Evidence for the Cardioprotective Effects of Omega-3 Fatty Acids

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OBJECTIVE: To review available literature regarding the cardiovascular effects of marine-derived Ω-3 fatty acids and evaluate the benefit of these fatty acids in the prevention of coronary heart disease.

DATA SOURCES: Biomedical literature accessed through a MEDLINE search (1966–April 2002). Search terms included fish oil, omega-3 fatty acid, sudden death, hypertriglyceridemia, myocardial infarction, and mortality.

DATA SYNTHESIS: Following an early 1970's observational investigation that Ω-3 fatty acids may reduce the occurrence of myocardial infarction–related deaths in Greenland Eskimos, additional trials have been conducted that support this finding. Epidemiologic and clinical trial data suggest that Ω-3 fatty acids may reduce the risk of cardiovascular-related death by 29–52%. In addition, the risk of sudden cardiac death was found to be reduced by 45–81%. Possible mechanisms for these beneficial effects include antiarrhythmic properties, improved endothelial function, antiinflammatory action, and reductions in serum triglyceride concentrations. Ω-3 Fatty acids are fairly well tolerated; potential adverse effects include bloating and gastrointestinal distress, "fishy taste" in the mouth, hyperglycemia, increased risk of bleeding, and a slight increase in low-density-lipoprotein cholesterol.

CONCLUSIONS: Ω-3 Fatty acids may be beneficial and should be considered in patients with documented coronary heart disease. They may be particularly beneficial for patients with risk factors for sudden cardiac death.

KEY WORDS: cardiovascular effects, omega-3 fatty acids.

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REQUEST

Do Ω-3 fatty acids provide cardioprotective effects?

RESPONSE

Background

Over the past 3 decades, interest in the potential benefits of consuming Ω-3 fatty acids through diet or as a supplement to diet has increased. The interest was initially sparked by a late 1970's observational investigation[1] that compared the occurrence of coronary heart disease in native Greenland Eskimos with that of a matched group from the Danish population. The results showed a significantly lower occurrence of death due to myocardial infarction (MI) in the Eskimos. These findings were attributed to the high concentration of Ω-3 fatty acids consumed in the fish-based diets of the native Greenland population.[2]

Fatty acids structurally consist of a hydrocarbon chain with a hydrophobic methyl group at 1 end and a hydrophilic carboxyl group at the other.[3] Fatty acids are typically described by the Ω numbering system, with the methyl end serving as the first carbon. The Ω-3 fatty acids are distinguished by the ω (ω-3) or n (n-3) designation, which indicates the carbon atom at which the first double bond occurs. Fatty acids are also distinguished by the number of double bonds present in the structure. Saturated fatty acids contain no double bonds, monounsaturated fatty acids contain 1 double bond, and polyunsaturated fatty acids contain ≥2 double bonds.[4]

This review focuses on marine-derived Ω-3 fatty acids, specifically the long-chain polyunsaturated Ω-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). The majority of the research conducted with Ω-3 fatty acids has focused on EPA and DHA. These fatty acids are found in varying concentrations in fish products such as halibut, mackerel, herring, and salmon.[5] There are also several fish oil supplements manufactured that provide varying amounts of marine-based EPA and DHA.

Epidemiologic evidence and clinical trial data examining the role of Ω-3 fatty acids in the prevention of coronary heart disease are presented. Proposed mechanisms,

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potential adverse effects, and sources of Ω-3 fatty acids are also discussed.

Epidemiologic Evidence

The majority of available epidemiologic data[6-10] suggests a beneficial effect of Ω-3 fatty acids on coronary heart disease mortality (Table 1). Hu et al.[6] evaluated the association between fish intake and the risk of coronary heart disease in 84 688 women enrolled in the Nurses' Health Study. These women were registered nurses aged 30–55 years and free from cardiovascular disease and cancer at baseline in 1980. Each participant completed questionnaires about their lifestyle and medical history in 1980, 1984, 1986, 1990, and 1994. During 16 years of follow-up, a significant inverse association between fish intake and incidence of coronary heart disease was observed.

The Nurses' Health Study collected data only for women, which sets it apart from other trials in which the majority of participants were men. This study provides additional evidence for a likely benefit of Ω-3 fatty acids on cardiovascular risk reduction and justifies the need for larger, randomized, controlled clinical trials to confirm these findings.

