

## Carbohydrates

### A Cereal-Based Evening Meal Rich in Indigestible Carbohydrates Increases Plasma Butyrate the Next Morning

A.C. Nilsson, E.M. Östman, K.E.B. Knudsen, J.J. Holst, I.M.E. Björck

*Journal of Nutrition*, Vol. 140, No. 11; pp. 1932-1936, 2010

Link to full text: <http://jn.nutrition.org/content/140/11/1932.full>

**Significance:** Cereal products rich in indigestible carbohydrates may improve glucose tolerance through a mechanism involving colonic fermentation and generation of short chain fatty acids.

The role of specific colonic metabolites, i.e., short chain fatty acids, on improve glucose tolerance was examined. Plasma concentrations of acetate, propionate, and butyrate were determined in the morning in 15 healthy participants following 8 different cereal-based evening meals (50 g available starch) varying in content of indigestible carbohydrates. At a standardized breakfast following evening test meals, the postprandial glucose response (incremental area under the curve, 0–120 min) was inversely related to plasma butyrate ( $r = -0.26$ ;  $P < 0.01$ ) and acetate ( $r = -0.20$ ;  $P < 0.05$ ) concentrations. Evening meals composed of high-amylose barley kernels or high- $\beta$ -glucan barley kernels resulted in higher plasma butyrate concentrations the following morning compared with an evening meal with white wheat bread ( $P < 0.05$ ).

## Metabolic Syndrome

### Lifestyle Counseling and Supplementation with Flaxseed or Walnuts Influence the Management of Metabolic Syndrome

H. Wu, A. Pan, Z. Yu, Q. Qi, L. Lu, G. Zhang, et al.

*Journal of Nutrition*, Vol. 140, No. 11; pp. 1937-1942, 2010

Link to full text: <http://jn.nutrition.org/content/140/11/1937.full>

**Significance:** A low-intensity lifestyle education program is effective in the management of metabolic syndrome.

A 3-arm, randomized, controlled trial was conducted among 283 participants screened for metabolic syndrome (MetS) using the updated NCEP-ATP III criteria for Asian Americans. Participants were assigned to lifestyle counseling (LC) on the AHA guidelines, LC + flaxseed (30 g/d) (LCF), or LC + walnuts (30 g/d) (LCW) group. After the 12-wk intervention, the prevalence of MetS decreased significantly in all groups:  $-16.9\%$  (LC),  $-20.2\%$  (LCF), and  $-16.0\%$  (LCW). The reversion rate of MetS, i.e., those no longer meeting the MetS criteria at 12 wk, was not significantly different among groups (LC group, 21.1%; LCF group, 26.6%; and LCW group, 25.5%). The

reversion rate of central obesity was higher in the LCF (19.2%; P=0.008) and LCW (16.0%; P=0.04) groups than in the LC group (6.3%). Most of the metabolic variables were significantly reduced from baseline in all 3 groups. However, the severity of MetS was significantly reduced in the LCW group compared with the LC group among participants with confirmed MetS at baseline (P=0.045).

## Cardiovascular Disease

### n-3 Fatty Acids and Cardiovascular Events after Myocardial Infarction

D. Kromhout, E.J. Giltay, J.M. Geleijnse for the Alpha Omega Trial Group

*New England Journal of Medicine*, Vol. 363, No. 21; pp. 2015-2026, 2010

Link to full text: <http://www.nejm.org/doi/full/10.1056/NEJMoa1003603>

**Significance:** Low-dose supplementation with EPA–DHA or ALA did not significantly reduce the rate of major cardiovascular events among patients who had had a myocardial infarction and who were receiving state-of-the-art antihypertensive, antithrombotic, and lipid-modifying therapy.

This multicenter, double-blind, placebo-controlled trial examined the effects of the n-3 fatty acids EPA, DHA and ALA on the rate of cardiovascular events among 4837 patients who have had a myocardial infarction and who were receiving antihypertensive, antithrombotic, and lipid-modifying therapy. Subjects were randomly assigned to receive one of four trial margarines for 40 months: one supplemented with EPA and DHA (with an additional intake of 400mg/day of EPA–DHA); one supplemented with ALA (with an additional intake of 2g/day of ALA); one supplemented with EPA–DHA and ALA; or a placebo margarine. The patients consumed 18.8g of margarine/day, which resulted in additional intakes of 226mg of EPA combined with 150mg of DHA, 1.9g of ALA, or both, in the active-treatment groups. During follow-up, a major cardiovascular event occurred in 671 patients (13.9%). Neither EPA–DHA nor ALA reduced this primary end point. In women, ALA, as compared with placebo and EPA–DHA alone, was associated with a reduced rate of major cardiovascular events that approached significance.

