



NEOLIFE

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PEER REVIEWED STUDIES

HEART HEALTH

Greater Whole-Grain Intake Is Associated with Lower Risk of Type 2 Diabetes, Cardiovascular Disease, and Weight Gain

ABSTRACT

Whole-grain and high fiber intakes are routinely recommended for prevention of vascular diseases; however, there are no comprehensive and quantitative assessments of available data in humans. The aim of this study was to systematically examine longitudinal studies investigating whole-grain and fiber intake in relation to risk of type 2 diabetes (T2D), cardiovascular disease (CVD), weight gain, and metabolic risk factors. We identified 45 prospective cohort studies and 21 randomized-controlled trials (RCT) between 1966 and February 2012 by searching the Cumulative Index to Nursing and Allied Health Literature, Cochrane, Elsevier Medical Database, and PubMed. Study characteristics, whole-grain and dietary fiber intakes, and risk estimates were extracted using a standardized protocol. Using random effects models, we found that compared with never/rare consumers of whole grains, those consuming 48-80 g whole grain/d (3-5 serving/d) had an ~26% lower risk of T2D [RR = 0.74 (95% CI: 0.69, 0.80)], ~21% lower risk of CVD [RR = 0.79 (95% CI: 0.74, 0.85)], and consistently less weight gain during 8-13 y (1.27 vs 1.64 kg; P = 0.001). Among RCT, weighted mean differences in post-intervention circulating concentrations of fasting glucose and total and LDL-cholesterol comparing whole-grain intervention groups with controls indicated significantly lower concentrations after whole-grain interventions [differences in fasting glucose: -0.93 mmol/L (95% CI: -1.65, -0.21), total cholesterol: -0.83 mmol/L (-1.23, -0.42); and LDL-cholesterol: -0.82 mmol/L (-1.31, -0.33)]. [corrected] Findings from this meta-analysis provide evidence to support beneficial effects of whole-grain intake on vascular disease prevention. Potential mechanisms responsible for whole grains' effects on metabolic intermediates require further investigation in large intervention trials.

Source

Ye EQ et al. Greater Whole-Grain Intake Is Associated with Lower Risk of Type 2 Diabetes, Cardiovascular Disease, and Weight Gain. *J Nutr* 142:1304-13, July, 2012 Epub May 30, 2012].

IMMUNE HEALTH

Update: effects of antioxidant and non-antioxidant vitamin supplementation on immune function

ABSTRACT

The purpose of this manuscript is to review the impact of supplementation with vitamins E and C, carotenoids, and the B vitamins on parameters of innate and adaptive immune function as reported from clinical trials in humans. There is evidence to support causal effects of supplementation with vitamins E and C and the carotenoids singly and in combination on selected aspects of immunity, including the functional capacity of innate immune cells, lymphocyte proliferation, and the delayed-type hypersensitivity (DTH) response. Controlled intervention trials of B vitamin-containing multivitamin supplements suggest beneficial effects on immune parameters and clinical outcomes in HIV-positive individuals.

Source

Webb AL, et al. Update: effects of antioxidant and non-antioxidant vitamin supplementation on immune function. *Nutr Rev*. 2007 May;65(5):181-217.

SKIN HEALTH

UVB photoprotection with antioxidants: effects of oral therapy with d-alpha-tocopherol and ascorbic acid on the minimal erythema dose

ABSTRACT

Ultraviolet radiation absorption is responsible for the production of free radicals in damaged cells. This side effect may be neutralized using antioxidant substances. It has been reported that ascorbic acid and d-alpha-tocopherol scavenge reactive oxygen species. In a single-blind controlled clinical trial we studied 45 healthy volunteers divided into three groups. Group 1 received d-alpha-tocopherol 1,200 I.U. daily; Group 2 ascorbic acid 2 g daily and Group 3 ascorbic acid 2 g plus d-alpha-tocopherol 1,200 I.U. daily. Treatment was sustained for one week. Before and after treatment, the minimal erythema dose was determined in all participants. The results show that the median minimal erythema dose increased from 60 to 65 mJ/cm² in Group 1 and from 50 to 70 mJ/cm² in Group 3. No modifications were observed in Group 2. We conclude that d-alpha-tocopherol prescribed in combination with ascorbic acid produces the best photoprotective effect.

Source

Mireles-Rocha H, et al. UVB photoprotection with antioxidants: effects of oral therapy with d-alpha-tocopherol and ascorbic acid on the minimal erythema dose. *Acta Derm Venereol* 82:21-4, 2002.

Discovering the link between nutrition and skin aging

ABSTRACT

Skin has been reported to reflect the general inner-health status and aging. Nutrition and its reflection on skin has always been an interesting topic for scientists and physicians throughout the centuries worldwide. Vitamins, carotenoids, tocopherols, flavonoids and a variety of plant extracts have

been reported to possess potent anti-oxidant properties and have been widely used in the skin care industry either as topically applied agents or oral supplements in an attempt to prolong youthful skin appearance. This review will provide an overview of the current literature “linking” nutrition with skin aging.

Source

Schagen S et al. Discovering the link between nutrition and skin aging. Review. *Dermato-Endocrinol* 4:298-307, 2012.