The US Physicians' Health Study was a pro-spective observational trial[7] that evaluated the association between dietary fish intake and prevention of sudden cardiac death in 20 551 male physicians aged 40–84 years who had no history of MI, stroke, transient ischemic attack, or cancer. Dietary fish intake was assessed through a semiquantitative food frequency questionnaire administered 12 months after participants were enrolled in the study. Information relating to cardiovascular events was updated every 6 months for the first year and then annually through follow-up questionnaires.

The definition of sudden death was death within 1 hour of symptom onset, a witnessed cardiac arrest, or abrupt collapse not preceded by more than 1 hour of symptoms that precipitated the terminal event. Over 11 years of follow-up, the researchers observed that fish consumption was inversely related to the risk of sudden cardiac death. This relationship reached significance at a consumption level between 1 and 2 servings per week. Furthermore, higher levels of fish consumption produced minimal change in the relative risk reduction that was achieved with 1–2 servings per week.[7]

A prospective, nested case–control analysis of the fatty acid composition of whole blood in men enrolled in the Physicians' Health Study was conducted.[11] The researchers identified 94 participants from the trial in whom sudden death was the first manifestation of cardiovascular disease. A group of 184 matched controls without a confirmed history of cardiovascular disease was identified from the same population. Fatty acids were extracted and quantified through gas–liquid chromatography from frozen blood samples taken from each participant at initial enrollment into the study.

Subjects experiencing sudden cardiac death were found to have a mean ± SD total concentration of long-chain Ω-3 fatty acids that was significantly lower than that of controls (4.82 ± 1.31% vs. 5.24 ± 1.32% of total fatty acids; p = 0.01). Mean concentrations of other fatty acids did not differ significantly between the 2 groups. A multivariate comparison of quartile

Table 1. Epidemiologic Evidence for the Cardioprotective Effects of Ω-3 Fatty Acids

Reference	Population	Evaluation Parameter	Follow-up (y)	Outcome
Hu et al. (2002)[6]	84 688 women, no CHD, cancer	dietary fish consumption	16	fish consumption ≥5 × per wk vs. <1 per mo CHD risk ↓ 34% (95% CI 11% to 50%; p = 0.001)[a] CHD death risk ↓ 45% (95% CI 10% to 67%; p = 0.01)[a] fish consumption 1 × per wk vs. <1 per mo CHD risk ↓ 29% (95% CI 13% to 42%; p = 0.001)[a]
Albert et al. (1998)[7]	20 551 men, no MI, stroke, TIA, cancer	dietary fish consumption	11	fish consumption at least 1 × per wk vs. <1 per mo sudden death risk ↓ 52% (95% CI 4% to 76%; p = 0.04)
Daviglus et al. (1997)[8]	1822 men, no cardio-vascular disease	dietary fish consumption	30	fish consumption ≥35 g/d vs. no fish consumption MI-related death risk ↓ 44% (95% CI 7% to 67%; p = 0.017)[b] CHD death risk ↓ 38% (95% CI 6% to 60%; p = 0.04)[b]
Burchfiel et al. (1996)[9]	120 men, no moderate to severe coronary atherosclerosis	dietary fish consumption	up to 20	fish consumption ≥2 × per wk vs. <2 × per wk myocardial lesions risk ↓ 65% (OR 0.35, 95% CI 0.15 to 0.86)
Dolecek (1992)[10]	6250 men, no cardio-vascular disease	dietary fish consumption	10.5	daily consumption of 664 mg of Ω-3 fatty acids vs. no intake CHD death risk ↓ 49% (p < 0.05)

CHD = coronary heart disease; MI = myocardial infarction; TIA = transient ischemic attack.
[a]For trend across frequency of fish intake quintiles.
[b]For trend across 4 strata of fish consumption.

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Ω-3 fatty acid blood concentrations revealed a risk reduction of 81% (95% CI 29% to 95%; p = 0.007) for participants in the highest Ω-3 quartile compared with those in the lowest quartile.[11] The findings discussed in the above trials provide consistent support for the beneficial effects of Ω-3 fatty acids in reducing sudden cardiac death.

Additional evidence exists to support the cardiovascular benefit of Ω-3 fatty acids. The Chicago Western Electric study[8] revealed a significant reduction in MI- and coronary heart disease–related deaths. Furthermore, findings from the Honolulu Heart Program[9] demonstrated that Ω-3 fatty acids significantly reduced the presence of intramural myocardial lesions, and the Multiple Risk Factor Intervention Trial[10] provided additional data to support a reduction in the risk of coronary heart disease with the use of Ω-3 fatty acids. These 3 trials, combined with the preceding data, constitute a majority of the available epidemiologic evidence supporting the cardiovascular benefit of Ω-3 fatty acids.

