

# "Super foods"

- Beans and Legumes
- Berries
- Cruciferous vegetables
- Chocolate
- Citrus fruits
- Pumpkin
- Fish
- Red wine
- Soy
- Spinach
- Olive Oil
- Tea
- Tomatoes
- Nuts
- Whole grains
- Yogurt

# Beans and Legumes

Dry beans or legumes are an inexpensive and healthy way to include additional servings of vegetables into your diet. They count as a substitute for meat. Low in calories, legumes are good sources of B vitamins, potassium, and fiber, which promotes digestive health and relieves constipation. Clinical studies have suggested that saponins have the ability to :

- Help protect the human body against cancer
- Lower cholesterol
- Lower blood glucose responses



# Berries

- Many berries are suitable to eat raw after rinsing and most types of berries vary from 50 to 100 calories per serving when eaten raw.
- Berries are loaded with: vitamin C, potassium, and fiber.
- All berries with strong red and blue colors have phytochemicals that can potentially reduce cancer rates and other chronic diseases.
- Berries have some of the highest antioxidant levels of any fresh fruits.



# Berries - Strawberries

Because of the antioxidant power found in strawberries, regular consumption of this fruit has been shown to have the potential to lower one's risk of heart disease. In addition, studies have shown that strawberries are involved in inhibiting inflammatory enzymes. This reduces the inflammatory response that is involved in the etiology of many diseases. Studies on two antioxidant compounds in strawberries (ellagic acid and quercetin) have demonstrated that these substances:

- Have anticancer activity
  - Work to block the initiation of carcinogenesis
  - Suppress progression and proliferation of tumors

# Cruciferous Vegetable

- Cabbage, broccoli and Brussels sprouts are in the family of cruciferous vegetables.
- The health benefits associated with cruciferous vegetables has been attributed to their high concentration of glucosinolates.
- Broccoli is a good source of vitamins A and C, potassium, folacin, iron, and fiber and has as much calcium per ounce as milk.
- Brussels sprouts contain significant amounts of the antioxidants vitamins A and C and is a good source of fiber. Their consumption has been associated with a reduced risk of cancer of the lung, stomach, colon, and rectum.



# Chocolate

Several studies support the suggestion that the consumption of flavanol-rich foods, such cocoa powders and dark chocolates, may be associated with a reduced risk for vascular disease. The antioxidants found in cocoa enhance vascular function and decrease platelet stickiness and therefore influence the cardiovascular system beneficially.

## Dark Chocolate:

- decreases blood pressure in people with hypertension
- decreases LDL “bad” cholesterol and increase HDL “good” cholesterol
- is linked to improvement in insulin sensitivity
- reduces the tendency of blood to clot.
- increases blood vessel flexibility
- is a natural anti depressant
- contains *serotonin* and stimulates *endorphin* production.



# Citrus Fruits



- Citrus fruits contain phytochemicals called flavonoids.
- Research throughout past years has confirmed that hesperidin is an anti-inflammatory agent used to treat many conditions. Hesperidin blocks an enzyme involved in an inflammatory reaction such as the release of histamine.
- Research has shown that citrus flavonoids and their metabolites are potent antioxidants. It is believed that they are able to suppress many of the events of cancer and inflammation which involve reactive oxygen species.
- Some of the flavonoids in citrus fruits such as tangerine and orange are the most potent cancer fighting compounds, particularly against lung and prostate cancer cells.

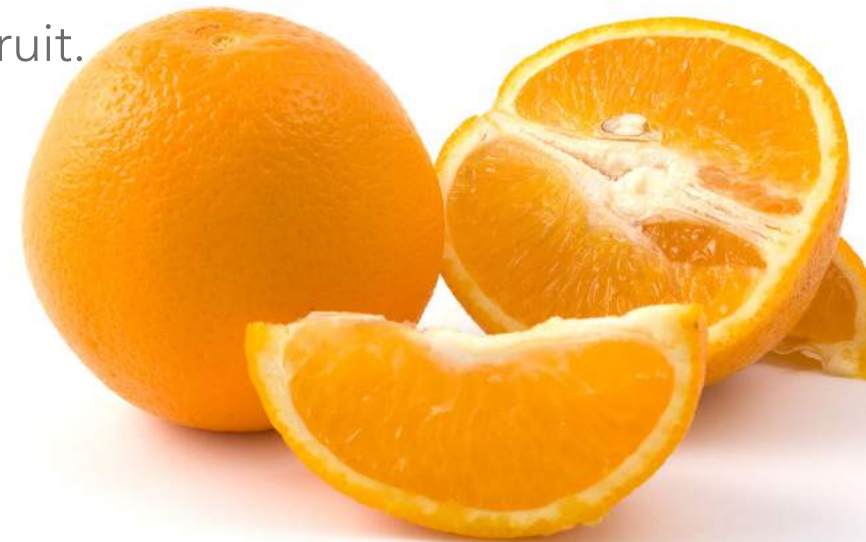
# Oranges

Oranges are highly valued for their vitamin C content. They are the primary source of vitamin C for most Americans.

However, oranges are also a good source of: folacin, calcium, potassium, thiamin, niacin, and magnesium.

