

Fish Oils and Hypertension

Summaries of the latest research concerning fish oils and hypertension

Fish oils recommended for heart disease prevention

DALLAS, TEXAS. The American Heart Association has reviewed the benefits of regular consumption of fish and fish oils. The review concludes that fish and fish oils help prevent cardiovascular disease including fatal and non-fatal heart attacks, strokes, sudden cardiac death, and coronary artery disease (angina). The reviewers believe that the mechanisms by which fish oils exert their protective effect include: * Reduction in susceptibility to ventricular arrhythmia * Decrease in platelet aggregation * Reduction in triglyceride levels * Retardation of atherosclerosis * Lowering of blood pressure * Promotion of nitric oxide induced endothelial relaxation * Anti-inflammatory effects. Fish and fish oils contain long-chain polyunsaturated omega-3 fatty acids, more specifically, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). The average American diet contains only about 100-200 mg/day of EPA and DHA. The diet also contains about 1.4 grams/day of alpha-linolenic acid mainly from canola and soybean oils. Alpha-linolenic acid can be converted in the body to EPA and DHA, but not in amounts sufficient to make a significant impact. Some studies have shown that alpha-linolenic acid, on its own, may have heart-protective effects, but other studies have failed to confirm this. NOTE: Flax seed oil is a particularly rich source of alpha-linolenic acid. The American Heart Association recommends that people increase their intake of long-chain polyunsaturated omega-3 oils from fish or directly from fish oil supplements. Healthy people should consume oily fish at least twice a week. Patients with heart disease should eat enough oily fish on a daily basis to obtain about 1 gram per day of EPA and DHA combined or take a fish oil supplement providing 1 gram per day of EPA + DHA. Patients with high triglyceride levels should receive 2-4 grams/day of EPA+DHA under the care of a physician. The reviewers point out that many fish species contain significant amounts of methylmercury, polychlorinated biphenyls (PCBs), dioxins, and other environmental contaminants and therefore must be consumed in moderation, if at all, especially by children and pregnant and lactating women. Poorer quality fish oils may also contain these contaminants, so it is important to only supplement with highly purified, pharmaceutical grade oils. *Kris-Etherton, PM, et al. Fish consumption, fish oil, omega-3 fatty acids, and cardiovascular disease. Circulation, Vol. 106, November 19, 2002, pp. 2747-57/*

Fish consumption combats hypertension and obesity

PERTH, AUSTRALIA. Obesity in patients with high blood pressure is associated with high cholesterol levels, poorer glucose control, and an increased risk of atherosclerosis and heart attacks. Researchers at the University of Western Australia have just released the results of a study that clearly demonstrates that a weight-loss diet combined with daily fish consumption is highly effective in reducing blood pressure, lowering triglyceride levels while increasing "good" (HDL2) cholesterol levels and in improving glucose tolerance. The study involved 63 men and postmenopausal women who were overweight and being treated for hypertension. The participants were randomly assigned to one of four groups. Group 1 included a daily fish meal (turbot, sardines, tuna or salmon) in their diet; group 2 consumed a calorie-restricted diet; group 3 consumed a calorie-restricted diet including a daily fish meal; and group 4 served as a control. Blood pressure, glucose tolerance, fatty acid profile, and cholesterol levels were measured at baseline and after 16 weeks on the diets. The two calorie-restricted diets resulted in an average weight loss of 5.6 kg (12 lbs) during the first 12 weeks of the experiment. No significant weight loss was observed in the control group and the daily fish meal group. Waking blood pressures decreased by 5.5 mm Hg (systolic) and 2.2 mm Hg (diastolic) in the calorie-restricted group and

by 13.0 mm Hg and 9.3 mm Hg in the group combining a daily fish meal with a calorie-restricted diet. The combination of fish consumption and weight loss improved glucose and insulin metabolism significantly and also resulted in a 38% reduction in triglyceride levels and a 24% increase in the level of "good" cholesterol (HDL2). The researchers conclude that a combination of weight loss and daily fish consumption significantly reduces the risk of cardiovascular disease among obese, hypertensive patients. *Mori, Trevor A., et al. Dietary fish as a major component of a weight-loss diet: effect on serum lipids, glucose, and insulin metabolism in overweight hypertensive subjects. American Journal of Clinical Nutrition, Vol. 70, November 1999, pp. 817-25 [57 references]*