Clinical Trials

In addition to the foregoing epidemiologic evidence, 2 clinical trials warrant review (Table 2).[12,13] These trials have primarily examined the role of Ω-3 fatty acids in the secondary prevention of heart disease.

The randomized controlled DART[12] (Diet and Reinfarction Trial) evaluated the effects of varying dietary interventions on the secondary prevention of MI. The researchers randomized 2033 men who were, on average, 41 days post MI to receive counseling on fat, fish, or fiber intake, or they received no counseling. The primary study endpoints were total mortality and ischemic heart disease events (defined as ischemic heart disease deaths plus nonfatal MI). The group receiving counseling on fish intake was advised to consume at least 2 weekly portions of fatty fish (200–400 g), which included halibut, herring, mackerel, salmon, or trout. Twenty-two percent of participants randomized to this group preferred not to eat fish and were allowed to take 3 MaxEPA capsules daily, which provided a total daily dose of 900 mg of EPA and DHA.

At 2 years, participants who had received advice on fish intake (n = 1015) were consuming about 300 g of fatty fish (EPA 2.5 g) per week. This amount was 4 times that of participants who received no dietary advice on fish consumption. The risk of ischemic heart disease death and all-cause mortality was significantly reduced through fish consumption (Table 2). The 22% of participants who chose to receive MaxEPA capsules derived even greater benefit. Total mortality for this group was reduced by 57% (p < 0.03) compared with patients not receiving dietary counseling on fish intake, and death from ischemic heart disease was reduced by 62% (p < 0.04).[12]

Based on the results of this trial, 1 death could be prevented over a 2-year period for 29 men who followed the dietary advice on fish consumption. Although the group receiving the MaxEPA supplement had a much lower daily intake of EPA, 900 mg versus 2.5 g, 1 reason for the enhanced effect may be increased compliance due to the ease of taking 1 capsule 3 times daily compared with consuming dietary Ω-3 fatty acids. No significant difference was noted in death or ischemic heart disease events in the groups receiving dietary advice on fat or fiber intake when compared with the group receiving no dietary counseling.[12]

GISSI-Prevenzione is the largest clinical trial[13] conducted to date that examines the cardiovascular benefits of Ω-3 fatty acids. This multicenter, open-label study enrolled 11 324 patients with a recent (<3 mo; median 16 d) MI. Patients were randomized to receive Ω-3 fatty acids (EPA/DHA 850–882 mg/d) alone, vitamin E 300 mg alone, a combination of Ω-3 fatty acids and vitamin E, or no supplement for 3.5 years. The primary combined endpoints were the cumulative rate of all-cause death, nonfatal MI, and nonfatal stroke plus the cumulative rate of cardiovascular death, nonfatal MI, and nonfatal stroke. Patients were encouraged to continue preventive treatments such as aspirin, ß-blockers, and angiotensin-converting enzyme inhibitors.

At the end of the trial, nearly 50% of the study population was also receiving a hydroxymethylglutaryl coenzyme A (HMG-CoA) reductase inhibitor with similar distribution between groups. After 3.5 years, treatment with Ω-3

Table 2. Clinical Trial Evidence for the Cardioprotective Effects of Ω-3 Fatty Acids

Reference	Design	Population	Intervention	Outcome
Burr et al. (1989)[12]	randomized, controlled 2 y	2033 men, acute MI	counseling on intake of fat, fish, fiber, or no dietary counseling	counseling vs. no counseling on intake of fish death risk ↓ 29% (95% CI 7% to 46%; p < 0.05) CHD death risk ↓ 30% (95% CI NR; p < 0.01)
GISSI-P (1999)[13]	randomized, open-label, 3.5 y	11 324 men and women, recent MI	Ω-3 fatty acids alone, vitamin E alone, Ω-3 plus vitamin E, or no supplement	Ω-3 fatty acids vs. no supplement combined endpoint ↓ 15% (95% CI 2% to 26%; p = 0.023)[a] combined endpoint ↓ 20% (95% CI 5% to 32%; p = 0.008)[b] total mortality ↓ 20% (95% CI 6% to 33%; p NR) sudden cardiac death ↓ 45% (95% CI 23% to 60%; p = 0.01)

CHD = coronary heart disease; MI = myocardial infarction; NR = not reported.
[a]Combined endpoint of all-cause death, nonfatal MI, and nonfatal stroke.
[b]Combined endpoint of cumulative rate of cardiovascular death, nonfatal MI, and nonfatal stroke.