The juice contains more vitamin C per serving than does the whole fruit. However orange juice does not contain fiber, whereas the fruit does.

Oranges belong to a class known as "citrus fruits."



# Pumpkin

Pumpkins are loaded with an important antioxidant, beta-carotene, and are a good source of potassium. Beta-carotene is one of the plant carotenoids converted to vitamin A in the body. Pumpkin seeds and oil are also dietary sources of the omega-3 fatty acid, alpha-linolenic acid.



There is strong evidence which supports the beneficial effects of alpha-linolenic acid in the prevention of cardiovascular disease. Foods high in beta-carotene are believed to offer protection from the development of cancer and against heart disease.

# Fish



Fatty Fish have the highest levels of omega-3 FA

Over 30 years ago, Danish researchers found that the lower rates of heart disease found in Greenland Eskimos were associated with their higher intake of seafood, particularly cold water fish. There are two classes of essential fatty acids: **omega-3** and **omega-6**.

Fish oil is the most significant source of dietary omega-3 fatty acid, and it consists of both: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Fish is a good source of protein and low in saturated fat.

The following types of fish are especially good sources of omega-3 fatty acids:

Mackerel - Lake trout - Herring – Sardines - Albacore tuna -Salmon

# Fish Oil & CVD

Numerous observational studies have shown that omega-3 FA enriched diets are associated with a reduction of:

- Cardiovascular mortality
- Heart attack
- Sudden death

Overall, it has been shown that a minimum of one fish meal per week translates to a 52% reduction in sudden cardiac death.

In several studies, a higher fish intake was associated with a decreased incidence of coronary artery disease and cardiovascular mortality.

# Fish Oils & Rheumatoid Arthritis

Over 15 clinical trials and 2 meta-analyses favor the use of fish oil in patients with rheumatoid arthritis (RA). A double-blind placebo controlled trial showed that fish oil supplementation of 130 mg/kg of body weight each day decreased the following in the control group:

- Number of stiff joints
- Duration of morning stiffness
  - Pain
- Global arthritis activity

Increased fish oil intake allows some with RA to reduce or even eliminate the use of non-steroidal anti-inflammatory drug (NSAID) use.

# N-3 Fatty Acids for the Prevention of Atrial Fibrillation After Coronary Artery Bypass Surgery

## A Randomized, Controlled Trial

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- OBJECTIVES** The aim of this study was to assess the efficacy of preoperative and postoperative treatment with n-3 polyunsaturated fatty acids (PUFAs) in preventing the occurrence of atrial fibrillation (AF) after coronary artery bypass graft surgery (CABG).
- BACKGROUND** Postoperative AF is a common complication of CABG. There is growing clinical evidence that PUFAs have cardiac antiarrhythmic effects.
- METHODS** A total of 160 patients were prospectively randomized to a control group (81 patients, 13 female,  $64.9 \pm 9.1$  years) or PUFAs 2 g/day (79 patients, 11 female,  $66.2 \pm 8.0$  years) for at least 5 days before elective CABG and until the day of discharge from the hospital. The primary end point was the development of AF in the postoperative period. The secondary end point was the hospital length of stay after surgery. All end points were independently adjudicated by two cardiologists blinded to treatment assignment.
- RESULTS** The clinical and surgical characteristics of the patients in the two groups were similar. Postoperative AF developed in 27 patients of the control group (33.3%) and in 12 patients of the PUFA group (15.2%) ( $p = 0.013$ ). There was no significant difference in the incidence of nonfatal postoperative complications, and postoperative mortality was similar in the PUFA-treated patients (1.3%) versus controls (2.5%). After CABG, the PUFA patients were hospitalized for significantly fewer days than controls ( $7.3 \pm 2.1$  days vs.  $8.2 \pm 2.6$  days,  $p = 0.017$ ).
- CONCLUSIONS** This study first demonstrates that PUFA administration during hospitalization in patients undergoing CABG substantially reduced the incidence of postoperative AF (54.4%) and was associated with a shorter hospital stay. (J Am Coll Cardiol 2005;45:1723–8) © 2005 by the American College of Cardiology Foundation

## Omega 3 and atrial fibrillation: Where are we?

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**Conflict-of-interest statement:** The authors declare no conflict of interest.

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fatty acids, at least in part mediated by anti-oxidant, anti-inflammatory and anti-fibrotic power, have been widely proved. Effect of fish oil on atrial fibrillation, both in primary and in secondary prevention and after cardiac surgery, are controversial, mostly due to lack of homogeneity between studies but also due to individual variability in response to fatty acids administration. Inclusion of measurement of incorporation of fish oil into cell membranes, appears to be essential in future studies, to assess their antiarrhythmic effect.

**Key words:** N-3 polyunsaturated fatty acids; Atrial fibrillation; Upstream therapy; Omega-3 index; Cardiac surgery

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**Core tip:** Individual variability in response to fish oil administration, in terms of eicosapentaenoic and docosahexaenoic acids in corporation into cell membranes, is responsible for controversial results of n-3 poly-unsaturated fatty acids administration in patients suffering atrial fibrillation.