Carotenoids and carotenoids plus vitamin E protect against ultraviolet light-induced erythema in humans

ABSTRACT

BACKGROUND:

Carotenoids and tocopherols, known to be efficient antioxidants and capable of scavenging reactive oxygen species generated during photooxidative stress, may protect the skin from ultraviolet light-induced erythema. b-Carotene is widely used as an oral sun protectant but studies on its protective effects are scarce.

OBJECTIVE:

The objective of this study was to investigate the protective effects of oral supplementation with carotenoids and a combination of carotenoids and vitamin E against the development of erythema in humans.

DESIGN:

A carotenoid supplement (25 mg total carotenoids/d) and a combination of the carotenoid supplement and vitamin E [335 mg (500 IU) RRR-a-tocopherol/d] were given for 12 wk to healthy volunteers. Erythema was induced by illumination with a blue-light solar simulator. Serum b-carotene and a-tocopherol concentrations and skin carotenoid levels were assessed by HPLC and reflection photometry.

RESULTS:

Serum b-carotene and a-tocopherol concentrations increased with supplementation. Erythema on dorsal skin (back) was significantly diminished ($P < 0.01$) after week 8, and erythema suppression was

greater with the combination of carotenoids and vitamin E than with carotenoids alone.

CONCLUSION:

The antioxidants used in this study provided protection against erythema in humans and may be useful for diminishing sensitivity to ultraviolet light.

Source

Stahl, W et al. Carotenoids and carotenoids plus vitamin E protect against ultraviolet light-induced erythema in humans. *Am J Clin Nutr* 71:795-8, 2000.

WEIGHT MANAGEMENT

Whole- and refined-grain intakes are differentially associated with abdominal visceral and subcutaneous adiposity in healthy adults: the Framingham Heart Study

ABSTRACT

BACKGROUND:

Observational studies have linked higher intakes of whole grains to lower abdominal adiposity; however, the association between whole- and refined-grain intake and body fat compartments has yet to be reported.

OBJECTIVE:

Different aspects of diet may be differentially related to body fat distribution. The purpose of this study was to assess associations between whole- and refined-grain intake and abdominal subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT).

DESIGN:

Cross-sectional associations between whole- and refined-grain intakes, waist circumference measures, and abdominal SAT and VAT volumes were examined in 2834 Framingham Heart Study participants (49.4% women; age range: 32-83 y). Dietary information was assessed with the use of a semiquantitative food-frequency questionnaire.

RESULTS:

Whole-grain intake was inversely associat-

ed with SAT (2895 compared with 2552 cm^3 in the lowest compared with the highest quintile category, P for trend < 0.001) and VAT (1883 compared with 1563 cm^3 , P for trend < 0.001), after adjustment for age, sex, current smoking status, total energy, and alcohol intake. In contrast, refined-grain intake was positively associated with SAT (2748 compared with 2934 cm^3 , P for trend = 0.01) and VAT (1727 compared with 1928 cm^3 , P for trend < 0.001) in multivariable models. When SAT and VAT were evaluated jointly, the P value for SAT was attenuated ($P = 0.28$ for whole grains, $P = 0.60$ for refined grains), whereas VAT remained associated with both whole grains ($P < 0.001$) and refined grains ($P < 0.001$).

CONCLUSIONS:

Increasing whole-grain intake is associated with lower VAT in adults, whereas higher intakes of refined grains are associated with higher VAT. Further research is required to elicit the potential mechanisms whereby whole- and refined-grain foods may influence body fat distribution.

Source

McKeown NM, et al. Whole- and refined-grain intakes are differentially associated with abdominal visceral and subcutaneous adiposity in healthy adults: the Framingham Heart Study. *Am J Clin Nutr*. 2010 Nov;92(5):1165-71. Epub 2010 Sep 29.

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(RCT) between 1966 and February 2012 by searching the Cumulative Index to Nursing and Allied Health Literature, Cochrane, Elsevier Medical Database, and PubMed. Study characteristics, whole-grain and dietary fiber intakes, and risk estimates were extracted using a standardized protocol. Using random effects models, we found that compared with never/rare consumers of whole grains, those consuming 48-80 g whole grain/d (3-5 serving/d) had an ~26% lower risk of T2D [RR = 0.74 (95% CI: 0.69, 0.80)], ~21% lower risk of CVD [RR = 0.79 (95% CI: 0.74, 0.85)], and consistently less weight gain during 8-13 y (1.27 vs 1.64 kg; P = 0.001). Among RCT, weighted mean differences in post-intervention circulating concentrations of fasting glucose and total and LDL-cholesterol comparing whole-grain intervention groups with controls indicated significantly lower concentrations after whole-grain interventions [differences in fasting glucose: -0.93 mmol/L (95% CI: -1.65, -0.21), total cholesterol: -0.83 mmol/L (-1.23, -0.42); and LDL-cholesterol: -0.82 mmol/L (-1.31, -0.33)]. [corrected] Findings from this meta-analysis provide evidence to support beneficial effects of whole-grain intake on vascular disease prevention. Potential mechanisms responsible for whole grains' effects on metabolic intermediates require further investigation in large intervention trials.

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