ILSI North America

Nutrition Briefs

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Cardiovascular Disease

Choline and Betaine Intakes Are Not Associated with Cardiovascular Disease Mortality Risk in Japanese Men and Women

C. Nagata, K. Wada, T. Tamura, K. Konishi, T. Kawachi, M. Tsuji, et al.

Journal of Nutrition, Vol. 145, No. 8; pp. 1787–1792, 2015

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Link to full text: Click here

Significance: No clear evidence of significant associations between choline and betaine intakes and cardiovascular disease mortality risk in Japanese men and women.

The associations of betaine and choline intakes with cardiovascular disease mortality were examined in a population-based cohort study in Japan. Subjects were 13,355 males and 15,724 females who were ≥35 years. During follow-up, 308 and 676 deaths were documented from coronary heart disease (CHD) and stroke, respectively (393 from ischemic and 153 from hemorrhagic strokes). Compared with the lowest quartile, the second, third, and highest quartiles of betaine intake were significantly associated with a decreased risk of mortality from CHD in men after controlling for covariates. The HRs were 0.58 (95% CI: 0.36, 0.93), 0.62 (95% CI: 0.39, 0.998), and 0.60 (95% CI: 0.37, 0.97), respectively. The trend was not statistically significant. There was no significant association between betaine intake and the risk of mortality from ischemic stroke. In women, betaine intake was unrelated to risk of mortality from CHD and stroke (P = 0.32 and 0.73, respectively, for interaction by sex). There was no significant association between choline intake and cardiovascular disease mortality risk in men or women.

Dietary Cholesterol and Cardiovascular Disease: A Systematic Review and Meta-analysis

S. Berger, G. Raman, R. Vishwanathan, P.F. Jacques, E.J. Johnson

American Journal of Clinical Nutrition, Vol. 102, No. 2; pp. 276–294, 2015

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Link to full text: Click here

Significance: Reviewed studies were heterogeneous and lacked the methodologic rigor to draw any conclusions regarding the effects of dietary cholesterol on CVD risk.

This systematic review and meta-analysis examined the effects of dietary cholesterol on cardiovascular disease risk in healthy adults. Forty studies (17 cohorts in 19 publications with 361,923 subjects and 19 trials in 21 publications with 632 subjects) published between 1979 and 2013 were eligible for review. Dietary cholesterol was not statistically significantly associated with any coronary artery disease (4 cohorts; no summary RR), ischemic stroke (4 cohorts; summary RR: 1.13; 95% CI: 0.99, 1.28), or hemorrhagic stroke (3 cohorts; summary RR: 1.09; 95% CI: 0.79, 1.50). Dietary cholesterol statistically significantly increased both

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serum total cholesterol (17 trials; net change: 11.2 mg/dL; 95% CI: 6.4, 15.9) and LDL-cholesterol (14 trials; net change: 6.7 mg/dL; 95% CI: 1.7, 11.7 mg/dL). Increases in LDL-cholesterol were no longer statistically significant when intervention doses exceeded 900 mg/d. Dietary cholesterol also statistically significantly increased serum HDL-cholesterol (13 trials; net change: 3.2 mg/dL; 95% CI: 0.9, 9.7 mg/dL) and the LDL- to HDL-ratio (5 trials; net change: 0.2; 95% CI: 0.0, 0.3). Dietary cholesterol did not statistically significantly change serum triglycerides or VLDL concentrations.

Diabetes

Metabolic and Physiologic Effects From Consuming a Hunter-Gatherer (Paleolithic)-Type Diet in Type 2 Diabetes

U. Masharani, P. Sherchan, M. Schloetter, S. Stratford, A. Xiao, A. Sebastian, et al.

European Journal of Clinical Nutrition, Vol. 69, No. 8; pp. 944–948, 2015

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Significance: Short-term consumption of a Paleolithic-type diet improved glucose control and lipid profiles in people with type 2 diabetes compared with a conventional diet containing moderate salt intake, low-fat dairy, whole grains and legumes.

