Editorial

Nutrition and cardiovascular disease

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In recent times cardiovascular disease has been rather oversimplified to a 'cholesterol problem' which, although an acknowledged and important pathway for the development of coronary heart disease and other forms of 'macrovascular disease' (disease of the large and distributing arteries) is not the only one. Indeed, elevated serum cholesterol may play a permissive role for other determinants of these arterial occlusive diseases, like cigarette smoking, high blood pressure, diabetes and abdominal obesity. What is not so well understood is that, for a given concentration of cholesterol in the blood (as LDL or low density lipoprotein cholesterol) a person may be more or less protected against it damaging the arteries.

A clearer appreciation of nutrition and cardiovascular disease comes through a consideration of the following:

1. Cholesterol intake from food does not always have the same effect on cholesterol in the blood, let alone in the tissues like arteries, and co-ingestion of saturated fat is a particular problem (e.g. butter and eggs rather than eggs alone).

2. There is no cholesterol in plant foods, only in animal-derived foods. It is mischievous to say that a vegetable oil is low in cholesterol, when it never had any to begin with.[1]

3. The variety of foods eaten, especially that of plant food which provides a variety of natural colours and of dietary fibre types, can protect LDL cholesterol against oxidation damage (the colours are transported with cholesterol) and increase the protective form of cholesterol, HDL or high density lipoprotein cholesterol (certain dietary fibre types), which help remove cholesterol from the arteries.[2]

4. Certain foods, like fish, sea plants, some land plants, seeds and lean meat, provide 'omega-3 polyunsaturated fatty acids' which help reduce the stickiness of platelets (the cell fragments which can contribute to atherosclerosis or hardening of the arteries, and to thrombosis which may block the arteries).[3]

5. It is also possible to favourably affect:

(a) the metabolism of the heart with a low fat, high carbohydrate diet, in favour of fuels like glucose which are better in times of shortage of oxygen supply;

(b) the membrane composition of heart muscle, reducing the risk of electrical instability and abnormal heart rhythms (omega-3 fatty acids better than omega-polyunsaturated fatty acids, better than 'mono-unsaturated', better than 'saturated' fatty acids).[4]

6. Certain foods may be protective against heart disease in other ways and these may include:

(a) sources of oestrogenic activity in food (e.g. from soya flour, tofu, legumes, seed shoots, carrots);[5]

(b) sources of arginine rich proteins (possibly nuts).

7. Alcohol (ethanol) can have a favourable effect on HDL cholesterol, increasing it, but an unfavourable effect on blood pressure, also increasing it.[6] In some beverages it may be accompanied by useful micronutrients (like thiamin in native beers) or antioxidant flavonoids (as in wines).[7] Its net cardiovascular and health effects depend on background community disease patterns, amount ingested, type of beverage and whether ingested with food (which reduces the likely blood alcohol level).

Thus, although the key consideration nutritionally is to reduce diet fat by:

- choosing lean meats;
- choosing low fat dairy products;
- voiding hidden fat in sweet and savoury biscuits (Scandinavian hard breads are virtually 'no fat', however);
- avoiding deep fried and battered foods;
- reading food labels for information about hidden fat in, especially, snack foods (e.g. potato crisps);

one can assume a relatively cardioprotective way of eating by:

- having a wide variety of foods;
- regular inclusion of fish (e.g. 2–3 times/week);
- minimizing sodium (salt, soya sauce, bicarb soda, MSG intake) in favour of potassium (plant foods, lean meat) intake;
- be sufficiently physically active so that you can eat enough and avoid abdominal fatness;
- be moderate with alcoholic beverages, ingest them with food, and have alcohol free days.

References

1. Wahlqvist ML. Food and Nutrition. Australasia, Asia and Pacific. St Leonards: Allen and Unwin 1997.

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2. Heller FR, Descamps O, Hondekijn JC. LDL oxidation – therapeutic perspectives. Atherosclerosis 1998; 137: S25–S31.
3. Leaf A. Omega-3 fatty acids and prevention of ventricular fibrillation. Prostaglandins Leukot Essent Fatty Acids 1995; 52: 197–198.
4. Charnock JS. Antiarrhythmic effects of fish oil. In: Health effects of ω-3 polyunsaturated fatty acids in seafoods. World Rev Nutr Diet 1991; 66: 278–291.
5. Wahlqvist ML, Dalais FS. Phytoestrogens: emerging multifaceted plant compounds. Med J Aust 1997; 167: 119–120.
6. Kannel WB, Ellison RC. Alcohol and coronary heart disease – the evidence for a protective effect. Clin Chim Acta 1996; 246: 59–76.
7. Constant J. Alcohol, ischaemic heart disease, and the French paradox. Coron Artery Dis 1997; 8: 645–649.