

NTRR – No.30

Natural Therapies Research Report

Nutra Therapeutics

Non-Pharmacological Prevention of Cardiovascular Disease

By James Meschino, D.C., M.S. Research and Clinical Director, RenaiSanté Institute of Integrative Medicine

oronary artery disease (C.A.D.) continues to be the leading cause of mortality and morbidity in the United States, where more than 500,000 people die of C.A.D. sequelae each year. Almost 70% of the adult population is affected with the disease to some extent. The annual cost of C.A.D. related health care and losses in productivity has been estimated to be greater than \$50 billion.¹

Studies have proven beyond doubt, that certain behaviors (smoking, inactivity) and conditions (hypertension, diabetes, obesity, hyperlipidemia) increase the risk of coronary artery disease. In any case, the risk can be reduced dramatically with non-pharmacological methods, but if needed, effective medications are available.²

In regards to reducing risk of C.A.D. with lifestyle Intervention, the Lipid Research Clinics Coronary Primary Prevention Trial 3 concluded that a 1% decrease in total serum cholesterol corresponded with a 2-3% decrease in risk of C.A.D. The Helsinki Heart Study yielded similar results.^{4,5} The recommended desirable level of total cholesterol is less than 200 mg/dL.² As well, the HDL cholesterol level is inversely related to the incidence of atherosclerosis.^{6,7} This data is supported by the Framingham Heart Study, the Lipids Research Clinics Primary Prevention Trial, the Lipid Research Clinics Primary Prevention Trial, the Lipid Research Clinics Prevalence Mortality Follow-up Study, and the Multiple Risk Factor Intervention Trial.⁸

concert with the National Cholesterol In Education Program, every effort should be made to lower cholesterol levels bv nonpharmacological means (diet, exercise, weight loss) before drug therapy is considered. The American Heart Association and the National Cholesterol Education Program have recommended a Step-Wise approach to diet therapy.¹

In most people, an average reduction in total cholesterol of 10% or more through diet can be expected. Other non-pharmacological measures to reduce coronary risk include those that increase HDL cholesterol levels, such as exercise, weight loss, cessation of smoking, etc. With respect to lifestyle changes, patient education and individual counseling with adequate follow-up achieve the best compliance.

Primary Prevention of coronary artery disease is the most cost-effective way of reducing coronary morbidity and mortality.²

A practical approach to achieve this end is to maintain a total dietary fat intake at or below 25% of total calories, focus upon complex carbohydrates to attain 55-65% of calories, with emphasis on those carbohydrates that also contain cholesterol lowering soluble fiber (oats, beans, fruits, vegetables).

Clinical trials using $3\frac{1}{2}$ oz of oat bran per day or $\frac{1}{2}$ cup of beans per day have demonstrated a 15-25 per cent lowering of blood cholesterol in hyperlipidemic patients, under controlled conditions.⁹

Recently, the Harvard Alumni Study and others have demonstrated that a threshold level of physical activity is significantly associated with a reduction in risk of C.A.D.^{10,11,12,13,14,15}

Exercise has many beneficial effects, which have been postulated as mechanism for reducing C.A.D. risk. Exercise decreases platelet aggregation, myocardial oxygen demand, hypertension, obesity, and glucose intolerance, and it increases fibrinolytic activity, myocardial oxygen supply, threshold for ventricular ectopy, and the HDL cholesterol level. General guidelines for reducing cardiovascular risk suggest 30 to 60 minutes of exercise at least three days a week, with aerobic activity being the most beneficial.¹⁶

Finally, a number of cross cultural, epidemiological and longitudinal studies have demonstrated a strong association between higher serum levels of antioxidants - beta carotene, vitamin C, and vitamin E and reduction in cardiovascular disease.^{17,18,19}

A number of mechanisms are now in place to explain the protective effects that these nutrients offer with respect to C.A.D. risk. It appears that attaining more optimal levels of intake for these nutrients, than is the U.S. average, would be an additional preventative strategy in the fight against C.A.D.

In conclusion, hypercholesterolemia continues to be a problem in the U.S. with more than 55 per cent of the population having blood cholesterol in the undesirable range.² Over-consumption of saturated fat, cholesterol, and calories is the major factor underlying hypercholesterolemia and excess coronary artery disease in our society Modest dietary changes can have a significant impact on serum lipid levels in many patients. On average, a 10% to 15% decrease in cholesterol level is anticipated for those who adhere to dietary suggestions proposed in the report by the National Heart, Lung and Blood Institute. This decrease would reduce the estimated risk of coronary artery disease 20% to 30%. (20). It would seem an opportune time to act as the American Heart Association has estimated that C.A.D. statistics will increase another 17% over the next 2 decades if prevention strategies are not put in place. In addition to lowering saturated fat and cholesterol intake, synergistic preventive strategies would also include adequate soluble fiber from complex carbohydrates, optimal levels of activity and exercise, and serum antioxidants beta-carotene, vitamin C and vitamin E.

