -0.37), and 0.19 (4.7%; 95%CI: -0.08, -0.30) mmol/L, respectively. By analysis of covariance, log(MW x C) was a significant determinant of LDL-cholesterol (P=0.003).

## Sugars

### Dietary Sources of Energy, Solid Fats, and Added Sugars among Children and Adolescents in the United States

J. Reedy, S.M. Krebs-Smith

*Journal of the American Dietetic Association*, Vol. 110, No. 10; pp. 1477-1484, 2010

Link to full text: [http://www.adajournal.org/article/S0002-8223\(10\)01189-2/fulltext](http://www.adajournal.org/article/S0002-8223(10)01189-2/fulltext)

**Significance:** There is an overlap between the major sources of energy and empty calories: soda, grain desserts, pizza, and whole milk.

This study identified top dietary sources of energy, solid fats, and added sugars among 2- to 18-year-olds in the U.S. Data from the NHANES were used to examine food sources of total energy (data from 2005-2006) and energy from solid fats and added sugars (data from 2003-2004). The top sources of energy for 2- to 18-year-olds were grain desserts (138 kcal/day), pizza (136 kcal/day), and soda (118 kcal/day). Sugar-sweetened beverages (soda and fruit drinks combined) provided 173 kcal/day. Nearly 40% of total energy consumed (798 of 2,027 kcal/day) by 2- to 18-year-olds was in the form of empty calories (433 kcal from solid fat and 365 kcal from added sugars). Consumption of empty calories far exceeded the corresponding discretionary calorie allowance for all sex-age groups (which range from 8%-20%). Half of empty calories came from six foods: soda, fruit drinks, dairy desserts, grain desserts, pizza, and whole milk.

## Caffeine

### A Review of the Epidemiologic Evidence Concerning the Reproductive Health Effects of Caffeine

#### Consumption: A 2000–2009 Update

J.D. Peck, A. Leviton, L.D. Cowan

*Food and Chemical Toxicology*, Vol. 48, No. 10; pp. 2549-2576, 2010

Link to full text: [http://www.sciencedirect.com/science?\\_ob=MIimg&\\_imagekey=B6T6P-509W7CP-3-1&\\_cdi=5036&\\_user=10&\\_pii=S0278691510003935&\\_origin=browse&\\_zone=rslt\\_list\\_item&\\_coverDate=10%2F31%2F2010&\\_sk=999519989&\\_wchp=dGLbVlz-zSkWb&\\_md5=c2f741c125d4c074968df0ec6c7e004a&\\_ie=/sdarticle.pdf](http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6T6P-509W7CP-3-1&_cdi=5036&_user=10&_pii=S0278691510003935&_origin=browse&_zone=rslt_list_item&_coverDate=10%2F31%2F2010&_sk=999519989&_wchp=dGLbVlz-zSkWb&_md5=c2f741c125d4c074968df0ec6c7e004a&_ie=/sdarticle.pdf)

**Significance:** The weight of evidence presented in this review does not support a positive relationship between caffeine consumption and adverse reproductive or perinatal outcomes.

This review of human studies of caffeine and reproductive health published between January 2000 and December 2009 serves to update the comprehensive review published by Leviton and Cowan (2002). The adverse reproductive outcomes addressed in this review include: (1) measures of subfecundity; (2) spontaneous abortion; (3) fetal death; (4) preterm birth; (5) congenital malformations; and (6) fetal growth restriction. Methodologic challenges and considerations relevant to investigations of each reproductive endpoint are summarized, followed by a brief critical review of each study. The evidence for an effect of caffeine on reproductive health and fetal development is limited by the inability to rule out plausible alternative explanations for the observed associations, namely confounding by pregnancy symptoms and smoking, and by exposure measurement error.

### The Effects of Caffeine and Caffeine Withdrawal on Measures of Mood, Cognition, and Functional Magnetic Resonance Imaging

M. Addicott

Ph.D. Dissertation, 2009, Wake Forest University, The Bowman Gray School; 190 pages, publication #3380543, 2010

Link to the full dissertation: [http://gateway.proquest.com/openurl%3furl\\_ver=Z39.88-2004%26res\\_dat=xri:pqdiss%26rft\\_val\\_fmt=info:ofi/fmt:kev:mtx:dissertation%26rft\\_dat=xri:pqdiss:3380543](http://gateway.proquest.com/openurl%3furl_ver=Z39.88-2004%26res_dat=xri:pqdiss%26rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation%26rft_dat=xri:pqdiss:3380543)

**Significance:** Measures of selective attention and memory were not negatively affected by abstinence and caffeine improved these measures in an abstained state and in a normal state.