Martino A, Pezzi L, Magnano R, Salustri E, Penco M, Calo' L. Omega 3 and atrial fibrillation: Where are we? *World J Cardiol* 2016; 8(2): 114-119 Available from: URL: <http://www.wjgnet.com/1949-8462/full/v8/i2/114.htm> DOI: <http://dx.doi.org/10.4330/wjc.v8.i2.114>



# Effect of Omega-3 Acid Ethyl Esters on Left Ventricular Remodeling After Acute Myocardial Infarction

## The OMEGA-REMODEL Randomized Clinical Trial

**BACKGROUND:** Omega-3 fatty acids from fish oil have been associated with beneficial cardiovascular effects, but their role in modifying cardiac structures and tissue characteristics in patients who have had an acute myocardial infarction while receiving current guideline-based therapy remains unknown.

**METHODS:** In a multicenter, double-blind, placebo-controlled trial, participants presenting with an acute myocardial infarction were randomly assigned 1:1 to 6 months of high-dose omega-3 fatty acids ( $n=180$ ) or placebo ( $n=178$ ). Cardiac magnetic resonance imaging was used to assess cardiac structure and tissue characteristics at baseline and after study therapy. The primary study endpoint was change in left ventricular systolic volume index. Secondary endpoints included change in noninfarct myocardial fibrosis, left ventricular ejection fraction, and infarct size.

**RESULTS:** By intention-to-treat analysis, patients randomly assigned to omega-3 fatty acids experienced a significant reduction of left ventricular systolic volume index ( $-5.8\%$ ,  $P=0.017$ ), and noninfarct myocardial fibrosis ( $-5.6\%$ ,  $P=0.026$ ) in comparison with placebo. Per-protocol analysis revealed that those patients who achieved the highest quartile increase in red blood cell omega-3 index experienced a 13% reduction in left ventricular systolic volume index in comparison with the lowest quartile. In addition, patients in the omega-3 fatty acid arm underwent significant reductions in serum biomarkers of systemic and vascular inflammation and myocardial fibrosis. There were no adverse events associated with high-dose omega-3 fatty acid therapy.

**CONCLUSIONS:** Treatment of patients with acute myocardial infarction with high-dose omega-3 fatty acids was associated with reduction of adverse left ventricular remodeling, noninfarct myocardial fibrosis, and serum biomarkers of systemic inflammation beyond current guideline-based standard of care.

**CLINICAL TRIAL REGISTRATION:** URL: <http://www.clinicaltrials.gov>. Unique identifier: NCT00729430.

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Sources of Funding, see page 389

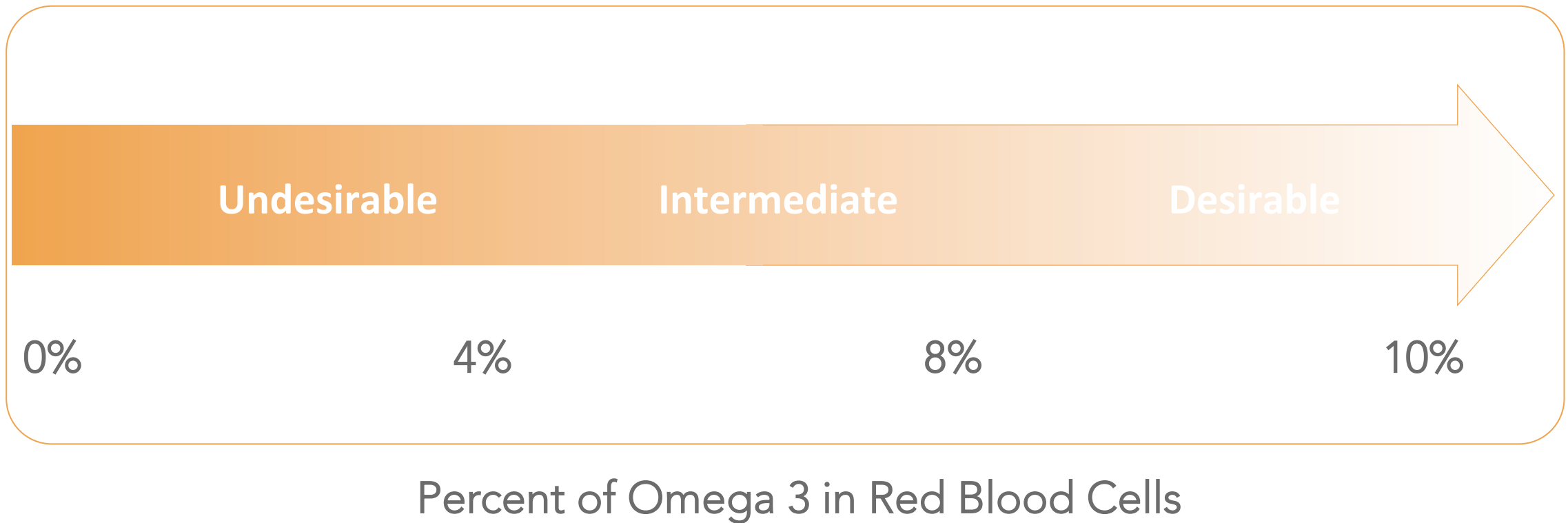
**Key Words:** endomyocardial fibrosis ■ fatty acids, omega-3 ■ infarction ■ magnetic resonance imaging ■ ventricular remodeling

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These three studies show the efficacy of treatment with Omega 3 in preventing the occurrence of arrhythmias and heart disease.