Fish oils benefit heart transplant patients

OSLO, NORWAY. Most heart transplant patients (60-100%) develop hypertension within six months following their surgery. It is believed that the increase in blood pressure is caused by the anti-rejection drug cyclosporine. Medical doctors at the University of Oslo now report that supplementation with fish oils will prevent the development of hypertension. Their clinical trial involved 28 heart transplant patients who, 4 days after surgery, were randomized to receive either 4 grams of fish oil (providing 1.9 g of eicosapentaenoic acid [EPA] and 1.5 g of docosahexaenoic acid [DHA] as well as 14.8 mg of vitamin E) or 4 grams of corn oil with vitamin E once a day for 6 months. The patients' blood pressure (24-hour readings) were measured 12 days, 1 month, 2 months, 3 months, and 6 months after surgery. Blood samples were also taken for analysis of EPA and DHA content. The researchers found that the average (mean) systolic blood pressure in the placebo group had increased by 17 mm Hg at the end of the 6-month supplementation period. In contrast, the average systolic blood pressure in the fish oil group had decreased by 2 mm Hg. The average diastolic pressure in the placebo group increased by 21 mm Hg as compared to an increase of only 10 mm Hg in the fish oil group. The researchers also observed a clear inverse correlation between the blood serum levels of EPA + DHA and systolic blood pressure. They conclude that daily supplementation with 4 grams of fish oil can markedly reduce the tendency to develop hypertension among cyclosporine-treated heart transplant patients. *Andreassen, Arne K., et al. Hypertension prophylaxis with omega-3 fatty acids in heart transplant recipients. Journal of the American College of Cardiology, Vol. 29, May 1997, pp. 1324-31 /*

Fish oils recommended for diabetes and hypertension

TROMSO, NORWAY. Fish and fish oils help protect against the development of atherosclerosis and heart disease. It is believed that fish oils exert their protective effect by lowering blood pressure and the levels of triglycerides and very-low-density lipoprotein (VLDL). Fish oils are also believed to reduce platelet aggregation and to suppress the growth of smooth-muscle cells in the arterial walls. Many people with hypertension also suffer from diabetes and there has been concern that fish oil supplementation may aggravate problems with glucose intolerance. Researchers at the University of Tromso now report that fish oil supplementation lowers blood pressure significantly in people with hypertension and has no effect on glucose control even in people with mild diabetes. The study involved 78 obese volunteers with essential hypertension. The participants were randomly assigned to one of two equal-sized groups. The fish oil group received four fish oil capsules a day (containing a total of 3.4 grams of a mixture of eicosapentaenoic acid and docosahexaenoic acid) for a period of 16 weeks. The control group received four corn oil capsules a day. At the end of the test period the average (mean) systolic blood pressure had dropped by 4.4 mm Hg and the diastolic pressure by 3.2 mm Hg in the fish oil group. The average blood pressure in the control group did not change. The researchers also found that plasma triglyceride and VLDL levels in the fish oil group decreased significantly (by about 9 per cent) while they increased significantly (by about 12 per cent) in the control group. There were no changes in total or low-density-lipoprotein levels in either group. Extensive tests (oral glucose tolerance, hyperglycemic and hyperinsulemic clamps) were done to evaluate the effect of fish oil supplementation on glucose control. No adverse effects were found. An editorial

accompanying the research report concludes that fish or fish oil is useful in the prevention of vascular disease in diabetics. Patients with diabetes should eat fish two to three times a week or, as an alternative, supplement with two to three one gram capsules of fish oil per day. *Toft, Ingrid, et al. Effects of n-3 polyunsaturated fatty acids on glucose homeostasis and blood pressure in essential hypertension. Annals of Internal Medicine, Vol. 123, No. 12, December 15, 1995, pp. 911-18* Connor, William E. *Diabetes, fish oil, and vascular disease. Annals of Internal Medicine, Vol. 123, No. 12, December 15, 1995, pp. 950-52/*

Controlled trials confirm blood pressure reduction with fish oils

BOSTON, MASSACHUSETTS. Numerous studies have concluded that fish oil consumption lowers blood pressure, but a few have found no effect and others have been inconclusive. Researchers at the Harvard Medical School have just completed a major evaluation of the results of 31 placebo-controlled trials involving 1356 subjects. They found that fish oil supplementation (mean dose of 5.6 grams/day) lowers systolic blood pressure (first [highest] reading of blood pressure measurement) by an average of 3.4 mm Hg and diastolic pressure (second [lowest] reading) by an average of 2.0 mm Hg. The effect is highly dose-dependent with 1 gram/day of fish oil lowering systolic pressure by an average of 0.66 mm Hg and diastolic pressure by an average of 0.35 mm Hg. Fish oil supplementation does not affect blood pressure in people with normal blood pressure, but relatively dramatic effects are seen in patients with high cholesterol levels and in patients with atherosclerosis. Both eicosapentaenoic and docosahexaenoic acids (the main components of fish oils) are effective in blood pressure reduction with docosahexaenoic acid being slightly superior. The Harvard researchers conclude that supplementation with 7.7 to 9 grams/day of fish oils will reduce systolic blood pressure by 4 mm Hg and diastolic pressure by 3 mm Hg in hypertensive individuals. Blood pressure reductions may be substantially larger among patients with atherosclerosis or high cholesterol levels. *Morris, Martha Clare, et al. Does fish oil lower blood pressure? A meta-analysis of controlled trials. Circulation, Vol. 88, No. 2, August 1993, pp. 523-33/*