This study investigated whether a diet similar to that consumed by our pre-agricultural hunter-gatherer ancestors ('Paleolithic' type diet) confers health benefits in 14 subjects with type 2 diabetes. The findings from the subjects on the Paleo diet (comprising lean meat, fruits, vegetables and nuts, and excluding added salt, and non-Paleolithic-type foods comprising cereal grains, dairy or legumes) were compared with 10 participants on a diet based on recommendations by the American Diabetes Association (ADA) containing moderate salt intake, low-fat dairy, whole grains and legumes. There were three ramp-up diets for 7 days, then 14 days of the test diet. Both groups had improvements in metabolic measures, but the Paleo diet group had greater benefits on glucose control and lipid profiles. Also, on the Paleo diet, the most insulin-resistant subjects had a significant improvement in insulin sensitivity (r=0.40, P=0.02), but no such effect was seen in the most insulin-resistant subjects on the ADA diet (r= 0.39, P=0.3).

Efficacy of Liraglutide for Weight Loss Among Patients With Type 2 Diabetes: The SCALE Diabetes Randomized Clinical Trial

M.J. Davies, R. Bergenstal, B. Bode, R.F. Kushner, A. Lewin, T.V. Skjøth, et al. for the NN8022-1922 Study Group

Journal of the American Medical Association, Vol. 314, No. 7; pp. 687–699, 2015
doi: 10.1001/jama.2015.9676.

Link to full text: Click here

Significance: Among overweight and obese participants with type 2 diabetes, use of subcutaneous liraglutide (3.0 mg) daily, compared with placebo, resulted in weight loss over 56 weeks.

This 56-week randomized (2:1:1), double-blind, placebo-controlled, parallel-group trial investigated the efficacy and safety of liraglutide vs placebo for weight management in overweight or obese adults with type 2 diabetes, taking 0 to 3 oral hypoglycemic agents and glycated hemoglobin level 7.0% to 10.0%). Of 1361 participants assessed for eligibility, 846 were randomized. Subjects received once-daily, subcutaneous liraglutide (3.0 mg) (n=423), liraglutide (1.8 mg) (n=211), or

placebo (n=212) plus a 500 kcal/d dietary deficit, and increased physical activity (≥150 min/wk). Baseline weight was 105.7 kg with liraglutide (3.0 mg dose), 105.8 kg with liraglutide (1.8-mg dose), and 106.5 kg with placebo. Weight loss was 6.0% with 3.0 mg dose, 4.7% with 1.8-mg dose, and 2.0% with placebo. Weight loss of ≥5% occurred in 54.3% with 3.0 mg and 40.4% with 1.8 mg vs 21.4% with placebo. Weight loss ≥10% occurred in 25.2% with 3.0 mg and 15.9% with 1.8 mg vs 6.7% with placebo. More gastrointestinal disorders were reported with 3.0 mg vs 1.8 mg and placebo.

Olive Oil Consumption and Risk of Type 2 Diabetes in US Women

M. Guasch-Ferré, A. Hruby, J. Salas-Salvadó, M.A. Martínez-González, Q. Sun, W.C. Willett, et al.

American Journal of Clinical Nutrition, Vol. 102, No. 2; pp. 479–486, 2015

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Link to full text: Click here

Significance: Higher olive oil intake is associated with modestly lower risk of type 2 diabetes in women and that hypothetically substituting other types of fats and salad dressings with olive oil is inversely associated with diabetes.

The association between olive oil intake and incident type 2 diabetes (T2D) was evaluated in 59,930 women aged 37–65 y from the Nurses' Health Study (NHS) and 85,157 women aged 26–45 y from the NHS II who were free of diabetes, cardiovascular disease, and cancer at baseline. After 22 y of follow-up, 5738 and 3914 incident cases of T2D were documented in the NHS and NHS II, respectively. The pooled hazard ratio (HR) (95% CI) of T2D in those who consumed >1 tablespoon (>8 g) of total olive oil per day compared with those who never consumed olive oil was 0.90 (0.82, 0.99). The corresponding HRs (95% CIs) were 0.95 (0.87, 1.04) for salad dressing olive oil and 0.85 (0.74, 0.98) for olive oil added to food or bread. Substituting olive oil (8 g/d) for stick margarine, butter, or mayonnaise was associated with 5%, 8%, and 15% lower risk of T2D, respectively, in the pooled analysis of both cohorts.