# Proposed Omega-3 Index Risk Zones: Relative Risk for Death from Coronary Artery Disease



Harris WS et al. *Prev Med* 2004;39:212-220.

Clemens von Schacky , William S. Harris *Cardiovascular Research* 73 (2007) 310–315



ELSEVIER

Cardiovascular Research 47 (2000) 549–555

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## Cardioprotective effect of resveratrol, a natural antioxidant derived from grapes

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Received 28 October 1999; accepted 25 April 2000

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### Abstract

**Background:** The major objective of the present study was to examine the cardioprotective effect of resveratrol, an antioxidant presents in red wines, in the rat after ischemia and ischemia–reperfusion (I–R). **Methods:** The left main coronary artery was occluded for 30 or 5 min followed by a 30-min reperfusion in anesthetized rats. Animals were preinfused with and without resveratrol before occlusion and the severity of ischemia- and I–R-induced arrhythmias and mortality were compared. **Results:** Resveratrol pretreatment had no effect on ischemia-induced arrhythmias nor on mortality. In contrast, a dramatic protective effects were observed against I–R-induced arrhythmias and mortality. Resveratrol pretreatment both reduced the incidence and duration of ventricular tachycardia (VT) and ventricular fibrillation (VF). During the same period, resveratrol pretreatment also increased nitric oxide (NO) and decreased lactate dehydrogenase levels in the carotid blood. **Conclusions:** Resveratrol is a potent antiarrhythmic agent with cardioprotective properties in I–R rats. The cardioprotective effects of resveratrol in the I–R rats may be correlated with its antioxidant activity and upregulation of NO production. © 2000 Elsevier Science B.V. All rights reserved.

**Keywords:** Arrhythmia, mechanisms; Free radicals; Ischemia; Nitric oxide; Reperfusion

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This study shows the cardioprotective effect of resveratrol, a natural antioxidant present in red wines, as a potent antiarrhythmic agents in the rat after ischemia and ischemia – reperfusion limiting clot formation and inflammation. It also protects against cancer by inhibiting cell growth.



# The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

APRIL 4, 2013

VOL. 368 NO. 14

## Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

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for the PREDIMED Study Investigators\*

### ABSTRACT

#### BACKGROUND

Observational cohort studies and a secondary prevention trial have shown an inverse association between adherence to the Mediterranean diet and cardiovascular risk. We conducted a randomized trial of this diet pattern for the primary prevention of cardiovascular events.

#### METHODS

In a multicenter trial in Spain, we randomly assigned participants who were at high cardiovascular risk, but with no cardiovascular disease at enrollment, to one of three diets: a Mediterranean diet supplemented with extra-virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or a control diet (advice to reduce dietary fat). Participants received quarterly individual and group educational sessions and, depending on group assignment, free provision of extra-virgin olive oil, mixed nuts, or small nonfood gifts. The primary end point was the rate of major cardiovascular events (myocardial infarction, stroke, or death from cardiovascular causes). On the basis of the results of an interim analysis, the trial was stopped after a median follow-up of 4.8 years.

#### RESULTS

A total of 7447 persons were enrolled (age range, 55 to 80 years); 57% were women. The two Mediterranean-diet groups had good adherence to the intervention, according to self-reported intake and biomarker analyses. A primary end-point event occurred in 288 participants. The multivariable-adjusted hazard ratios were 0.70 (95% confidence interval [CI], 0.54 to 0.92) and 0.72 (95% CI, 0.54 to 0.96) for the group assigned to a Mediterranean diet with extra-virgin olive oil (96 events) and the group assigned to a Mediterranean diet with nuts (83 events), respectively, versus the control group (109 events). No diet-related adverse effects were reported.

#### CONCLUSIONS

Among persons at high cardiovascular risk, a Mediterranean diet supplemented with extra-virgin olive oil or nuts reduced the incidence of major cardiovascular events. (Funded by the Spanish government's Instituto de Salud Carlos III and others; Controlled-Trials.com number, ISRCTN35739639.)

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\*The PREDIMED (Prevención con Dieta Mediterránea) study investigators are listed in the Supplementary Appendix, available at [NEJM.org](http://NEJM.org).

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This article was published on February 25, 2013, and updated on February 27, 2014, at [NEJM.org](http://NEJM.org).

*N Engl J Med* 2013;368:1279-90.

DOI: 10.1056/NEJMoa1200303

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# Soy

A daily intake 25 grams of soy protein per day is considered beneficial.

Most don't realize it, but a lot of foods that are eaten every day contain soy.

Soybean oil accounts for 79% of the edible fats used annually in the U.S.

The ingredient lists of several commonly consumed food items show that soybean oil is high on the list: mayonnaise, margarines, salad dressings, and vegetable shortenings.



# Soy Isoflavones

Soy has phytoestrogens called isoflavones. Two of the most common ones are daidzein and genistein.

Soy isoflavones are believed to play a role in prostate cancer, where supplementation with isoflavones has shown a reduction in prostate cancer risk in studies.

Soy isoflavones, and possibly soy proteins as well, are believed to play a role in bone health.

