

LOWERING YOUR CHOLESTEROL WITH DIET AND EXERCISE



Presented by
Nutritionist

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Cigna Provider

CONTRIBUTORS OF HEART DISEASE AND HIGH VLDL CHOLESTEROL

- **Wrong Foods:**
- **Excessive Sugar, High Fructose Corn Syrup, High Glycemic Foods**
- **Fried Foods, Processed Foods- devoid of Plant based Fibers, Vitamins & Minerals**
- **Environmental Toxins and Heavy Metals**
- **Bad Genes**

What's on your plate?



	NOMANCLATURE AND MAIN HISTOLOGY	SEQUENCES IN PROGRESSION OF ATHEROSCLEROSIS	EARLIEST ONSET	MAIN GROWTH MECHANISM	CLINICAL COLLERLATION
ENDOTHELIAL DYSFUNCTION ↓	Initial lesion <ul style="list-style-type: none"> • histologically "normal" • macrophage infiltration • isolated foam cells 		from first decade	growth mainly by lipid addition	clinically silent
	Fatty streak <ul style="list-style-type: none"> mainly intracellular lipid accumulation 		from third decade		
	Intermediate lesion <ul style="list-style-type: none"> • intracellular lipid accumulation • small extracellular lipid pools 		from fourth decade		
	Atheroma <ul style="list-style-type: none"> • intracellular lipid accumulation • core of extracellular lipid 		thrombosis and/or hematoma		
	Fibroatheroma <ul style="list-style-type: none"> • single or multiple lipid cores • fibrotic/calcific layers 				
	Complicated lesion <ul style="list-style-type: none"> • surface defect • hematoma-hemorrhage • thrombosis 				

LIPOPROTEINS

- Lipoproteins are the particles that transport cholesterol and triglycerides in the blood stream.
- Not all are Bad

DIETARY GUIDELINES 2015

- Does not mention reducing cholesterol
- Removes the upper limit on fats (healthy fats)
- Focus on less process foods

HDL- GOOD- HELPS EXCRETE CHOLESTEROL FROM BODY



Tekening: Auke Herrema

NON-HDL CHOLESTEROL

TOTAL CHOLESTEROL - HDL CHOLESTEROL

- **Commonly used marker for a blood lipid pattern associated with increased risk of heart disease.**