Cholesterol

Butter Increased Total and LDL Cholesterol Compared with Olive Oil but Resulted in Higher HDL Cholesterol Compared with a Habitual Diet

S. Engel, T. Tholstrup

American Journal of Clinical Nutrition, Vol. 102, No. 2; pp. 309–315, 2015

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Link to full text: Click here

Significance: Moderate intake of butter resulted in increases in total cholesterol and LDL-cholesterol compared with the effects of olive oil intake and a habitual diet (run-in period).

This controlled, double-blinded, randomized 2 × 5-wk crossover dietary intervention study examined the effects of moderate butter intake, moderate olive oil intake, and a habitual diet on blood lipids, high-sensitivity C-reactive protein (hsCRP), glucose, and insulin. During a 14-d run-in period subjects (n=47; mean total cholesterol: 5.22 ± 0.90 mmol/L) consumed their habitual diets and substituted a part of their habitual diets with 4.5% of energy from butter or refined olive oil. Butter intake increased total cholesterol and LDL-cholesterol more than did olive oil intake ($P < 0.05$) and the run-in period ($P < 0.005$ and $P < 0.05$,

respectively) and increased HDL-cholesterol compared with the run-in period ($P < 0.05$). No difference in effects was observed for triacylglycerol, hsCRP, insulin, and glucose concentrations. The intake of saturated fatty acids was significantly higher in the butter period than in the olive oil and run-in periods ($P < 0.0001$).

Blood Pressure

Dietary Approaches to Stop Hypertension Diet Retains Effectiveness to Reduce Blood Pressure When Lean Pork is Substituted for Chicken and Fish as the Predominant Source of Protein

R.D. Sayer, A.J. Wright, N. Chen, W.W. Campbell

American Journal of Clinical Nutrition, Vol. 102, No. 2; pp. 302–308, 2015

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Link to full text: Click here

Significance: Adults with elevated blood pressure (BP) may effectively incorporate lean pork into a DASH-style diet for BP reduction.

This randomized crossover study evaluated whether the consumption of lean pork compared with the consumption of chicken and fish as the predominant protein source in a DASH-style diet affected blood pressure (BP) control in 6 men and 13 women with elevated BP. Two 6-wk controlled dietary interventions were included (a 4-wk diet washout between interventions) with either lean pork [DASH diet with pork (DASH-P)] or chicken and fish [DASH diet with chicken and fish (DASH-CF), the control diet] as the major protein source (55% of total protein intake). SBP and DBP were measured manually and with a 24-h BP monitoring system on 3 d before and 3 d at the end of each diet intervention. Preintervention manual BP (DASH-P: 130/84 ± 2/1 mm Hg; DASH-CF: 129/84 ± 2/1 mg Hg) and postintervention manual BP (DASH-P: 122/79 ± 2/1 mm Hg; DASH-CF: 123/78 ± 3/1) were not different between the DASH-P and DASH-CF. Consumption of these DASH-style diets for 6 wk reduced all measures of BP ($P < 0.05$) with no differences in responses between the DASH-CF and DASH-P.

Absence of an Effect of High Nitrate Intake From Beetroot Juice on Blood Pressure in Treated Hypertensive Individuals: A Randomized Controlled Trial

C.P. Bondonno, A.H. Liu, K.D. Croft, N.C. Ward, S. Shinde, Y. Moodley, et al.

American Journal of Clinical Nutrition, Vol. 102, No. 2; pp. 368–375, 2015

doi: 10.3945/ajcn.114.101188

Link to full text: Click here

Significance: An increase in dietary nitrate intake may not be an effective short-term approach to further lower blood pressure in treated hypertensive subjects.

This randomized, placebo-controlled, double-blind crossover trial examined whether increased dietary nitrate intake by using beetroot juice for 1 wk lowers blood pressure in 27 treated hypertensive men and women. The effect of 1-wk intake of nitrate-rich beetroot juice was compared with 1-wk intake of nitrate-depleted beetroot juice (placebo). Relative to the placebo, 1-wk intake of nitrate-rich beetroot juice resulted in a 3-fold increase in plasma nitrite and nitrate, a 7-fold increase in salivary nitrite, an 8-fold higher salivary nitrate, and a 4-fold increase in both urinary nitrite and nitrate ($P < 0.001$). However, no differences in blood pressure were observed with 1-wk intake of nitrate-rich beetroot juice in comparison with the placebo.