## Soy Protein

There is also the biologically active non-isoflavone component of soy that has received much attention in past years— soy protein. The protein part is believed to be responsible for the additional benefits seen from soy consumption, which are:

Cholesterol-lowering effects - Blood pressure-lowering effects  
Reduction of cancer risks - Favorable effects on kidney function

# Spinach

Spinach is one of the most important antioxidative vegetables and is consumed either fresh or cooked.

Spinach is composed of various active compounds, such as flavonoids and other polyphenolic active ingredients. These compounds are believed to act in combination with one another as:

Anti-inflammatory agents - Antioxidative agents - Anticancer agents

The active compounds are believed to be highly available to the body.

A powerful, water-soluble, **natural antioxidant mixture (NAO)** was identified in spinach leaves, which contains its main active compounds.

NAO is stable at high temperatures and is nontoxic. It is used in studies of chemoprevention and dietary intervention in humans.



## Olive Oil

There are proved evidence that a regular consumption of olive oil may lower all-cause mortality and most of all among people at high cardiovascular risk, a Mediterranean Diet supplement with extra-virgin olive oil reduced the incidence of major cardiovascular events.



# Tea

Green tea comes from the mature leaves of the plant and is sold as either fresh or dried unfermented leaves. The very early shoots are highly sought after and from these, white tea is made. Total polyphenols in these early shoots comprise about 20-30% by weight, 60 to 80 percent of which are catechins. Mature leaves naturally contain lesser amounts of catechins than do the early leaves, and with the processing of green tea, the concentration is further decreased (~15%).

- Unlike green tea, preparation of black tea requires fermentation.
- During this process, catechins in black tea are partially converted to theaflavins.
- A less extensive fermentation leads to a lighter flavored tea, called oolong tea.
- Therefore, of the teas mentioned, white tea has the highest concentration of catechins, followed by green tea, oolong tea and, lastly, black tea.

# Tea

The catechins found in green tea have been shown to possess biological activity which may be beneficial in the prevention and treatment of various forms of cancer. Green tea is also believed to exhibit beneficial effects following:

- Arthritis
- Bone Density
- Stress

In addition, it has also found to exhibit:

- Antiviral properties
- Anticariogenic effects
- Ultraviolet skin protection



# Green tea consumption and the risk of incident functional disability in elderly Japanese: the Ohsaki Cohort 2006 Study

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## Abstract

### **BACKGROUND:**

Previous studies have reported that green tea consumption is associated with a lower risk of diseases that cause functional disability, such as stroke, cognitive impairment, and osteoporosis. Although it is expected that green tea consumption would lower the risk of incident functional disability, this has never been investigated directly.

### **OBJECTIVE:**

The objective was to determine the association between green tea consumption and incident functional disability in elderly individuals.

### **DESIGN:**

We conducted a prospective cohort study in 13,988 Japanese individuals aged  $\geq 65$  y. Information on daily green tea consumption and other lifestyle factors was collected via questionnaire in 2006. Data on functional disability were retrieved from the public Long-term Care Insurance database, in which subjects were followed up for 3 y. We used Cox proportional hazards regression analysis to investigate the association between green tea consumption and functional disability.