### Dietary Protein and Risk of Ischemic Heart Disease in Middle-Aged Men

S.R. Preis, M.J. Stampfer, D. Spiegelman, W.C. Willett, E.B. Rimm

*American Journal of Clinical Nutrition*, Vol. 92, No. 5; pp. 1265-1272, 2010

Link to full text: <http://www.ajcn.org/content/92/5/1265.full>

**Significance:** Higher intake of animal protein may be associated with an increased risk of ischemic heart disease in “healthy” men.

This prospective study examined the association between dietary protein and risk of ischemic heart disease (IHD) in 43,960 men in the Health Professionals Follow-Up Study. Intake of protein and other nutrients were assessed using a validated food-frequency questionnaire at 4 time points during follow-up. During 18 y of follow-up, 2959 incident cases of IHD were documented. The RR of IHD was 1.08 (95% CI: 0.95, 1.23; P for trend=0.30) comparing the top

with the bottom quintile of percentage of energy from total protein. RRs for animal and vegetable protein were 1.11 (95% CI: 0.97, 1.28; P for trend=0.18) and 0.93 (95% CI: 0.78, 1.12; P for trend=0.49), respectively. When the population was restricted to “healthy” men (those free of hypertension, hypercholesterolemia, and diabetes at baseline), the RR of IHD was 1.21 (95% CI: 1.01, 1.44; P for trend=0.02) for total protein, 1.25 (95% CI: 1.04, 1.51; P for trend=0.02) for animal protein, and 0.93 (95% CI: 0.72, 1.19; P for trend=0.65) for vegetable protein.

## Lipids

### Effects of a Sphingolipid-Enriched Dairy Formulation on Postprandial Lipid Concentrations

L. Ohlsson, H. Burling, R-D. Duan, Å. Nilsson

*European Journal of Clinical Nutrition*, Vol. 64, No. 11; pp. 1344–1349, 2010

Link to full text: <http://www.nature.com/ejcn/journal/v64/n11/full/ejcn2010164a.html>

**Significance:** The sphingolipid-rich buttermilk drink may affect cholesterol concentrations in triglyceride-rich lipoproteins, but has no effect on postprandial TG after a breakfast with butter fat as the major lipid.

This study examined whether a dairy formulation based on fractionation of buttermilk, which is enriched in milk polar lipids containing sphingolipids (SL), when ingested with a standard breakfast, exerted a different influence on postprandial lipids than an equivalent control formulation lacking the polar milk lipids. Eighteen healthy males, 22–65 years, ingested a high-fat (40 g) standard breakfast together with a milk-like formulation containing 975 mg of milk SL (A) or the control formulation (B). Postprandial levels of TG, total, low-density lipoprotein (LDL) and high-density lipoprotein (HDL) cholesterol, apolipoprotein AI (ApoAI), ApoB, glucose and insulin were measured 1 to 7 h after the meal. No difference was seen between experimental and control groups in postprandial levels of TG, insulin, ApoA1 or ApoB. After 1 hour there was a trend of lower cholesterol concentrations in large TG-rich lipoproteins after formulation A.

## Sugars

### Fructose-Rich Beverages and Risk of Gout in Women

H.K. Choi, W. Willett, G. Curhan

*Journal of the American Medical Association*, Vol. 304, No. 20; pp. 2270–2278, 2010