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fatty acids produced a significant reduction in the 2 primary efficacy endpoints (Table 2). No additional benefit on total mortality, cardiac death, or sudden death was observed with the combination of the Ω-3 fatty acid supplement and vitamin E. Also, no difference was observed for either of the primary endpoints following treatment with vitamin E alone.[13]

In a recently published analysis[14] of the GISSI trial results, the significant reduction in mortality was reported to occur very early in the treatment course. After only 3 months of therapy, patients randomized to receive Ω-3 fatty acid supplements had a mortality risk reduction of 41% (95% CI 3% to 64%; p = 0.037) compared with controls. After 4 months of therapy, a 53% (95% CI 1% to 78%; p = 0.048) reduction in the risk of sudden death was found to be significant. This reduction in sudden death remained significant at 42 months as evidenced by a risk reduction of 45% (95% CI 23% to 61%; p = 0.0006).

Of note, the reduction in sudden death accounted for 59% of the Ω-3 fatty acid mortality benefit. Significant reductions in cardiac death were observed at 6 months (p = 0.036), coronary death at 8 months (p = 0.04), and cardiovascular death at 8 months (p = 0.024). The early mortality benefit observed provides additional support that Ω-3 fatty acids may exert antiarrhythmic properties.[14]

Mechanisms of the Cardioprotective Effects

Several mechanisms have been proposed[15-26] to explain the beneficial effects observed with Ω-3 fatty acids. It is unclear why larger doses of Ω-3 fatty acids are required to reduce triglyceride concentrations, while smaller doses are sufficient to demonstrate cardiovascular benefit. Proposed mechanisms for the beneficial effects include a potent antiarrhythmic effect.[15,16] It is believed that these fatty acids alter specific ion currents within the myocardium that reduce ventricular susceptibility to fatal rhythms. This fact, in conjunction with the increased heart rate variability achieved, is thought to be 1 of the mechanisms underlying the observed reductions in sudden cardiac death. Another proposed mechanism[15-17] is the ability of Ω-3 fatty acids to improve endothelial function. This is partly accomplished through enhanced production of nitric oxide. Vasodilation may also be accomplished by the blockage of calcium entry into vascular smooth muscle, suppression of vasoconstrictor prostanoids, and reduced plasma norepinephrine.[16]

Effects on platelet-derived growth factor and monocyte chemoattractant protein, which are involved in the pathogenesis of atherosclerosis, are also likely mechanisms of Ω-3 fatty acids. Concentrations of each of these are significantly reduced by consumption of relatively large doses of EPA and DHA (7 g/d).[15] Reductions in vascular cell adhesion molecules (E-selectin, vascular cell adhesion molecule 1, intracellular adhesion molecule) and various inflammatory mediators (tumor necrosis factor-α, interleukins) have also been noted following consumption of Ω-3 fatty acids.[15,17]

Another proposed mechanism[18] of action of Ω-3 fatty acids is their ability to function as "fuel partitioners." Ω-3 Fatty acids possibly exert cardiovascular benefit through their effects on genes encoding proteins that are involved in an up-regulation of lipid oxidation and a down-regulation of lipid synthesis, which can indirectly reduce the risk of coronary heart disease.

Increasing emphasis has been placed on the treatment of hypertriglyceridemia due to recognition of elevated triglycerides as an independent risk factor for heart disease. The National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III)[19] now places more emphasis on the treatment of hypertriglyceridemia than in previous years and establishes a lower target goal for triglycerides. Although detailed discussion of this topic is beyond the scope of this review, a number of studies[20-26] has been conducted to evaluate the effects of Ω-3 fatty acids on serum triglyceride concentrations. A consistent finding is a reduction in triglyceride concentrations of approximately 30% when EPA and DHA intake totals 3–4 g/d. Although Ω-3 fatty acid supplements are not recommended in the NCEP ATP III guidelines as standard therapy for all patients with hypertriglyceridemia, their potential role and benefit are acknowledged.

Potential Adverse Effects

The most common adverse effects reported[3,20,22,23] by patients include gastrointestinal discomfort, nausea, and a "fishy taste in the mouth," which is commonly associated with belching, bloating, and stomach upset. Other reported adverse effects include a mild elevation of low-density lipoprotein (LDL) cholesterol,[20,22,23] possible worsening of glycemic control with large amounts of Ω-3 fatty acids,[27] and an increased incidence of bleeding.[28]

The consumption of Ω-3 fatty acids, especially in higher doses, may slightly raise serum LDL concentrations, although this increase is generally <5%. If increases in LDL persist or concentrations continue to rise in the presence of beneficial effects from Ω-3 fatty acid supplementation, initiation of an HMG-CoA reductase inhibitor is a safe and effective strategy to offset the LDL increase.[29,30] However, the majority of patients should be receiving an HMG-CoA reductase inhibitor as part of standard medical therapy. At this time, it would be premature to recommend combination treatment with HMG-CoA reductase inhibitor and Ω-3 supplements for all patients with mixed hyperlipidemia. However, the combination does appear to be safe and effective.