### **RESULTS:**

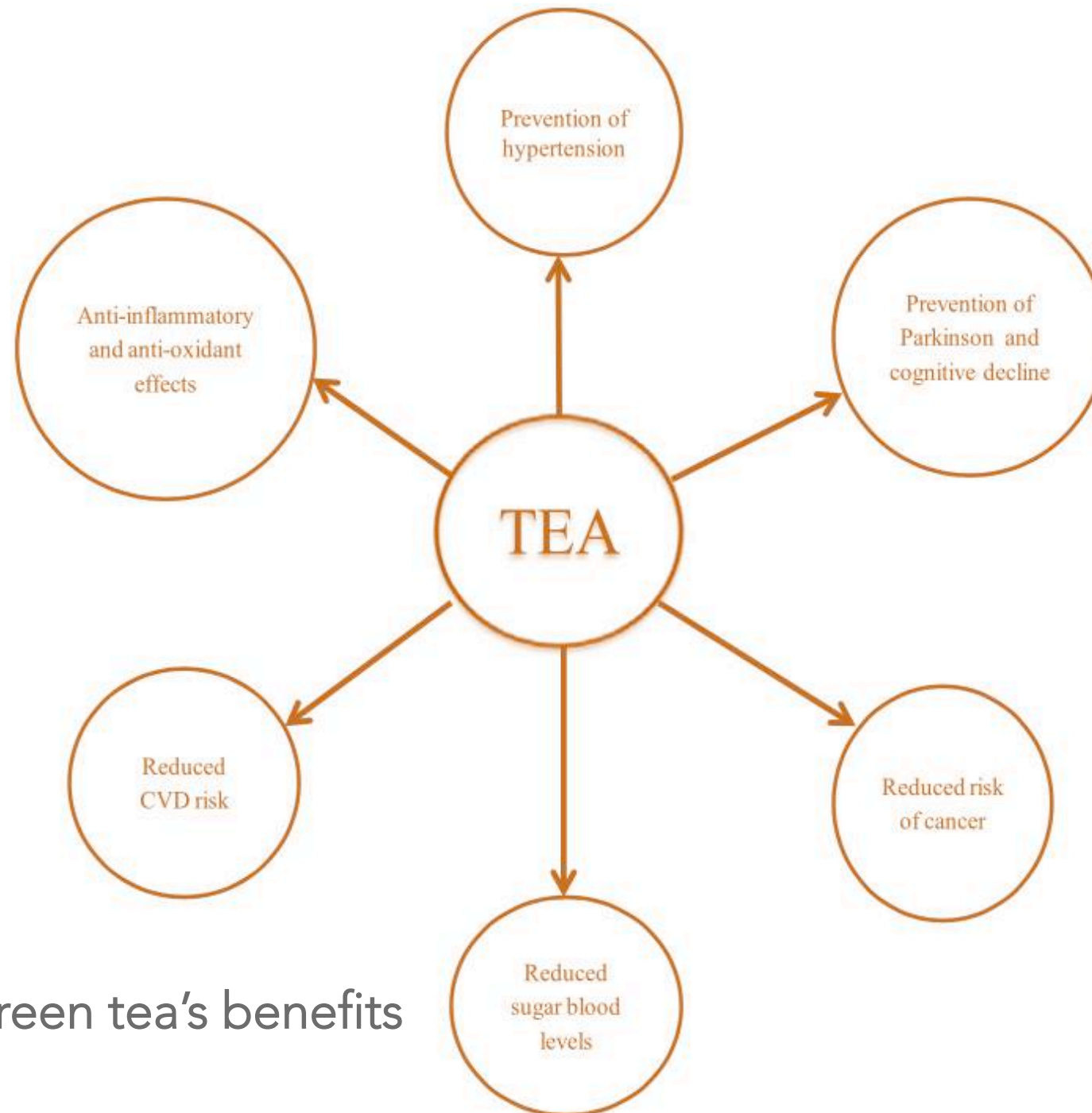
The 3-y incidence of functional disability was 9.4% (1316 cases). The multiple-adjusted HR (95% CI) of incident functional disability was 0.90 (0.77, 1.06) among respondents who consumed 1-2 cups green tea/d, 0.75 (0.64, 0.88) for those who consumed 3-4 cups/d, and 0.67 (0.57, 0.79) for those who consumed  $\geq 5$  cups/d in comparison with those who consumed  $< 1$  cup/d (P-trend  $< 0.001$ ).

### **CONCLUSION:**

Green tea consumption is significantly associated with a lower risk of incident functional disability, even after adjustment for possible confounding factors.

This study points out how green tea consumption is significantly associated with a lower risk of incident functional disability in elderly individual, such as stroke, cognitive impairment, and osteoporosis.





Others green tea's benefits

# Tomatoes

Lycopene is the pigment principally responsible for the deep-red color of ripe tomato fruits and tomato products. The consumption of tomatoes and tomato products containing lycopene have been shown to be associated with *decreased risk* of chronic diseases like **cancer** and **cardiovascular diseases** in several recent studies.



## Tomatoes and Prostate Cancer - HPFS Study

In 1995, a study was conducted examining the relationship between the intake of various carotenoids, fruits, and vegetables and the risk of prostate cancer.

Of the 46 fruits, vegetables, and related products that were analyzed in the study, only four were significantly associated with a lower prostate cancer risk.

Of these four, tomato sauce, tomatoes and pizza sauce, but not strawberries, were primary sources of **lycopene**.

# Processed or Fresh Tomatoes?

Studies have found that tomato paste and other processed tomato products are even more effective than fresh tomatoes in preventing prostate cancer.

This seems to be in contrast to the messages that we hear, of consuming fresh fruits and vegetables whenever possible for maximum health benefits.

However, numerous studies have revealed that tomato processing actually increases the bioavailability of lycopene to humans. This is because processing converts much of the trans-form of lycopene found in fresh tomatoes into the cis-form, which is much more readily taken up in humans.



# Tomatoes and Other Effects

The evidence suggests that the anti-proliferative properties of lycopene **may extend it's effects to other types of cancer**, beyond just that of prostate cancer.

In addition, lycopene may be useful in **preventing heart disease**.

Studies have shown that lycopene inhibits cholesterol synthesis and enhances the breakdown of the bad cholesterol, low-density lipoprotein (LDL).

# Nuts

In 2003, the U.S. FDA approved this package label:

“Scientific evidence suggests but does not prove that eating 1.5 ounces per day of most nuts, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease.”

According to FDA, “Types of nuts eligible for this claim are restricted to almonds, hazelnuts, peanuts, pecans, some pine nuts, pistachio nuts and walnuts..”



30 gr walnuts = 2 gr of alfa-linoleic acid (Omega 3)

# Nuts

Nuts are important for what they don't offer:

1. Nuts do not contain cholesterol.
2. Nuts only contain trace amounts of sodium.  
(Unless it has been added to the nuts during processing)

Nuts are usually thought of as a high fat food. Although, this is true – nuts are high in fat - it is not the same as animal fat. Nuts are mostly high in heart-healthy unsaturated fats, the fats that lower your bad cholesterol.