Link to full text: <http://jama.ama-assn.org/cgi/content/full/304/20/2270>

**Significance:** Consumption of fructose-rich beverages is associated with an increased risk of incident gout.

The relationship between intake of fructose-rich beverages and fructose and the risk of incident gout among women was examined in 78,906 women from the Nurses' Health Study who had no history of gout at baseline. During 22 years of follow-up, 778 incident cases of gout were documented. Increasing intake of sugar-sweetened soda was independently associated with increasing risk of gout. Compared with consumption of <1 serving/month of sugar-

sweetened soda, the multivariate relative risk (RR) of gout for 1 serving/day was 1.74 (95% CI=1.19-2.55) and for  $\geq 2$  servings/day was 2.39 (95% CI=1.34-4.26). The corresponding RRs for orange juice were 1.41 (95% CI=1.03-1.93) and 2.42 (95% CI=1.27-4.63). The absolute risk differences corresponding to these RRs were 36 and 68 cases/100,000 person-years for sugar-sweetened soda and 14 and 47 cases/100,000 person-years for orange juice, respectively. Compared with the lowest quintile of fructose intake, the multivariate RR of gout in the top quintile was 1.62 (95% CI=1.20-2.19) (risk difference of 28 cases/100,000 person-years).

## Hypertension

### Effects of Concord Grape Juice on Ambulatory Blood Pressure in Prehypertension and Stage 1 Hypertension

M.M. Dohadwala, N.M. Hamburg, M. Holbrook, B.H. Kim, M-A. Duess, A. Levit, et al.

*American Journal of Clinical Nutrition*, Vol. 92, No. 5; pp. 1052-1059, 2010

Link to full text: <http://www.ajcn.org/content/92/5/1052.full>

**Significance:** No effect of grape juice on ambulatory blood pressure was observed in this cohort with modestly elevated blood pressure.

This double-blind crossover study compared the effects of grape juice (7 mL/kg/d) and matched placebo beverage on 24-h ambulatory blood pressure, stress-induced changes in blood pressure, and biochemical profile in 64 patients with prehypertension and stage 1 hypertension. Participants consumed each beverage for 8 wk with a 4-wk rest period between beverages. Baseline mean ( $\pm$ SD) cuff blood pressure was 138 $\pm$ 7 (systolic)/82 $\pm$ 7 (diastolic) mmHg. No effects on the primary endpoint of 24-h mean systolic blood pressure, diastolic blood pressure, or stress-induced changes in blood pressure were observed. At baseline, nocturnal pressure was 8.3 $\pm$ 7.1% lower at night than during daytime. The mean nocturnal dip increased 1.4 percentage points after grape juice and decreased 2.3 percentage points after placebo (P=0.005). Fasting blood glucose was 91 $\pm$ 10 mg/dL at baseline for the entire cohort. Glucose decreased 2 mg/dL after consumption of grape juice and increased 1 mg/dL after consuming the placebo (P=0.03).

## Glycemic Index

### Diets with High or Low Protein Content and Glycemic Index for Weight-Loss Maintenance

T.M. Larsen, S-M. Dalskov, M. van Baak, S.A. Jebb, A. Papadaki, A.F.H. Pfeiffer, et al. for the Diet, Obesity, and Genes (Diogenes) Project

*New England Journal of Medicine*, Vol. 363, No. 22; pp. 2102-2113, 2010

Link to full text: <http://www.nejm.org/doi/full/10.1056/NEJMoa1007137>

**Significance:** A modest increase in protein content and a modest reduction in the glycemic index led to an improvement in study completion and maintenance of weight loss.

Overweight adults who had lost  $\leq 8\%$  of their initial body weight with an 800-kcal diet were randomly assigned to one of five ad libitum diets to prevent weight regain over a 26-week period: a low-protein and low-glycemic-index

diet, a low-protein and high-glycemic-index diet, a high-protein and low-glycemic-index diet, a high-protein and high-glycemic-index diet, or a control diet. A total of 1209 adults were screened and 938 entered the low-calorie-diet phase of the study; 773 who completed that phase were randomly assigned to one of the five maintenance diets; 548 completed the intervention (71%). The mean initial weight loss with the low-calorie diet was 11.0 kg. Only the low-protein–high-glycemic-index diet was associated with subsequent significant weight regain (1.67 kg; 95% CI=0.48-2.87). The weight regain was 0.93 kg less (95% CI=0.31-1.55) in the groups assigned to a high-protein diet than in those assigned to a low-protein diet (P=0.003) and 0.95 kg less (95% CI=0.33-1.57) in the groups assigned to a low-glycemic-index diet than in those assigned to a high-glycemic-index diet (P=0.003).