SPECTRACELL LABS



The Size/Density and Number of Particles Determine Your Risk

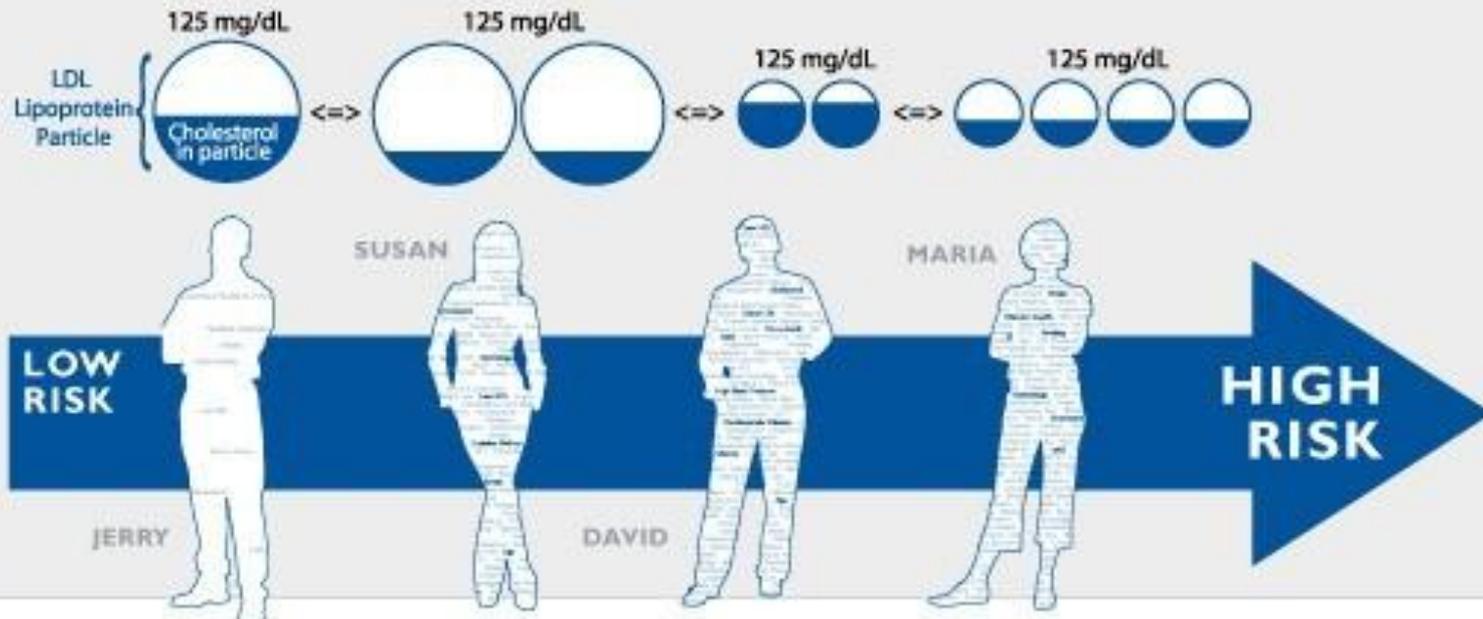
LDL CHOLESTEROL MEASUREMENTS DO NOT DETERMINE THE NUMBER OF LDL PARTICLES

LDL particles can be large or small, and the amount of cholesterol contained within these particles varies widely. Smaller particles have a greater risk of causing cardiovascular disease. An increased number of particles also has a higher risk. Bigger is better!

LIPOPROTEIN PARTICLES VS. CHOLESTEROL

Each patient shown has the same LDL cholesterol of 125 mg/dL.

Maria has the higher risk because her LDL particles are the smallest and she has a lot of them.



STATIN DRUGS SIDE EFFECTS

- Headache
- Gastrointestinal complaints
- Elevated Liver Enzymes
- Myalgia- Muscle soreness, weakness, pain in 30-50% of patients- no elevation of creatinine kinase
- Myopathy- Severe inflammation of the muscle- w/ assoc. creatinine kinase
- Rhabdomyolysis- Severe myopathy- rare and life threatening.

EXCESS LEAD AT LOW LEVELS CONTRIBUTES TO CARDIOVASCULAR DISEASE

Lead and CVD Circulation 2006;114:138-1399

Epidemiology

Blood Lead Below 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) and Mortality Among US Adults

Andy Mittlek, MPH, Paul Mattson, PhD, Vicki Barman, MD, Ellen K. Silbergeld, PhD, Elaine Gazdar, MD, DPH

Background—Blood lead levels above 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) in adults have been associated with increased risk of cardiovascular, cancer, and all-cause mortality. The objective of the present study was to determine the association between blood lead levels below 0.48 $\mu\text{mol/L}$ and mortality in the general US population.

Methods and Results—Blood lead levels were measured in a nationally representative sample of 10 740 adult participants of the Third National Health and Nutrition Examination Survey conducted in 1988 to 1994 and followed up for up to 12 years for all-cause and cause-specific mortality. The geometric mean blood lead level in study participants was 0.32 $\mu\text{mol/L}$ (7.26 $\mu\text{g/dL}$). After multivariable adjustment, the hazard ratios (95% CIs) for comparisons of participants in the highest quintile of blood lead (0.67 $\mu\text{mol/L}$ [15.62 $\mu\text{g/dL}$]) with those in the lowest quintile (0.09 $\mu\text{mol/L}$ [2.19 $\mu\text{g/dL}$]) were 1.23 (1.08 to 1.39), P_{trend} across quintiles = 0.002 for all-cause mortality and 1.15 (1.04 to 1.26), P_{trend} across quintiles = 0.005 for cardiovascular mortality. Blood lead level was significantly associated with both myocardial infarction and stroke mortality, and the association was evident at levels ≥ 0.10 $\mu\text{mol/L}$ (2.42 $\mu\text{g/dL}$). There was no association between blood lead and cancer mortality in this range of exposure.

Conclusions—The association between blood lead levels and increased all-cause and cardiovascular mortality was observed at substantially lower blood lead levels than previously reported. Despite the marked decrease in blood lead levels over the past 3 decades, environmental lead exposures remain a significant determinant of cardiovascular mortality in the general population, constituting a major public health problem. (Circulation. 2006;114:1388-1394.)

Key Words: risk factors • mortality • cardiovascular disease • myocardial infarction • stroke

Blood lead levels above 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) have been associated with increased risks of cardiovascular, cancer, and all-cause mortality in several occupational cohorts in the general population. Landberg and Schecter¹ also reported significant relationships between blood lead levels above 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) and cardiovascular, cancer, and all-cause mortality.