## Walnuts

One ounce of walnuts (about 14 shelled walnut halves) is all that is needed to meet the dietary recommendations for omega-3 FA. The type of omega-3 FA found in walnuts is alpha-linolenic acid, which can be transformed into either EPA or DHA in humans and animals.

## Almonds

One ounce of almonds (about 20-24 shelled whole almonds) provides 35% of the daily value for vitamin E.

## Peanuts

Although it is often discussed with nuts, peanuts are actually a legume, along with dry beans, peas and lentils. One ounce of roasted peanuts provides about 10% of the daily value for folate.

# The Importance of Specific Nuts

As discussed earlier, omega-3 fatty acids (alpha-linolenic acid found in walnuts and other sources included) help to decrease one's risk for CVD.

A recent study has also suggested that a diet rich in foods containing vitamin E may help protect some against the development of Alzheimer's disease.

Folate is a B vitamin that has been recognized for some time now, particularly for women of childbearing age, as it is believed to help reduce the incidence of birth defects and lower the risk of heart disease.

## ORIGINAL ARTICLE

## Association of Nut Consumption with Total and Cause-Specific Mortality

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## ABSTRACT

**BACKGROUND**

Increased nut consumption has been associated with a reduced risk of major chronic diseases, including cardiovascular disease and type 2 diabetes mellitus. However, the association between nut consumption and mortality remains unclear.

**METHODS**

We examined the association between nut consumption and subsequent total and cause-specific mortality among 76,464 women in the Nurses' Health Study (1980–2010) and 42,498 men in the Health Professionals Follow-up Study (1986–2010). Participants with a history of cancer, heart disease, or stroke were excluded. Nut consumption was assessed at baseline and updated every 2 to 4 years.

**RESULTS**

During 3,038,853 person-years of follow-up, 16,200 women and 11,229 men died. Nut consumption was inversely associated with total mortality among both women and men, after adjustment for other known or suspected risk factors. The pooled multivariate hazard ratios for death among participants who ate nuts, as compared with those who did not, were 0.93 (95% confidence interval [CI], 0.90 to 0.96) for the consumption of nuts less than once per week, 0.89 (95% CI, 0.86 to 0.93) for once per week, 0.87 (95% CI, 0.83 to 0.90) for two to four times per week, 0.85 (95% CI, 0.79 to 0.91) for five or six times per week, and 0.80 (95% CI, 0.73 to 0.86) for seven or more times per week ( $P < 0.001$  for trend). Significant inverse associations were also observed between nut consumption and deaths due to cancer, heart disease, and respiratory disease.

**CONCLUSIONS**

In two large, independent cohorts of nurses and other health professionals, the frequency of nut consumption was inversely associated with total and cause-specific mortality, independently of other predictors of death. (Funded by the National Institutes of Health and the International Tree Nut Council Nutrition Research and Education Foundation.)

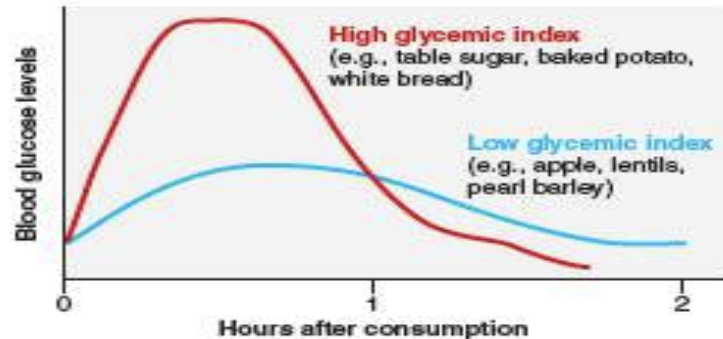
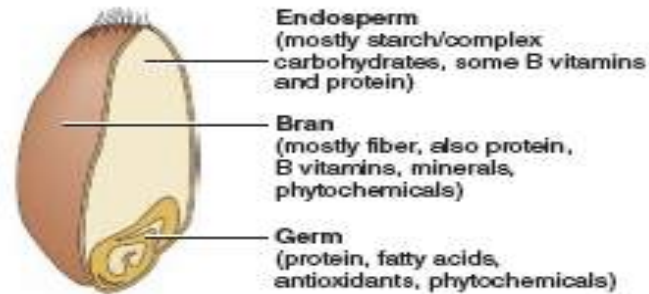
The frequency of nut consumption is inversely associated with total mortality, in particular of cardiovascular disease and type 2 diabetes mellitus, thanks to omega-3 (alpha-linolenic acid found in walnuts and other sources included).



A recent study has also suggested that a diet rich in foods containing vitamin E may help protect some against the development of Alzheimer's disease.

# Whole Grains

As defined by the Dietary Guidelines for Americans, a whole grain is a grain that contains the entire grain kernel: **outer bran layer** - **endosperm** - **inner germ layer**.