## Caffeine

### Caffeine Consumption During Pregnancy and Risk of Preterm Birth: A Meta-Analysis

E. Maslova, S. Bhattacharya, S-W. Lin, K.B. Michels

*American Journal of Clinical Nutrition*, Vol. 92, No. 5; pp. 1120-1132, 2010

Link to full text: <http://www.ajcn.org/content/92/5/1120.full>

**Significance:** No important association between caffeine intake during pregnancy and the risk of preterm birth for cohort and case-control studies was observed.

The association between caffeine consumption during pregnancy and risk of preterm birth was examined in a meta-analysis. The authors searched MEDLINE and EMBASE articles published between 1966 and July 2010, cross-referenced reference lists of the retrieved articles, and identified 15 cohort and 7 case-control studies that met inclusion criteria for this meta-analysis. The combined odds ratios (ORs) obtained by using fixed-effects models for cohort studies were 1.11 (95% CI=0.96-1.28), 1.10 (95% CI=1.01-1.19), and 1.08 (95% CI=0.93-1.27) for risk of preterm birth comparing the highest with the lowest level of caffeine intake (or no intake) (mg/d) during the first, second, and third trimesters, respectively. Results for the case-control studies yielded no associations for the first (OR=1.07; 95% CI=0.84-1.37), second (OR=1.17; 95% CI=0.94-1.45), or third (OR=0.94; 95% CI=0.79-1.12) trimesters. No overall heterogeneity was found by region, publication decade, exposure and outcome assessment, caffeine sources, or adjustment for confounding, which was largely driven by individual studies.

## Special Reports

### Coffee and Tea Intake and Risk of Brain Tumors in the European Prospective Investigation into Cancer and Nutrition (EPIC) Cohort Study

D.S. Michaud, V. Gallo, B. Schlehofer, A. Tjønneland, A. Olsen, K. Overvad, et al.

*American Journal of Clinical Nutrition*, Vol. 92, No. 5; pp. 1145-1150, 2010

Link to full text: <http://www.ajcn.org/content/92/5/1145.full>

**Significance:** An inverse association was found between total coffee and tea consumption and risk of glioma that was consistent with previous findings.

This study examined the relation between coffee and tea intake and the risk of glioma and meningioma. Data on coffee and tea intake were collected from men and women recruited into the EPIC cohort study. Over an average of 8.5 y of follow-up, 343 cases of glioma and 245 cases of meningioma were newly diagnosed in 9 countries. No associations were observed between coffee, tea, or combined coffee and tea consumption and risk of either type of brain tumor when using quantiles based on country-specific distributions of intake. However, a significant inverse association was observed for glioma risk among those consuming  $\geq 100$  mL coffee and tea/day compared with those consuming  $< 100$  mL/d (hazard ratio: 0.66; 95% CI=0.44-0.97). The association was slightly stronger in men (hazard ratio: 0.59; 95% CI=0.34-1.01) than in women (hazard ratio: 0.74; 95% CI=0.42-1.31).

#### **A Review and Meta-Analysis of Prospective Studies of Red and Processed Meat Intake and Prostate Cancer**

D.D. Alexander, P.J. Mink, C.A. Cushing, B. Scurman

*Nutrition Journal*, Vol. 9, p. 50, 2010

Link to full text: <http://www.nutritionj.com/content/9/1/50>

**Significance:** The results of this meta-analysis are not supportive of an independent positive association between red or processed meat intake and prostate cancer.

A meta-analysis of prospective studies was conducted to estimate potential associations between red or processed meat intake and prostate cancer. Fifteen studies of red meat and 11 studies of processed meat were included in the analyses. No association between high vs. low red meat consumption (SRRE=1.00, 95% CI: 0.96-1.05) or each 100g increment of red meat (SRRE=1.00, 95% CI: 0.95-1.05) and total prostate cancer was observed. No association with red meat was observed for advanced prostate cancer (SRRE=1.01, 95% CI: 0.94-1.09). A weakly elevated summary association between processed meat and total prostate cancer was found (SRRE=1.05, 95% CI: 0.99-1.12), although heterogeneity was present, the association was attenuated in a sub-group analysis of studies that adjusted for multiple potential confounding factors, and publication bias likely affected the summary effect.