Food Allergy

Consensus Communication on Early Peanut Introduction and the Prevention of Peanut Allergy in High-Risk Infants

D.M. Fleischer, S. Sicherer, M. Greenhawt, D. Campbell, E. Chan, A. Muraro, et al.

Journal of Allergy and Clinical Immunology, Vol. 136, No. 2; pp. 258–261, 2015

doi: 10.1016/j.jaci.2015.06.001

Link to full text: Click here

Significance: This paper highlights emerging evidence for existing allergy prevention guidelines regarding potential benefits of supporting early rather than delayed peanut introduction during the period of complementary food introduction in infants.

Based on data generated in the Learning Early About Peanut Allergy (LEAP) trial, the following interim guidance is suggested to assist the clinical decision making of health care providers. Health care providers should recommend introducing peanut-containing products into the diets of "high-risk" infants between 4 and 11 months of age in countries where peanut allergy is prevalent because delaying the introduction of peanut can be associated with an increased risk of peanut allergy. Infants with early-onset atopic disease, such as severe eczema, or egg allergy in the first 4 to 6 months of life, might benefit from evaluation by an allergist or physician trained in management of allergic diseases in this age group to diagnose any food allergy and assist in implementing these suggestions regarding the appropriateness of early peanut introduction. Without intervention by health care providers, there is the potential that such high-risk infants will remain at risk for delayed introduction of solids and allergenic foods into their diet because of the widespread belief that such foods can exacerbate eczema.

Sugar-Sweetened beverages

Consumption of Sucrose-Sweetened Soft Drinks Increases Plasma Levels of Uric Acid in Overweight and Obese Subjects: A 6-Month Randomised Controlled Trial

J.M. Bruun, M. Maersk, A. Belza, A. Astrup, B. Richelsen

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Link to full text: Click here

Significance: Daily intake of 1 L sucrose-sweetened soft drinks for 6 months was found to increase circulating uric acid levels compared with isocaloric milk, diet cola and water.

This study investigated the long-term effects of consuming sucrose-sweetened soft drinks (SSSDs) on circulating levels of uric acid (UA) in 47 non-diabetic overweight and obese subjects who were randomized to consume 1 L daily of either SSSD (regular cola), isocaloric semi-skimmed milk, diet cola or water for 6 months. Circulating UA levels increased ~15% (P=0.02) after the 6-month intervention in the SSSD group with no change in the other groups. In the SSSD group, circulating UA levels increased significantly after the intervention in both absolute (P=0.005) and relative values (P=0.004). The change in UA after the intervention correlated with changes in liver fat (P=0.005), triglycerides (P=0.02) and insulin (P=0.002).

Fiber

Dietary Intake of Soluble Fiber and Risk of Islet Autoimmunity by 5 y of Age: Results from the TEDDY Study

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American Journal of Clinical Nutrition, Vol. 102, No. 2; pp. 345–352, 2015

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Significance: The intake level of dietary soluble fiber is not associated with islet autoimmunity or type 1 diabetes in early life.

This study hypothesized that a high intake of dietary soluble fiber in early childhood decreases the risk of type 1 diabetes (T1D)–associated islet autoimmunity. 17,620 food records were collected between age 9 and 48 mo from 3358 children from the US and Germany who were prospectively followed in the TEDDY (The Environmental Determinants of Diabetes in the Young) study. HRs for the development of any/multiple islet autoantibodies (242 and 151 events, respectively) and T1D (71 events) by soluble fiber intake were calculated and adjusted for covariates. There were no statistically significantly protective associations observed between a high intake of soluble fiber and islet autoimmunity or T1D (e.g., the adjusted HRs (95% CIs) for high intake (highest compared with lowest quintile) at age 12 mo were 0.90 (0.55, 1.45) for any islet autoantibody, 1.20 (0.69, 2.11) for multiple islet autoantibodies, and 1.24 (0.57, 2.70) for T1D. In analyzing soluble fiber intake as a time-varying covariate, there were also no short-term associations between soluble fiber intake and islet autoimmunity development, with adjusted HRs of 0.85 (0.51, 1.42) for high intake and development of any islet autoantibody, for example.

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The North American branch of the International Life Sciences Institute (ILSI North America) is a public, non-profit scientific foundation that advances the understanding and application of science related to the nutritional quality and safety of the food supply.

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