Editorial p 1347
Clinical Perspective p 1396

Environmental lead exposures in the United States have generally declined since the mid 1970s, largely because of the phase-out of lead in gasoline, which was finalized in 1996. In addition, lead-based paints were restricted in use, and a voluntary program removed lead solder from food cans.² Among US adults, the geometric mean blood lead level decreased from 0.60 $\mu\text{mol/L}$ (14.1 $\mu\text{g/dL}$) in 1976 to 0.30 to 0.38 $\mu\text{mol/L}$ (7.1 to 9.0 $\mu\text{g/dL}$) in 1999 to 2002. Currently, 99% of US adults have blood lead levels below 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$).³ To the best of our knowledge, the association of

blood lead levels below 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) with mortality and pain has never been investigated.

The purpose of the present analysis was to evaluate the association of blood lead levels below 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) with all-cause and cause-specific mortality in the general US population. To do so, we analyzed data from the Third National Health and Nutrition Examination Survey (NHANES III) Mortality Study, a cohort study based on a nationally representative sample of US adults in which blood lead was measured in 1988 to 1994, with participants followed up for up to 12 years.

Methods

Study Population

NHANES III was a stratified, multistage probability survey designed to allow a representative sample of the civilian, noninstitutionalized US population.⁴ Overall, 18 000 adults 18 years of age and older completed the NHANES III exposure and questionnaire between 1988 and 1994, after the enrollment of 2402 participants who were among those for blood lead. Of participants with blood lead ≥ 0.10 $\mu\text{mol/L}$ (2.42 $\mu\text{g/dL}$), 1456 participants also were among those

- Low level exposure blood lead > 2 ug/dl
- 55% increase CVD
- 89% increase in MI
- 151% increase stroke
- Affects 39% population

GOOGLE SCHOLAR- 2,060 ARTICLES

DAVID JENKINS, M.D. PORTFOLIO DIET

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The effect of combining plant sterols, soy protein, viscous fibers, and almonds in treating hypercholesterolemia
DJA Jenkins, CWC Kendall, A Marchie, D Faulkner... - Metabolism, 2003 - Elsevier
... The reductions in LDL-C and the LDL:HDL-C ratio were both significantly lower on the **portfolio diet** than on the control **diet** ($P < .001$ and ... Combining a number of foods and food components in a single **dietary portfolio** may lower LDL-C similarly to statins and so increase the ...
Cited by 80 Related articles All 9 versions Cite Save

The **portfolio diet for cardiovascular risk reduction**
DJA Jenkins, AR Josse, JMW Wong... - Current atherosclerosis ..., 2007 - Springer
Abstract Prompted by current **dietary** recommendations for the control of serum cholesterol to new targets to reduce the risk of coronary heart disease (CHD), and by the CHD risk reduction claims made for certain foods or food components, studies are now being ...
Cited by 23 Related articles All 6 versions Cite Save

Comparison of a **dietary portfolio diet of cholesterol-lowering foods and a statin on LDL particle size phenotype in hypercholesterolaemic participants**
I Gigueux, DJA Jenkins, CWC Kendall... - British journal of ..., 2007 - Cambridge Univ Press
Abstract The effect of **diet** v. statins on LDL particle size as a risk factor for CVD has not been examined. We compared, in the same subjects, the impact of a **dietary portfolio** of cholesterol-lowering foods and a statin on LDL size electrophoretic characteristics. Thirty- ...
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Viscous **dietary fibre and metabolic effects**
DJA Jenkins, A Marchie, LSA Augustin, E Ros... - Clinical Nutrition ..., 2004 - Elsevier
... Adapted from Jenkins et al., 2001 44 with permission from Elsevier. ... We assessed the effect of viscous fibre in the context of a **portfolio dietary** approach where we tried to diversify the active components in the **diet** to maximize our chances of success while reducing our risks. ...

FOREWORD BY JENNIFER H. MIERES, M.D.

Cholesterol DOWN



10 Simple Steps
to Lower Your
Cholesterol in
4 Weeks—Without
Prescription Drugs

Janet Bond Brill, Ph.D., R.D., LDN

TEN FOODS THAT LOWER CHOLESTEROL

1. Oatmeal, Oat based cereals like cherrios, Barley
2. Almonds, Flaxseeds, Walnuts, other nuts
3. Psyllium husks- MetaMucil,
4. Beans- all types
5. Apples- all types
6. Margarines with “Phytosterols” or “Plant Sterols”
7. Soy Proteins- tofu, tempeh, soy burgers, soy milk all types
8. Garlic- raw and cooked
9. Fatty fish- wild salmon, trout, sardines, herring
10. Vegetables and Fruits daily

AMERICAN HEART ASSOCIATION- RECIPES



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Beans Legumes Recipes

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Ants on a Log by Devin Alexander
Try this twist on the traditional snack favorite.
Heart-Healthy Recipe



Kid-Friendly Chicken Enchiladas with ...
Here is a kid-friendly Mexican dinner recipe the kids will love to help make it and eat!