Glucose control was found to be adversely affected by Ω-3 fatty acids in 1 study[27] that involved consumption of large doses of fish oil. In this trial, patients received dietary supplementation with MaxEPA in doses that provided 5.5 g/d of EPA/DHA. After 4 weeks of supplementation, patients experienced a significant 19% (95% CI 1.1% to 36.3%) increase in fasting glucose concentrations. However, 2 meta-analyses[31,32] of fish oil consumption by patients with diabetes have failed to support this finding.

Increased bleeding times have been reported[28] for patients consuming high quantities of Ω-3 fatty acids (>20 g/d). However, these findings have not been confirmed in

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subsequent trials, and moderate consumption (2–5 g/d) does not appear to increase the risk of bleeding.[33,34] There also appears to be no increased risk of bleeding in patients taking Ω-3 supplements with either aspirin or warfarin.[35]

Sources of Ω-3 Fatty Acids

Ω-3 Fatty acids may be obtained from several sources including dietary and commercially prepared products (Table 3).[36] One of the best sources is fish consumption through a variety of species including halibut, mackerel, herring, and salmon.[5] Several Ω-3 fatty acid supplements are also available, but provide varying amounts of marine-based EPA and DHA. Therefore, the label of an individual product should be reviewed carefully to determine the actual ingredients and exact quantities of EPA and DHA contained within each product so that appropriate recommendations can be made.

The data presented here focus on EPA and DHA. However, it is important to recognize that α-linolenic acid (ALA) may also be found in various concentrations within fish products.[36] This substance, which serves as a precursor to EPA, is also a polyunsaturated Ω-3 fatty acid that is primarily found in plant-derived products such as soybeans, canola oil, flaxseed oil, and leafy vegetables.[4] There have been a few reports[37-40] of potential cardiovascular benefit obtained through ALA consumption. However, further studies to investigate this potential benefit are needed to strengthen the available evidence.

Table 3. Sources of Ω-3 Fatty Acids

Source	Fatty Acid		Amount to Receive EPA/DHA 900 mg/d[a]
Fish (g/100 g of edible portion)	EPA	DHA	Ounces[b]
mackerel	1.0	1.2	1.4
Pacific herring	1.0	0.7	1.8
Chinook salmon	0.8	0.6	2.1
Atlantic salmon	0.3	0.9	2.5
albacore tuna	0.3	1.0	2.3
rainbow trout	0.1	0.4	6.0
Pacific halibut	0.1	0.3	7.5
Atlantic cod	0.1	0.2	10.0
catfish	0.1	0.2	10.0
flounder	0.1	0.1	15.0
snapper	trace	0.2	15.0
Supplements[c]	EPA/DHA per capsule (mg)		Capsules (n)
MaxEPA	300		3
EPA-DHA Complex	300		3
Omega EFA	100		9
EPA-Plus	300		3

DHA = docosahexaenoic acid; EPA = eicosapentaenoic acid.
[a]Amount to provide cardiovascular benefit.
[b]1 oz = ~28 g.
[c]Partial listing.

Although data are limited, some investigators[41] suggest a need for achieving a desirable ratio between Ω-3 and Ω-6 fatty acids for optimal health benefit. Results of a prospective cohort study[42] of 76 283 women showed that a modest reduction in coronary heart disease mortality may be achieved with an Ω-6:Ω-3 ratio of ≤10; however, this reduction was not statistically significant. Therefore, one should realize that additional clinical trial data are needed to establish the desired ratio of fatty acids.

Summary

Since the original investigation of the Greenland Eskimos, additional studies[6-14,20-26] have been published demonstrating the benefits of Ω-3 fatty acids. A number of the investigations,[6-14] including 3 recent articles, contribute substantially to the evidence that Ω-3 fatty acids may reduce death from coronary heart disease and, in particular, prevent sudden cardiac death.