Fish oils reduce blood pressure

BALTIMORE, MARYLAND. The daily consumption of fish oils (omega-3 polyunsaturated fatty acids) can significantly lower blood pressure in people suffering from hypertension. The benefit of the fish oils is comparable to that obtainable by sodium reduction and weight loss. A group of medical researchers at the Johns Hopkins Medical School evaluated the results of 17 clinical trials involving supplementation with fish oils for periods of three months or less. They found that the consumption of 3 grams per day of fish oil (6-10 capsules) or more led to impressive reductions in the blood pressure of hypertensive individuals. Systolic pressure was lowered by an average of 5.5 mm Hg and diastolic pressure was lowered by 3.5 mm Hg. The effect was found to be more pronounced at higher blood pressures and no significant effects were noted in people with normal blood pressure. Twenty-eight percent of the participants in the trials reported side effects such as a fishy taste or belching. The doctors suggest that fish oil supplementation may be a valuable therapy in patients with borderline hypertension who would otherwise be candidates for conventional drug therapy. They point out that the effects of long term (> 3 months) supplementation are unknown and that lower dosages than 3 g/day may be desirable and perhaps as effective. NOTE: Systolic pressure is the first (highest) reading given for a blood pressure measurement, diastolic is the second (lowest) reading, i.e. 120/80. *Appel, Lawrence J., et al. Does supplementation of diet with "fish oil" reduce blood pressure? Archives of Internal Medicine, Vol. 153, June 28, 1993, pp. 1429-38/*

Fish oil supplementation reduces blood pressure

CINCINNATI, OHIO. Conventional blood pressure lowering medications often have detrimental effects on quality of life and may lead to unfavourable changes in cholesterol levels. Several studies have found that supplementation with large amounts of fish oil (5-15 grams/day) lowers blood pressure significantly in hypertensive individuals. Whether smaller amounts are equally effective has been open to question. Researchers at the University of Cincinnati (Ohio) College of Medicine now report that daily supplementation with low doses of fish oil is indeed effective in lowering blood pressure in mildly hypertensive patients. Their study involved 33 patients (men and women) with a diastolic pressure between 90 and 104 mm Hg. After a four-week wash-out period during which the participants discontinued all medications the patients were randomly allocated to one of two groups. Group 1 supplemented with 2.04 grams/day of fish oil containing 410 mg of eicosapentaenoic acid and 285 mg of docosahexaenoic acid. Group 2 was given a placebo capsule daily containing safflower oil (80% linoleic acid). After 12 weeks and a four-week wash-out period the groups switched supplementation so that group 1 now received the placebo. Blood pressure, heart rate, and body weight were recorded at two-week intervals during the study and blood samples were collected and analyzed at the beginning and end of each treatment period. The researchers found that fish oil supplementation reduced diastolic pressure (sitting) by an average of approximately 4.4 mm Hg and systolic pressure by an average of 6.5 mm Hg when compared to values obtained prior to the start of treatment. There were no adverse effects on cholesterol levels. They conclude that fish oil supplementation is a safe and effective way of lowering blood pressure in mildly hypertensive subjects, but noted that the beneficial effects wear off relatively quickly once supplementation is discontinued. NOTE: This study was funded by a grant from RP Scherer Ltd. a manufacturer of fish oil products. *Radack, Kenneth, et al. The effects of low doses of n-3 fatty acid supplementation on blood pressure in hypertensive subjects. Archives of Internal Medicine, Vol. 151, June 1991, pp. 1173-80/*