Kid-Friendly White Bean and Avocado Wrap
This kid-friendly favorite makes a delicious meal or snack that you can have again and again, and...



Chipotle Chicken Stuffed Sweet Potatoes
Stuff savory sweet potatoes with spicy pulled chicken, beans, and corn for a comforting meal on c...



Guisado de arroz con carne
Esta receta de Cocina Simple con el Corazón es un favorito de la familia, es fácil ...



Tex-Mex Black Bean and Chicken Wrap
This delicious sandwich not only tastes amazing, but it's also a good way to get some ...



Sweet Potato Nachos
The seasoned sweet potatoes with the mellow cheese create a wonderful combination for a snack or ...



Mediterranean Couscous Salad with Chi...
Grapes add sweetness to this easy, no-cook dish that works easily for a packed lunch to work or f...

This Week's Top Rated Recipes



One-Pot Tuna Casserole...
This great one-pot American dish is easy to make and easy on your w...



Texas Caviar
Try this classic and traditional Southern-American black-eyed pea s...



PB and J Spirals by De...
Whole grain tortillas help make this kid-favorite lunch a hearty me...



Quinoa and Asian Pear ...
Crisp Asian pear, snow peas, and red bell pepper contrast with fluf...

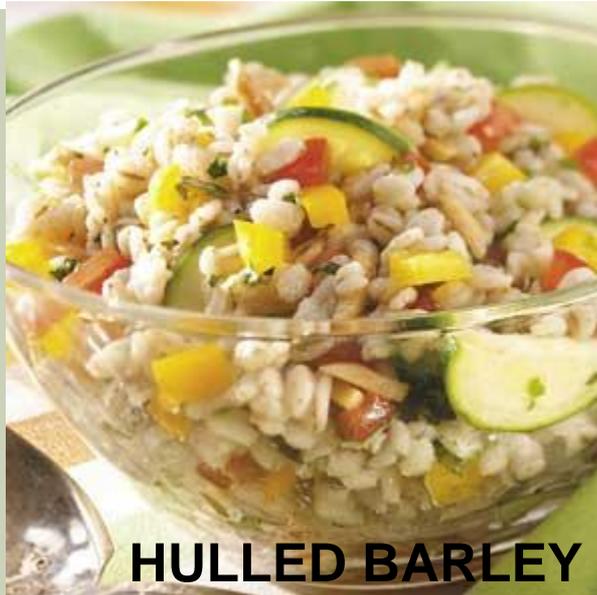


Bearymelon Cookies by ...
Your kids will love this cool summer snack as much as they love rea...

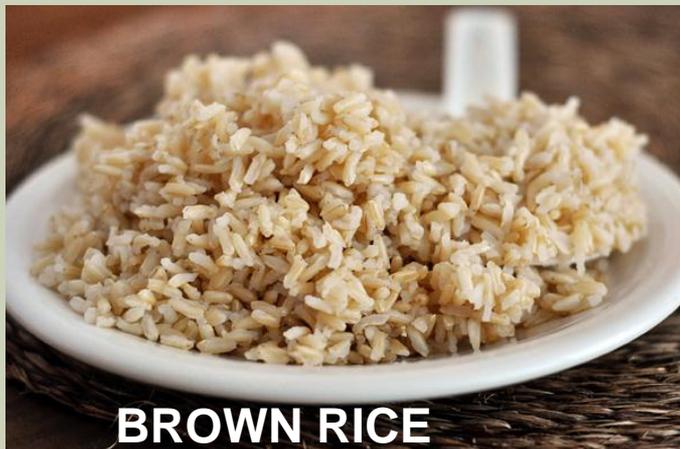
WHOLE GRAINS- OATMEAL, BARLEY, QUINOA, BROWN RICE- NO WHITES



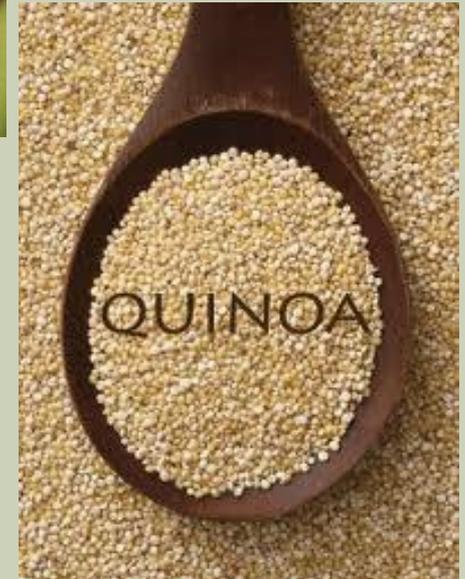
OATMEAL



HULLED BARLEY



BROWN RICE



QUINOA

ALMONDS, FLAXSEED, WALNUTS AND MORE- 1/4- 1/2 CUP DAILY

- Almonds, Walnuts Snacks, Add to Cereals
- Ground Flaxseed Add to smoothies, cereals salads
- Peanuts and natural peanut butter