A program that included education, daily implementation strategies and follow up reenforcement would likely be the only effective way of facilitating these changes among the general population. There is now unquestioned evidence that much of coronary artery disease is preventable or postponable.^{21,22} Prevention strategies are known to be effective, cost-efficient and without side effects.

References

- Carleton R A. Dwyer J., Finberg I, et al. Report of the Expert Panel on Population Strategies for Blood Cholesterol Reduction: A statement from the National Cholesterol Education Program, National Heart, Lung and Blood Institute, National Institutes of Health Circulation 1991; 83(6)2154-232.
- 2. Kingsley C M, Gupta, S C. How to Reduce the Risk of Coronary Artery Disease. Post Graduate Medicine Vol. 91, No.4, March 1992:147-160.
- Lipid Research Clinics Program. The Lipid Research Clinics Coronary Primary Prevention Trial Results. II. The relationship of reduction in incidence of coronary heart disease to cholesterol lowering. JAMA 1984; 251(3):365-74,
- Frick M H, Elo O, Haapa K, et al. Helsinki Heart Study: primary-prevention trial with gemfibrozil in middle-aged men with dyslipidemia. Safety of treatment, changes In risk factors, and incidence of coronary heart disease. N Engl J Med 1983;317(20):1237-45.
- Manninen V, Elo M O, Frick N H, et al. Lipid alterations and decline in the Incidence of coronary heart disease in the Helsinki Heart study. JANA 1988;260(5): 641-51.
- Gordon D J., Probstfield J L., Rubenstein C, et al. Coronary risk factors and exercise test performance in asymptomatic hypercholesterolemic men; application of proportional hazards analysis. AM J Epidemiol 1984;120(2):21-24
- Gofman J W., Yound W., Tandy R. Ischemic heart disease, atherosclerosis and longevity. Circulation 1966; 34(4): 679-97
- Castelli , W P Garrison, R J Wilson, P W et al. Incidence of coronary heart disease and lipoprotein cholesterol levels: the Framingham study. JAMA 1986; 256(20) 2835-8.
- 9. Anderson J W , Gustafson N J Hypocholesterolemic effect of oat and bean products. AM J Clinical Nutrition I988; 48: 749-53.
- Paffenbarger, R S, Hyde R T, Wing A L, Hsieh, C. Physical activity, all-cause mortality and longevity of college alumni. N Engl J Med 314:605-613, 1986.
- 11. Pekkanen J, Marti B, Nissinen A, Tuomilehto J, Punsar S, Karvonen M J, Reduction of premature mortality by high physical activity: a 20 year follow-

up of middle-aged Finnish men. Lancet 1:1473-1477, 1987.

- Powell, K E, Thompson P D, Caspersen C J, Kendrick J S. Physical activity and the incidence of coronary heart disease. Annu Rev Public Health 8:253-287, 1987.
- Quinn, T.J., Sprague H A, Van Huss W D, Olson H W. Caloric expenditure, life status, and disease in former male athletes and non-athletes Med Sci Sports Exerc 22:742-750, 1990,
- Tsevat J, Weinstein M C, Williams L W, Tosteson, A N A, Goldman, L. Expected gains in life expectancy from various coronary heart disease risk factor modifications. Circulation 83:1194-1201, 1991.
- 15. Rotevatn S, Akseln L A, Bjelke, E. Lifestyle and mortality among Norwegian man. Prev Med 18:433-443, 1989.
- 16. Butler R N, Goldberg, L. Exercise and prevention of coronary heart disease. Prim Care 1989;16(1):99-114.

- 17. Enstrom J E, Kanin, L E, Klein, M A, 1992. Vitamin C intake and mortality among a sample of the U.S. Population. Epidemiology 2:194-202.
- Gey, K F, Brubacher G B and Stehelin, H B, 1987. Plasma levels of anti-oxidant vitamins in relation to ischemic heart disease and cancer. American Journal of Clinical Nutrition 45:1368-1377.
- 19. Salonen J T, et al. 1987. Serum fatty acids, apolipoproteins, selenium and vitamins in relation to ischemic heart disease and cancer. American Journal of Clinical Nutrition 45:1368-1377.
- Lavie, C J, et al. High-density lipoprotein cholesterol. Post Graduate Medicine vol. 87 (7): 36-51, May, 1990.
- 21. Castelli, W P, Griffin G C, 1988. Cutting back on saturated fat and cholesterol. Post Graduate medicine vol. 84 (3): 44-56.
- Keys A, Seven Countries: a multivariate analysis of death and coronary artery disease. Cambridge, MA; Harvard University Press, 1980.