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Abstract

We are delighted to see a cross-discipline review article by Chong, Sinclair and Guymer appearing in this issue of CEO ('Facts on fat', pp. 464–471). As the authors anticipate, this review provides valuable information to readers of the Journal, who are mostly ophthalmologists. We also believe that this cross-discipline review article will enable readers to better understand the roles of dietary fats, and be in a position to convey better quality information to their patients. Given that a possible association between dietary fatty acid intake and age-related macular degeneration is a current hot topic in the ophthalmic literature, this review article is well worth reading.

Keywords

implications, fats, facts

Disciplines

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Editorial

Facts on fats: what are the implications?

We are delighted to see a cross-discipline review article by Chong, Sinclair and Guymer appearing in this issue of CEO ('Facts on fat', pp. 464–471). As the authors anticipate, this review provides valuable information to readers of the Journal, who are mostly ophthalmologists. We also believe that this cross-discipline review article will enable readers to better understand the roles of dietary fats, and be in a position to convey better quality information to their patients. Given that a possible association between dietary fatty acid intake and age-related macular degeneration is a current hot topic in the ophthalmic literature, this review article is well worth reading.

The review is written in plain readable language, and has a few important points that deserve highlighting. First, Chong *et al.* rightly point out that cholesterol is an essential metabolite to cell membranes, steroid hormones and bile acids. In other words, it is essential to life, but not an essential nutrient, as it can be manufactured *de novo* in our body. Diets with low saturated fat intake and moderate amounts of polyunsaturated fats, with a wide variety of fruits, vegetables and wholegrain cereal products can lower plasma cholesterol by about 15%.¹ Medications (including statins and fibrates) are useful in people with persistent elevated plasma cholesterol, in particular, for patients with existing vascular disease,¹ however, care needs to be taken to ensure a balanced approach to medication use, as adverse effects from low plasma cholesterol have previously been documented.^{2,3}

Second, the authors rightly point out differences in the nutrient compositions of Australian and New Zealand food products from those of North American products; in particular, the *trans*-unsaturated fatty acid (TFA) composition is much lower in Australian margarines than in American margarines. In response to encouragement from lobby groups, Australian margarine manufacturers have been working to lower TFA content since the late 1990s, whereas this was slow to occur in the USA, though there are now moves to reduce the TFA content of manufactured foods.⁴ The implication is that care must be taken when extrapolating research findings of dietary data reported from US populations to Australian and New Zealand populations.

Although it would be valuable if TFA could also become part of mandatory labelling, there may be practical issues limiting manufacturers' ability to do this, as TFA are difficult to measure, and currently there is no comprehensive TFA database in Australia. This also means that it is difficult to estimate population intakes of TFA and to measure potential associations with health outcomes. This limitation needs to be considered, with respect to potential research in this area.

Third, the authors also very rightly point out that intake of one type of fat (i.e. monounsaturated fatty acids, MUFA) is strongly correlated with saturated and *trans*-unsaturated fatty acids in the American diet, as the main sources of MUFA in the American diet are french fries, dairy fats, ground beef and hydrogenated vegetable oils. The implication is that this applies not only to American diet research but likewise to other nutrition research, and needs to be taken into consideration, with other correlated nutrient intake and total energy intake. In nutritional epidemiology, energy-adjustment of nutrient intakes is the usual approach taken. Similar approaches, however, have not been widely used when investigating fatty acid intake, that is, each type of fatty acid intake should be adjusted for the total fat intake and other subtypes of fat. This approach has been used in only a few studies, including one report from an Australian population-based cohort study.⁵

It is important to consider that some dietary fats also provide sources of other nutrients, such as Vitamin E and polyphenols. Diet as a whole may have synergistic effects from different foods, which may provide greater benefit from combinations of many nutrients to achieve better health outcomes. In Australia, the main contributors to total fat intake among adults, assessed in the 1995 National Nutrition Survey, were meat and meat products (23.7% in men, 19.8% in women), cereal based products and dishes (including biscuits, cakes and pastries) (18.4% in men, 18.0% in women), dairy products (16.6% in men, 16.9% in women) and fats and oils (11.8% in men, 11.4% in women);⁶ the main contributors to PUFA intake were margarine (19.1% in men, 16.4% in women), meat and meat products (16.4% in men, 14.2% in women), cereal-based products and dishes (14.9% in men, 15.4% in women), breads and breakfast cereals (13.4% in men, 13.8% in women).⁶

It is valuable that the authors have discussed the need to consider the balance of *n*-6 : *n*-3 in our diet, in the context of absolute intakes of omega fatty acids.

The Australian diet has been reported to have too high a ratio of *n*-6 : *n*-3.⁷ Increasing fish intake is a practical way to increase *n*-3 fatty acid intake (2–3 serves a week), thus not only reducing the ratio of *n*-6 : *n*-3, but probably more importantly, increasing our overall absolute intake of *n*-3 fatty acids. There is a growing body of evidence suggesting that dietary sources of fish (especially those rich in long chain *n*-3 fatty acids) are not only associated with a reduced risk of cardiovascular disease, but also a reduced risk of age-related macular degeneration.^{5,8–11} A recent meta-analysis published in BMJ, however, indicated that fish oil supple-

ments did not provide protective benefits for mortality, cardiovascular disease and cancer.¹²

How our diet affects our health and disease burden is a complex area of research, as dietary effects are unlikely to be measurable in the short-term, usually requiring relatively longer periods of time for harmful or beneficial effects to be detected. There also needs to be very careful consideration of the approach taken when conducting analyses, given differences between population food supplies, and differences in the total intake of all foods between individuals.

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