HEALTHY OILS AND AVOCADO FAT



1-2 Tablespoons daily



Avocado-add to salads,
make guacomole

PSYLLIUM HUSKS

1-2 T. IN 8-12 OZ. WATER



**Plantago Plant
Soluble Fiber**



ALL BEANS- SOUPS, SPREADS, ADDED TO SALADS, COOKED WITH VEGGIES

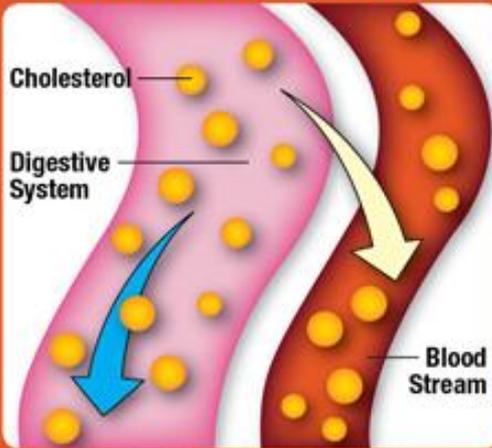


APPLES- EAT ONE DAILY



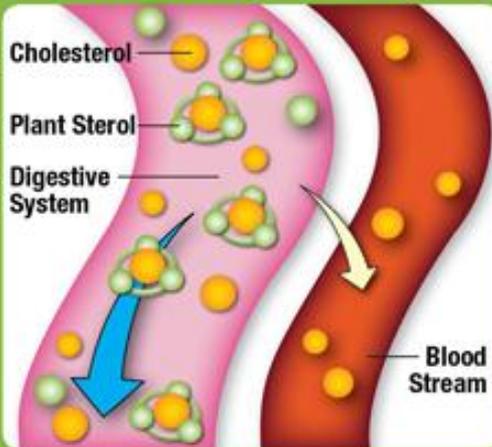
PLANT STEROLS WORK TO ACTIVELY LOWER YOUR CHOLESTEROL ABSORPTION

WITHOUT PLANT STEROLS



CHOLESTEROL IS ABSORBED FROM THE DIGESTIVE SYSTEM INTO THE BLOODSTREAM AND LITTLE IS REMOVED FROM THE BODY

WITH PLANT STEROLS

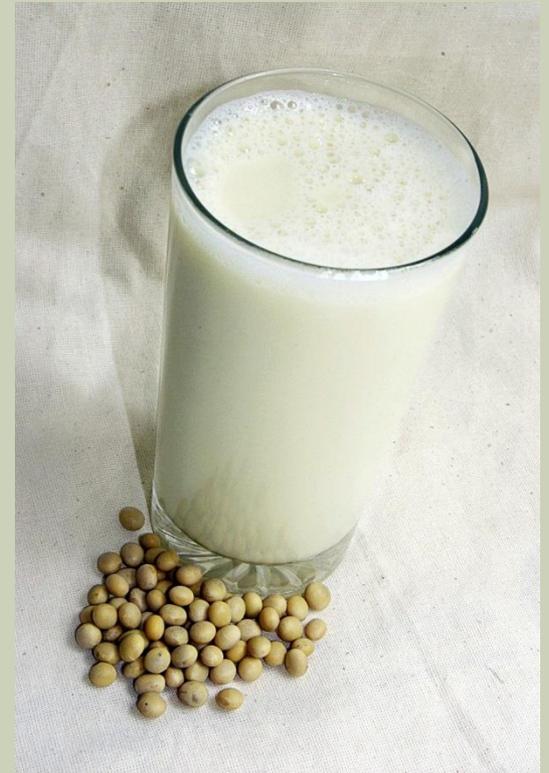


PLANT STEROLS ACTIVELY BLOCK CHOLESTEROL FROM BEING ABSORBED INTO THE BLOODSTREAM AND MORE IS REMOVED FROM THE BODY

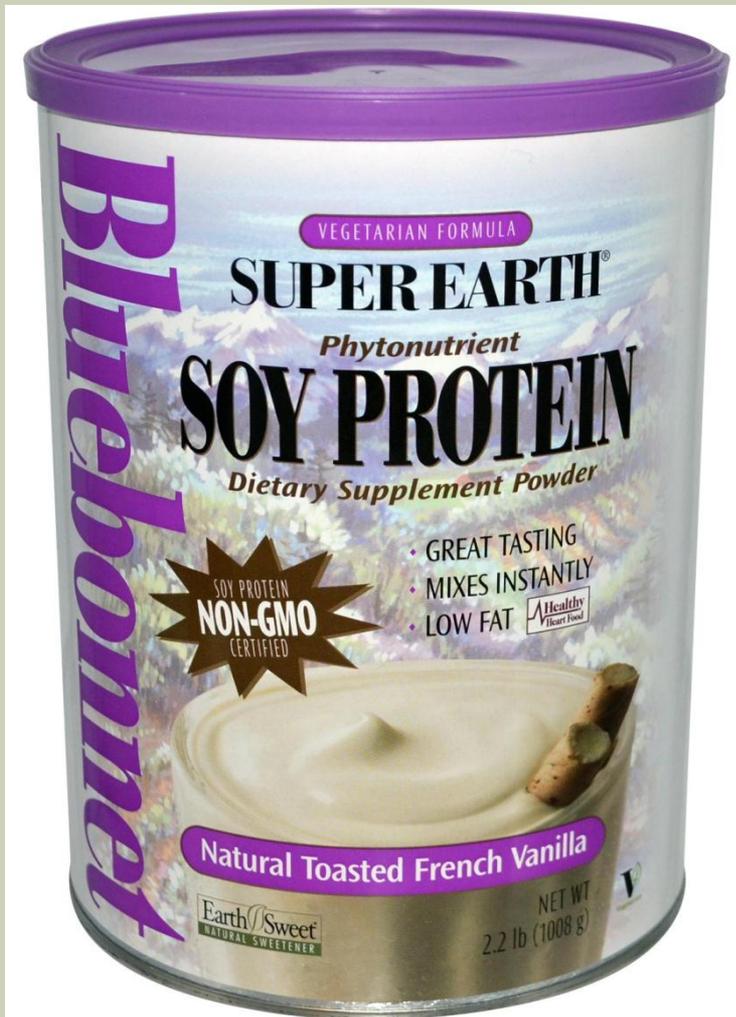
MARGARINES WITH PLANT STEROLS



SOY PRODUCTS- PREFERABLY ORGANIC



SOY PRODUCTS- PREFERABLY ORGANIC



SOY PRODUCTS- TOFU PREFERABLY ORGANIC



SOY PRODUCTS- TEMPEH PREFERABLY ORGANIC



SOY PRODUCTS- TEMPEH PREFERABLY ORGANIC



GARLIC- ADD IT TO EVERYTHING!!



FATTY FISH- RICH IN EFA'S (ESSENTIAL FATTY ACIDS)



- ADD TO SALADS
- MAKE INTO BURGERS
- ADD TO WRAPS WITH VEGGIES

FATTY FISH- RICH IN EFA'S (ESSENTIAL FATTY ACIDS)



**Trout, Mackerel, Tuna,
Herring, Sardines**

- Eat fish 3x-4x/week
- Wild is richer in EFA's than farmed

5+VEGETABLES AND 3+ FRUITS DAILY