Salt restriction and fish oil supplementation lower blood pressure

ADELAIDE, AUSTRALIA. Salt (sodium) restriction can help lower blood pressure in people with hypertension, but is less effective in people with normal pressure. Blood pressure tends to rise with age and there is some evidence that sodium restriction may help reduce this age-related increase. Fish oil supplementation is also effective in lowering blood pressure in hypertensive individuals, but its effect on people with normal pressure is unclear. Australian researchers report that a combination of fish oil supplementation and salt restriction is highly effective in lowering both systolic and diastolic blood pressure in elderly people with normal pressures. Their study involved 50 healthy volunteers aged 60 to 80 years whose mean initial systolic and diastolic blood pressures were 133 and 77 mm Hg respectively. The participants were randomly assigned to one of four groups. Group 1 supplemented with 8 fish oil capsules per day (providing 4.2 g of omega-3 fatty acids) while maintaining a normal sodium intake. Group 2 supplemented with fish oil while consuming a low-sodium diet. Group 3 supplemented with sunflower oil combined with normal sodium intake while group 4 took sunflower oil while consuming a low-sodium diet. After 4 weeks the mean systolic blood pressure in group 1 had decreased by 8.9 mm Hg and the diastolic pressure by 6.0 mm Hg. There were no significant changes in blood pressure in the group supplementing with fish oil while maintaining a normal sodium intake. The researchers conclude that sodium restriction combined with fish oil supplementation effectively lowers blood pressure. They suggest that this finding may be of particular relevance in the treatment of hypertension in the elderly. / Cobiac, Lynne, et al. Effects of dietary sodium restriction and fish oil supplements on blood pressure in the elderly. *Clinical and Experimental Pharmacology and Physiology*, Vol. 18, 1991, pp. 265-68 / Coromega *Additional References* 1. Bao, D.Q., et al. Effects of dietary fish and weight reduction on ambulatory blood pressure in overweight hypertensives. *Hypertension**, Vol. 32, October 1998, pp. 710-17 *Conclusion:* Fish oil supplementation lowers blood pressure and heart rate in obese subjects. 2. Lungershausen, Y.K., et al. Reduction of blood pressure and

plasma triglycerides by omega-3 fatty acids in treated hypertensives. *Journal of Hypertension*, Vol. 12, September 1994, pp. 1041- 45 *Conclusion:* Fish oil supplementation may be a useful adjunct to standard antihypertensive therapy. 3. Sacks, F.M., et al. The effect of fish oil on blood pressure and high-density lipoprotein-cholesterol levels in phase I of the Trials of Hypertension Prevention. *Journal of Hypertension*, Vol. 12, February 1994, pp. 209-13 *Conclusion:* Moderate amounts of fish oil (6 g/day) are unlikely to lower blood pressure in normotensive persons, but may increase HDL2-cholesterol, particularly in women. 4. Landmark, K., et al. Effects of fish oil, nifedipine and their combination on blood pressure and lipids in primary hypertension. *J Hum Hypertens*, Vol. 7, February 1993, pp. 25-32 *Conclusion:* Fish oil supplementation supports the effects of nifedipine therapy in lowering blood pressure. 5. Margolin, G., et al. Blood pressure lowering in elderly subjects: a double-blind crossover study of omega-3 and omega-6 fatty acids. *American Journal of Clinical Nutrition*, Vol. 53, February 1991, pp. 562-72 *Conclusion:* Fish oil supplementation safely and effectively lowers blood pressure and triglycerides in elderly subjects. 6. Levinson, P.D., et al. Effects of n-3 fatty acids in essential hypertension. *American Journal of Hypertension*, Vol. 3, October 1990, pp. 754-60 *Conclusion:* Large doses of marine oil reduce diastolic blood pressure, lower triglycerides, and increase bleeding time in patients with mild hypertension. 7. Bonna, K.H., et al. Effect of eicosapentaenoic and docosahexaenoic acids on blood pressure in hypertension: a population-based intervention trial from the Tromso study. *New England Journal of Medicine*, Vol. 322, March 22, 1990, pp. 795-801 *Conclusion:* Eicosapentaenoic and docosahexaenoic acids reduce blood pressure in essential hypertension. 8. Meland, E., et al. Effect of fish oil on blood pressure and blood lipids in men with mild to moderate hypertension. *Scand J Prim Health Care*, Vol. 7, October 1989, pp. 131-35 *Conclusion:* Fish oil supplementation lowers blood pressure in men with mild to moderate hypertension. 9. Knapp, H.R. and FitzGerald, G.A. The antihypertensive effects of fish oil: a controlled study of polyunsaturated fatty acid supplements in essential hypertension. *New England Journal of Medicine*, Vol. 320, April 20, 1989, pp. 1037-43 *Conclusion:* Fish oil supplementation reduces blood pressure in men with essential hypertension. *OILOFPISCES.COM* *INTERNATIONAL HEALTH NEWS* Copyright © 2006 by Hans R. Larsen Oilofpisces.com does not provide medical advice. Do not attempt self- diagnosis or self-medication based on our reports.

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