It is important to note that reductions in cardiovascular mortality have been achieved with smaller quantities of Ω-3 fatty acids (EPA/DHA 360–850 mg/d) compared with those required to achieve significant reductions in triglycerides (EPA/DHA 3–4 g/d).[6-14,20-26] Ω-3 Fatty acid intake was accomplished through fish consumption (generally 1–2 meals/wk) or Ω-3 supplements.

In summary, Ω-3 fatty acids (1–2 fish meals/wk or EPA/DHA 850 mg/d supplements) may be beneficial and should be considered in patients with documented coronary heart disease. This is especially true for patients who have risk factors for sudden cardiac death such as prior MI, left-ventricular dysfunction, ventricular dysrhythmias, or left-ventricular hypertrophy. For the primary prevention of heart disease, it is reasonable to recommend that patients incorporate at least 2 fish-containing meals per week into their diets.[43] Additional trials to explore the benefits of Ω-3 fatty acids for primary and secondary prevention of heart disease would strengthen the current evidence and could potentially broaden the population of patients for whom we recommend this treatment.

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EXTRACTO

OBJETIVO: Evaluar la literatura relacionada a los efectos cardiovasculares de los ácidos graso Ω-3, especialmente el beneficio en la prevención de enfermedad coronaria.

EXTRACCIÓN DE DATOS: Búsqueda de literatura biomédica usando MEDLINE (1966–abril 2002) con los términos aceite de pescado, ácidos graso Ω-3, muerte repentina, hipertrigliceridemia, infarto miorcardio, y mortalidad.

SÍNTESIS DE DATOS: Utilizando los hallazgos de principio de los años 1970, en que los ácidos graso Ω-3 reducen la ocurrencia de infarto del miocardio relacionado muerte en Greeland Eskimos; otros estudios han sido conducidos. Estudios clínicos y epidemiológicos sugieren que los ácidos graso Ω-3 podrían reducir el riesgo cardiovascular relacionado a muerte hasta un 29–52%. Además se encontró que el riesgo de muerte repentina puede ser reducido a un 45–81%. Posibles mecanismos para estos efectos beneficiosos incluyen propiedades antiarritmicas, mejoría de la función endotelial, efecto anti-inflamatorio, y reducción en triglicéridos. Los ácidos graso Ω-3 son bastante bien tolerado. Los efectos secundarios posibles incluyen llenura y malestar gastrointestinal, sensación de sabor a pescado en la boca, hiperglicemia, aumento en riesgo de sangrado, y ligero aumento de colesterol LDL.

CONCLUSIONES: Los ácidos graso Ω-3 podrían beneficiar y debe ser considerado en pacientes que este documentado enfermedad coronaria. Este medicamento podría ser particularmente beneficioso para pacientes con factor de riesgo de muerte cardíaca repentina.

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RÉSUMÉ

OBJECTIF: Réviser la littérature disponible à propos des effets cardio-vasculaires des acides gras de poisson Ω-3, et plus précisément, évaluer leur bénéfice dans la prévention des maladies coronariennes.

REVUE DE LITTÉRATURE: Littérature biomédicale repérée par une recherche sur MEDLINE (1966 à avril 2002). Mots-clés: huile de poisson, acides gras oméga-3, mort subite, hypertriglycéridémie, infarctus du myocarde, et mortalité.

RÉSUMÉ: Il a été envisagé au cours des années 1970 que la consommation d'acides gras Ω-3 par les Inuits du Groenland pouvait expliquer leur faible mortalité par infarctus du myocarde. Des essais ont été conduits pour vérifier cette hypothèse. Les études épidémiologiques et cliniques suggèrent que les acides gras Ω-3 à doses moyennes (850 mg/j) pourraient réduire le risque de mortalité cardio-vasculaire de 29 à 52% et diminuer le risque de mort subite cardiaque de 45 à 81%. Parmi les mécanismes envisagés pour ces effets bénéfiques ont été citées des propriétés anti-arythmiques, l'amélioration de la fonction endothéliale, une action anti-inflammatoire, et la diminution des triglycérides plasmatiques. Les acides gras Ω-3 sont assez bien tolérés: les effets indésirables sont principalement des troubles gastro-intestinaux et un goût de poisson dans la bouche, et, à fortes doses, une hyperglycémie, une augmentation des risques hémorragiques, et une augmentation légère du cholestérol LDL.

CONCLUSIONS: Les acides gras Ω-3 sont susceptibles d'être bénéfiques et devraient être envisagés pour les patients atteints de maladies coronariennes. Ils pourraient être particulièrement bénéfiques pour les sujets avec des facteurs de risque de mort subite cardiaque.

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