SNACKS

- Fruits with almonds, cashews, sunflower seeds, walnuts
- Yogurt with granola, fresh fruit
- Hummus with veggies, whole grain crackers
- Fresh fruit and SOY protein smoothies
- Fruit and veggie smoothies
- Baked kale or veggies chips
- Whole grain pretzels- low salt or salt free
- Oat based nutrition bars- 2+ grams fiber or more

EXERCISE- 30 MINUTES 5 DAYS/ WEEK



SUPPLEMENTS- FISH OILS

- EPA- 1000 mg- 2000 mg daily
- DHA- 300-600 mg daily
- Other EFA's- 100-300 daily

10 Fish Oil Benefits

- 1. Reduces Inflammation**
- 2. Cancer Prevention**
- 3. Reduces Alzheimer's Risk**
- 4. Improved Joint Pain**
- 5. Lifts Depression**
- 6. Gut Health**
- 7. Improved ADHD**
- 8. Thickens Hair**
- 9. Glowing Skin**
- 10. Heart Health**



SUPPLEMENTS- FISH OILS

Supplement Facts		Servings Per Container 40	
Serving Size 1 Teaspoonful (5 ml)			
Each Teaspoonful Contains	% D.V.		
Calories (energy)	40		
Calories from Fat	40		
Total Fat	4 g	6%	☆
Saturated Fat	1 g	5%	☆
Polyunsaturated Fat	2 g		†
Monounsaturated Fat	1 g		†
Cholesterol	15 mg	5%	☆
Vitamin E Natural (d-Alpha Tocopherol)	10 IU	33%	
Omega-3 Fatty Acids	1,600 mg		†
EPA (Eicosapentaenoic Acid)	800 mg		†
DHA (Docosahexaenoic Acid)	500 mg		†
Other Omega-3 Fatty Acids	300 mg		†

☆ Percent Daily Value is based on a 2000 calorie diet
 † Daily Value (D.V.) not established.