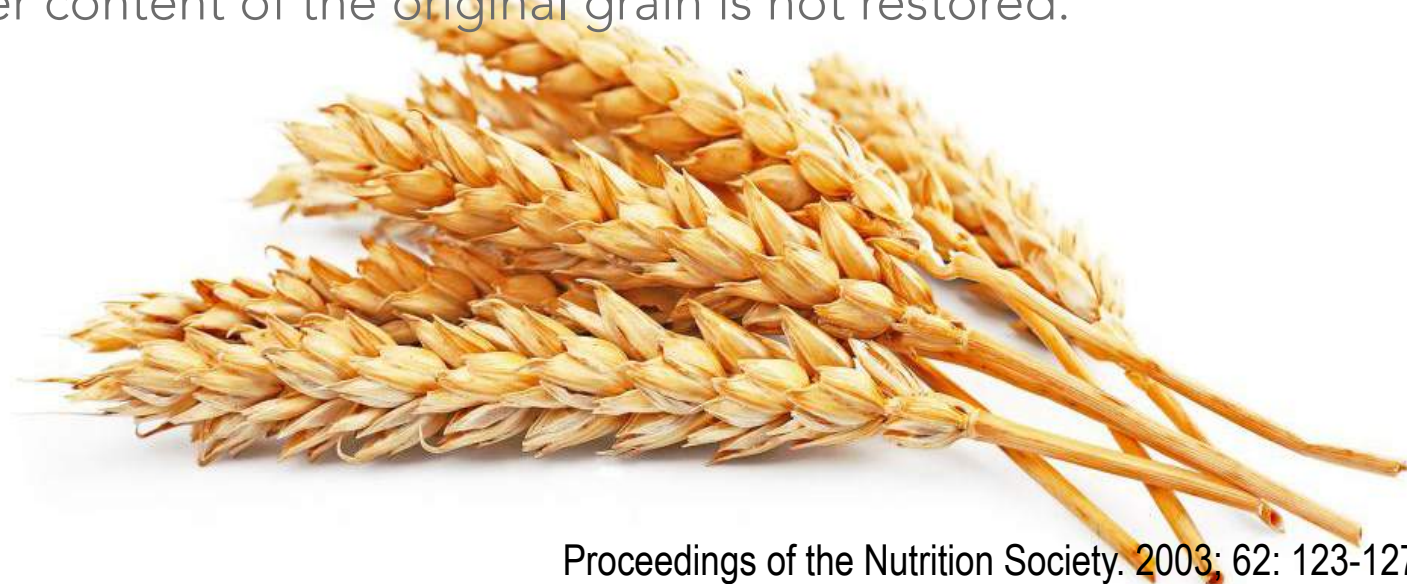
The **outer bran layer** is rich in B vitamins and phytonutrients such as flavonoids and indoles, along with a small amount of protein. The **endosperm** is predominantly carbohydrate, and the **germ layer** is concentrated with minerals such as iron and zinc, along with the antioxidant vitamin E.

# Whole Grains - The Milling Process

The milling process, which removes both the bran and the germ, determines how much of the whole grain is retained. It impacts the nutritional value of the end product.

A *refined grain* is a grain that has been milled. Milling has negative effects in that it takes dietary fiber, iron, and many B vitamins from the grain.

To make up for this loss of nutrients during the milling process, most refined grains are *enriched* after processing, where certain B vitamins (such as thiamin, riboflavin, niacin, and folic acid) and iron are added back. However, the fiber content of the original grain is not restored.



# Whole Grains

Benefits associated with whole wheat foods can be achieved at relatively low levels of intake (between 2 and 3 servings/d).

However, the consumption of whole wheat foods in some Western countries has been noted to be *less than one serving per day*, which is equivalent to less than one slice of whole wheat bread per day.



# "Make Half Your Grains Whole"

## Dietary Fiber

Insoluble fiber in wheat bran

Betaglucan & saponins in oats

Soluble fiber in oats, psyllium & whole cereal grains

## *Why is this Important?*

Because regular consumption of whole grain foods has been associated with a reduction in:

- Incidence of cardiovascular disease
  - Incidence of diabetes
- Cancer mortality at certain sites
  - Premature death

# Yogurt

In recent years, many studies have been published on the health effects of yogurt and the bacterial cultures used in the production of yogurt. The lactic acid-producing bacteria (LAB) used in the U.S. include *Lactobacillus* and *Streptococcus* species.

Dairy products are generally considered an excellent source of high-quality protein, calcium, potassium, phosphorus, magnesium, zinc, and the B vitamins riboflavin, niacin, vitamin B-6, and vitamin B-12. However, the final nutritional value of yogurt depends on several factors.

Current scientific concepts agree that yogurt cultures *are probiotics* (Live microorganism which when administered in adequate amounts confer a health benefit to the host) if two criteria are met:

1. A beneficial physiological effect can be obtained by consumption of the live cultures
2. The benefit has been sustained appropriately in human studies.

The benefits of yogurt and LAB on gastrointestinal health have been explored mainly in animal models and, occasionally in human subjects as well. In some studies using yogurt, individual LAB species, or both, promising health benefits were found for individuals with: Lactose Intolerance – Constipation - Diarrheal diseases -Colon Cancer - Inflammatory Bowel Disease (IBD)- *Helicobacter pylori* infection- Allergies

# The perfect balance

Mediterranean Diet was added by UNESCO to the Intangible Cultural Heritage of Humanity in 2013.

Numerous studies underline a lower risk of heart disease and early death in who follows it due to reduction of:

- Blood Pressure
- Cholesterol
- Blood Glucose
- Weight Gain