The acute effects of caffeine were investigated among moderate habitual caffeine consumers in an abstained state following 30 hours of caffeine abstinence, and in a normal caffeinated state following normal caffeine use. It was hypothesized that the effects of caffeine on measures of mood, cognition, and functional imaging would be greater in an abstained state than in a normal caffeinated state. The first experiment compared a retrospective interview and a prospective diary of caffeine use against salivary caffeine concentrations obtained during normal caffeine use.

Moderate daily caffeine consumers who experienced withdrawal symptoms were included in the second experiment. Withdrawal symptoms were reported in the abstained state, and caffeine had a greater positive effect on mood and choice reaction time in the abstained, than in the normal state, as hypothesized. The effects of caffeine and withdrawal on the blood oxygen level dependent (BOLD) signal were also investigated. Changes in cerebral blood flow, salivary caffeine concentrations, and response time to a visual-motor task predicted different parameters of the BOLD response.

## Type 2 diabetes

### Glycemic Responses to Sweetened Dried and Raw Cranberries in Humans with Type 2 Diabetes

T. Wilson, J.L. Luebke, E.F. Morcomb, E.J. Carrell, M.C. Leveranz, L. Kobs, et al.

*Journal of Food Science*, Vol. 75, No. 8; pp. H218–H223, 2010

Link to full text: <http://onlinelibrary.wiley.com/doi/10.1111/j.1750-3841.2010.01800.x/full>

**Significance:** Sweetened dried cranberries containing less sugar were associated with a favorable glycemic and insulinemic response in type 2 diabetics.

The metabolic response to sweetened dried cranberries (SDC), raw cranberries (RC), and white bread (WB) was assessed in 13 type 2 diabetics. Subjects received WB (57g, 160 cal, 1g fiber), RC (55g, 21 cal, 1g fiber), SDC (40g, 138 cal, 2.1g fiber), and SDC-containing less sugar (SDC-LS, 40g, 113 cal, 1.8g fiber + 10g polydextrose). Plasma glucose (mmol/L) peaked significantly at 60 min for WB, and at 30 min for RC, SDC, and SDC-LS at  $9.6\pm 0.4$ ,  $7.0\pm 0.4$ ,  $9.6\pm 0.5$ , and  $8.7\pm 0.5$ , respectively. WB remained significantly elevated from the other treatments at 120 min. Plasma insulin (pmol/mL) peaked at 60 min for WB and SDC and at 30 min for RC and SDC-LS at  $157\pm 15$ ,  $142\pm 27$ ,  $61\pm 8$ , and  $97\pm 11$ , respectively. Plasma insulin for SDC-LS was significantly lower at 60 min than either WB or SDC. Insulin area under the curve values for RC and SDC-LS were both significantly lower than WB or SDC. Phenolic content of SDC and SDC-LS was found to be rich in 5-caffeoylquinic acid, quercetin-3-galactoside, and quercetin-3-galactoside, and the proanthocyanidin dimer epicatechin.

## Dietary Behaviors

### Whole-Grain Consumption Is Associated with Diet Quality and Nutrient Intake in Adults: The National Health and Nutrition Examination Survey, 1999-2004

C.E. O'Neil, T.A. Nicklas, M. Zhanovec, S. Cho

*Journal of the American Dietetic Association*, Vol. 110, No. 10; pp. 1461-1468, 2010

Link to full text: <http://www.adajournal.org/article/PIIS0002822310011910/fulltext>

**Significance:** Adults who consumed the most servings of whole grains had better diet quality and nutrient intakes.

The association of consumption of whole grains with diet quality and nutrient intake was examined using cross-

sectional data from 1999-2004 NHANES. Adults aged 19-50 years (n=7,039) and those  $\geq 51$  years (n=6,237) were divided into four whole-grain consumption groups:  $\leq 0$  to  $< 0.6$ ,  $\geq 0.6$  to  $< 1.5$ ,  $\geq 1.5$  to  $< 3.0$ , and  $\geq 3.0$  servings (ounce equivalents)/day. Adults aged 19-50 and  $\geq 51$  years consumed a mean of 0.63 and 0.77 servings of whole grains/day, respectively. For both age groups, diet quality and intake of energy, fiber, and polyunsaturated fatty acids were significantly higher in those consuming the most servings of whole grains. Intake of total sugars (19-50 years), added sugars, saturated fatty acids, monounsaturated fatty acids, and cholesterol was significantly lower in those consuming the most servings of whole grains. Intake of all micronutrients, except vitamin B-12 and sodium, was higher among individuals who consumed the most servings of whole grains.