SUPPLEMENTS- FISH OILS



KIRKLAND Signature

From
**Healthy Hearts
to Healthy
Minds**

KIRKLAND Signature
NATURAL
**Omega 3
Fish Oil**
1000 mg

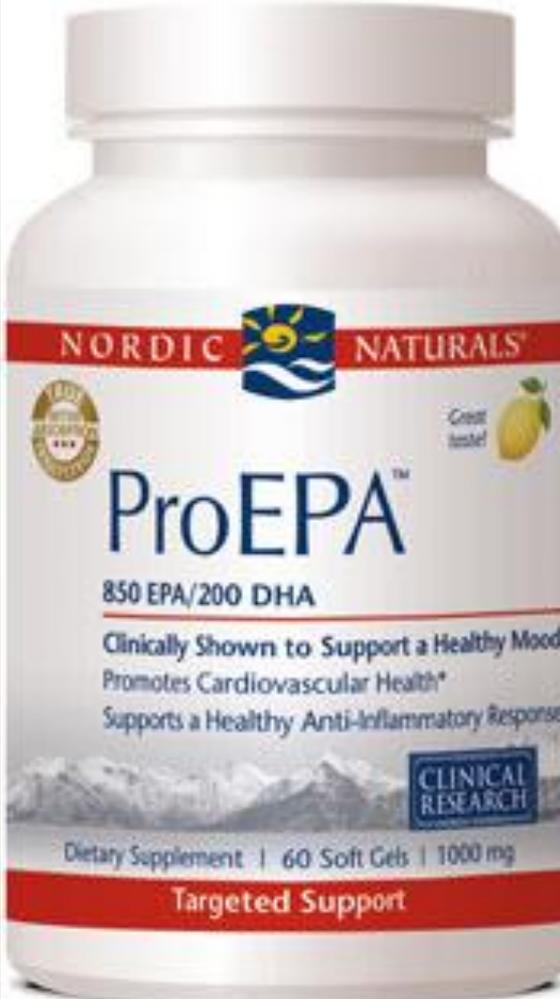
Concentrated Fish Oil
with 300 mg Omega-3 Fatty Acids

Supports healthy **HEART**
JOINTS, BRAIN and SKIN

400
SOFTGELS

Dietary Supplement

Supports healthy Heart, Joints, Brain and Skin¹



NORDIC NATURALS

Great taste!

ProEPA™
850 EPA/200 DHA

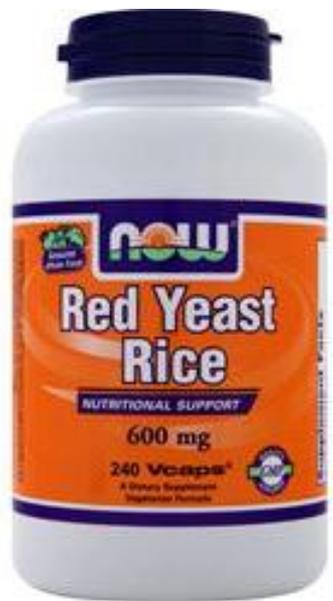
Clinically Shown to Support a Healthy Mood*
Promotes Cardiovascular Health*
Supports a Healthy Anti-Inflammatory Response*

CLINICAL RESEARCH

Dietary Supplement | 60 Soft Gels | 1000 mg

Targeted Support

RED YEAST RICE-17% LOVASTATIN 1800MG DAILY



Lipid Lowering Efficacy of Red Yeast Rice
©2011 Pharmacology Weekly, Inc.

Study	Dose	TC	TG	LDL-C	HDL-C	CRP
Keithley JK et al 2002	2400 mg/d	↓13%	↓43%	↓23%	-	-
Zhao SP et al 2003	1200 mg/d	↓20%	↓32%	↓34%	↑18%	-
Li JJ et al 2005	1200 mg/d	↓13%	↓13%	↓23%	-	↓28%
	2400 mg/d	↓22%	↓23%	↓32%		↓30%
Cicero AFG et al 2005	340 mg/d	↓16-17%	↓15-16%	↓21-24%	↓3 to ↑3%	-
Hu CI et al 2006	1200 mg/d	↓21%	↓32%	↓31%	↑22%	↓60%
Li et al 2007	1200 mg/d	↓19%	↓16%	↓26%	-	↓38%
Lin CC et al 2007	1200 mg/d	↓21%	↓16%	↓28%	↑0.9%	-
Zhao SP et al 2007	1200 mg/d	↓11%	↓10%	↓17%	↑2%	-
Gheith O et al 2008	1200 mg/d	↓30%	-	-	-	-

Doses were usually given in two divided doses. Changes in lipids reflect percent reductions compared to baseline values. Red yeast rice is also marketed as Cholestin or Xuezhikang supplements.

