FOOD TECHNOLOGY AS AN AID TO ACHIEVING DIETARY GOALS: ALTERNATIVE FATS AND FAT SUBSTITUTES

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The National Heart Foundation's (1989) current Dietary Goals for All Australians include, "Decrease fat consumption to 30% of total calories. Substitute unsaturated fats for saturated fats where possible. Decrease cholesterol intake to under 300 mg/day."

Most of us find it difficult to change our dietary habits. (The many dubious slimming aids that can be seen in any pharmacy or 'health food store' are a good indication of this.) It is particularly difficult to reduce fat consumption because fat can give food an attractive texture and mouthfeel.

Food technology can help. Polyunsaturated margarines have already made a substantial impact on the relative consumption of saturated and unsaturated fats. Alternative fats and fat substitutes have the potential to make a similar impact on total consumption of fat and technology being developed by CSIRO for extracting cholesterol from dairy products and eggs could help to reduce the dietary intake of cholesterol.

Alternative fats: Medium chain triglycerides, predominantly C8:0 and C10:0 fatty acids have been proposed as substitutes for the more usual lipids in margarine, spreads and modified milk products. Unlike conventional lipids, these compounds are oxidised and metabolised in the liver as rapidly as carbohydrate and appear to lower plasma cholesterol. Structured lipids could be used similarly. It might be advantageous, for example, to use synthetic lipid with an ω-3 fatty acid in the central position of the triglyceride and medium chain fatty acids in the outer two positions.

Fat substitutes: Two classes of fat substitute have been proposed, both of which mimic the mouthfeel of fat. (1) Compounds which resemble fat physically but which are not absorbed from the gut. Examples are sucrose polyesters (*e.g.* 'Olestra') or polysiloxanes. (2) Products which in no way resemble fat except in mouthfeel. The only example, so far, is 'Simplesse' in which the creamy texture is achieved by forming minute spheres (0.1 - 2 μm) of protein from milk or egg white.

Cholesterol reduction: A process developed by CSIRO removes 80-90% of the cholesterol from whole milk or egg pulp. Only cholesterol is removed and the product remains in other respects unaltered. The process offers an economic and practical route for the production of low-cholesterol egg and dairy products.

"Ye shall eat of the fat of the land" (*Genesis* ch. 45 v. 18) was intended as a blessing, not a curse; fat can give food delightful textures and flavours. In biblical times, and until the last century, foods rich in fat were scarce luxuries. Now they are abundant and cheap, a result of successful application of food technology and modern agriculture. Food technology may now be in a position to offer the semblance of fat without the substance - and to assist in achieving the dietary goals.

NATIONAL HEART FOUNDATION OF AUSTRALIA. (1989). Update on diet and heart disease 1989, 1.

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