## Special Report

### Americans Do Not Meet Federal Dietary Recommendations

S.M. Krebs-Smith, P.M. Guenther, A.F. Subar, S.I. Kirkpatrick, K.W. Dodd

*Journal of Nutrition*, Vol. 140, No. 10; pp. 1832-1838, 2010

Link to full text: <http://jn.nutrition.org/cgi/content/full/140/10/1832>

**Significance:** Nearly the entire U.S. population consumes a diet that is not on par with recommendations.

This study demonstrated the National Cancer Institute's method of estimating the distribution of usual intake of foods and determined the proportion of the U.S. population who does not meet federal dietary recommendations using data from the 2001–2004 NHANES for 16,338 persons, aged 2 y and older. Quantities of foods reported on 24-h recalls were translated into amounts of various food groups using the MyPyramid Equivalents Database. The majority of the population did not meet recommendations for all of the nutrient-rich food groups, except total grains and meat and beans. Overconsumption of energy from solid fats, added sugars, and alcoholic beverages (empty calories) was ubiquitous. Over 80% of persons aged 71 y and over 90% of all other sex-age groups had intakes of empty calories that exceeded the discretionary calorie allowances.

## Food Allergy

### National Prevalence and Risk Factors for Food Allergy and Relationship to Asthma: Results from the National Health and Nutrition Examination Survey 2005-2006

A.H. Liu, R. Jaramillo, S.H. Sicherer, R.A. Wood, S.A. Bock, A.W. Burks, et al.

*The Journal of Allergy and Clinical Immunology*, Vol. 126, No. 4; pp. 798-806, 2010

Link to full text: [http://www.jacionline.org/article/S0091-6749\(10\)01140-1/fulltext](http://www.jacionline.org/article/S0091-6749(10)01140-1/fulltext)

**Significance:** Food allergies could be an under-recognized risk factor for problematic asthma.

Nationally representative estimates of the prevalence of and demographic risk factors for food allergy (FA) were

developed and associations of FA with asthma, hay fever, and eczema were investigated in 8203 participants in the NHANES 2005-2006. Subjects had food-specific serum IgE for peanut, cow's milk, egg white, and shrimp. Food-specific IgE and age-based criteria were used to define likely FA (LFA), possible FA, and unlikely FA and to develop estimates of clinical FA. The estimated prevalence of clinical FA was 2.5% (peanut, 1.3%; milk, 0.4%; egg, 0.2%; shrimp, 1.0%; not mutually exclusive). Risk of possible FA/LFA was increased in non-Hispanic blacks (OR=3.06; 95% CI=2.14-4.36), males (1.87; 1.32-2.66), and children (2.04; 1.42-2.93). Study participants with doctor-diagnosed asthma (vs. no asthma) exhibited increased risk of all measures of food sensitization. In those with LFA, the adjusted OR for current asthma (3.8; 1.5-10.7) and an emergency department visit for asthma in the past year (6.9; 2.4-19.7) was both notably increased.

### **Can Early Introduction of Egg Prevent Egg Allergy in Infants? A Population-based Study**

J.J. Koplin, N.J. Osborne, M. Wake, P.E. Martin, L.C. Gurrin, M.N. Robinson, et al.

*The Journal of Allergy and Clinical Immunology*, Vol. 126, No. 4; pp. 807-813, 2010

Link to full text: [http://www.jacionline.org/article/S0091-6749\(10\)01173-5/fulltext](http://www.jacionline.org/article/S0091-6749(10)01173-5/fulltext)

**Significance:** Introduction of cooked egg at 4 to 6 months of age might protect against egg allergy.

This study determined whether confirmed egg allergy in 12-month-old infants was associated with duration of breast-feeding and ages of introducing egg and solids in a population-based cross-sectional study. Parents reported on infant feeding and potential confounding factors before skin prick testing for egg white. Egg-sensitized infants were then offered an egg oral food challenge. A total of 2589 infants participated. Compared with introduction at 4-6 months, introducing egg into the diet later was associated with higher risks of egg allergy (adjusted OR=1.6 [95% CI, 1.0-2.6] and 3.4 [95% CI, 1.8-6.5] for introduction at 10-12 and after 12 months, respectively). These findings persisted even in children without risk factors (OR=3.3 [95% CI, 1.1-9.9]; 10-12 months). At age 4-6 months, first exposure as cooked egg reduced the risk of egg allergy compared with first exposure as egg in baked goods (OR=0.2 [95% CI, 0.06-0.71]). Duration of breast-feeding and age at introduction of solids were not associated with egg allergy.