VITAMIN D3- 5000IU

Hypothesis: Recent global changes are related to decreased vitamin D

Less sun = Less Vitamin D = More disease

Less time outdoors

- Air Conditioning
- TV & internet & video games
- Live in smoggy cities
or in suburbs with little walking
- Less work outdoors

Less sun when outdoors

- Sunscreen
- Protective clothing

More disease

Cancers of prostate, breast, pancreas, bladder, skin, Osteoporosis, Rickets, MS, Falls/fractures in elderly

Diabetes, Influenza, Kidney, Depression, Chronic fatigue, Birth problems, SAD, Overweight, Heart disease, Lupus, Chronic Pain, ALS, TB, IBD, COPD, Colds, All cancers, Psoriasis, Bone density/fractures

Autism, Gum, Allergy, AIDS, Asthma, Headache, Rosecea, Battered child, Cystic Fibrosis

Strong Proof
that increase in Vit D decreases incidence

Associated
with low Vit D for most people with the disease

Suspected
relationship with low Vitamin D

GRILLED SALMON WITH ASPARAGUS AND GREENS



WHOLE WHEAT BEAN VEGGIE WRAP



GREEN BEANS WITH WALNUTS AND FAVA BEANS



PASTA VEGETABLE FETA OR TOFU SALAD



BROWN RICE PILAF



foods-that-lowerbloodpressure.com

CHOLESTEROL DOWN APP DAILY TRACKER AND FOOD GUIDE

Download App @\$2.99 Each



Features

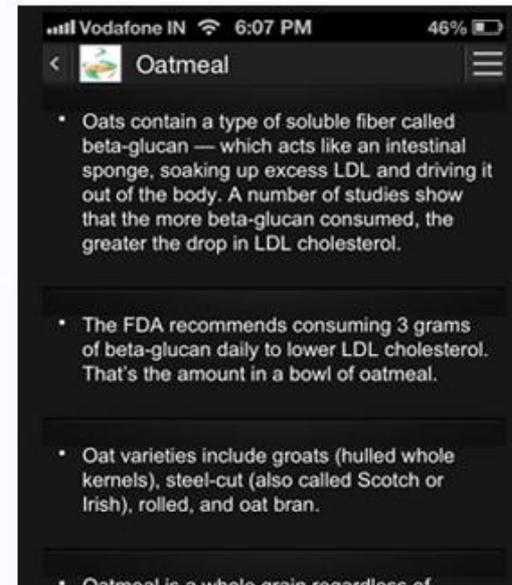
1 Daily Tracker

Check off each step as you go.



2 10 Simple Steps to Lower Cholesterol

How-to details for each of the 10 steps, with practical tips and safety precautions.



WEBSITES AND RESOURCES

- [*CHOLESTEROL DOWN BY JANET BRILL, PHD.*](#)
- [*www.portfoliodiet.com*](http://www.portfoliodiet.com)
- [*www.heart.org*](http://www.heart.org)
- [*www.mayoclinic.org*](http://www.mayoclinic.org)
- [*www.nhlbi.nih.gov/health*](http://www.nhlbi.nih.gov/health)
- [*National Cholesterol Education Program*](#)
- [*http://www.drjanet.com/blog/recipe/*](http://www.drjanet.com/blog/recipe/)
- [*www.cleananddelicious.com*](http://www.cleananddelicious.com)
- [*www.eatingwell.com*](http://www.eatingwell.com)
- [*www.localharvest.org*](http://www.localharvest.org)

PUBLIC POLICY AND FEDERAL DOLLARS- WE CAN SHIFT WHERE \$\$ GO

- Federal subsidies of fresh produce and junk food, prepared by US PIRG, a non-profit organization, revealed your tax dollars annually per person go to: \$7.36 for junk food and 11 cents to buy apples/produce.
- USDA data, 92 cents of each food dollar now goes to someone other than the farmer—it's actually spent on the various manufacturing and packaging processes associated with processed foods.
- "We're not going to undo that unless we buy more directly from farmers and buy unprocessed food," Michael Pollen

LOCALHARVEST.ORG

- Buy direct from a local farmer- just put in your zip code
- Build a garden with your family
- Get involved with the local school volunteering with the garden

“...one third of what we eat keeps us alive.

Two thirds of what we eat keeps doctors alive.”

Unknown

