



Nutrition and the eye: Basic and clinical research

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There's something very seductive about the promise of nutrition as the key to better health. If we could only get enough of such-and-such a vitamin, then we would live longer, happier, more active lives. The vendors of vitamin supplements capitalise on the free-floating discontent and sense of lassitude that are all too common in modern life, suggesting that some imbalance in our diets is responsible for how we feel. The vague discomfort so many people feel about medications is also exploited – for surely the nutrients that naturally occur in one's diet are the best medication of all?

In "health food" stores and the like, nutritional supplements are heavily promoted, often with rather luridly exaggerated claims for their benefits featuring prominently on the labels. I've often felt it ironic that the same people who angrily denounce the medical profession for being enmeshed with money-grabbing pharmaceutical firms are often promoting some supplement or other that, to put it mildly, doesn't come cheap. The evidence that nutritional supplements do anything much outside of well-defined populations is scanty at best, as we shall see.

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There are more admirable reasons for the interest in antioxidants and food supplements that has been growing over the last decade. Oxidative damage is undoubtedly implicated in many diseases of the eye. Antioxidative substances are now a major research area. So it isn't just hype.

In this slim volume, the whole issue of how the major compounds of nutrition and food supplements relate to clinical practice is explored. It is a fascinating topic, and the authors, while far from skimping on the science (to put it mildly), give a clear and clinically relevant summary of their conclusions.

This volume is a relatively slim instalment in the Karger Developments in Ophthalmology series, yet it is one which punches above its weight.

The opening section, by Peter Schreier, is a review of the whole general area of nutrition – about food sources, nutrient-nutrient interactions, and the effect of deficiencies and of over-consumption. Over the years, I'm sure most readers have heard the grandiloquent claims made, for example, for megadoses of vitamin C.

Schreier takes the reader through the various claims for various nutrients. In almost all, it seems, we come across words along the lines of "the evidence is equivocal" or "the exact role of nutrient X still needs to be clarified." It seems that there have been studies that not only show that nutrient X is associated with less cases of disease Y, but that nutrient X is also associated with more cases of disease Y.

This is not to say that nutritional approaches do not have great promise, and that there may, possibly, some day be a role for nutritional supplements in a preventive approach to health care. But there is always a more complicated picture than the supplement-pushers might indicate. Some epidemiologic evidence shows that selenium, for instance, may increase the risk of cardiovascular diseases, but there is no

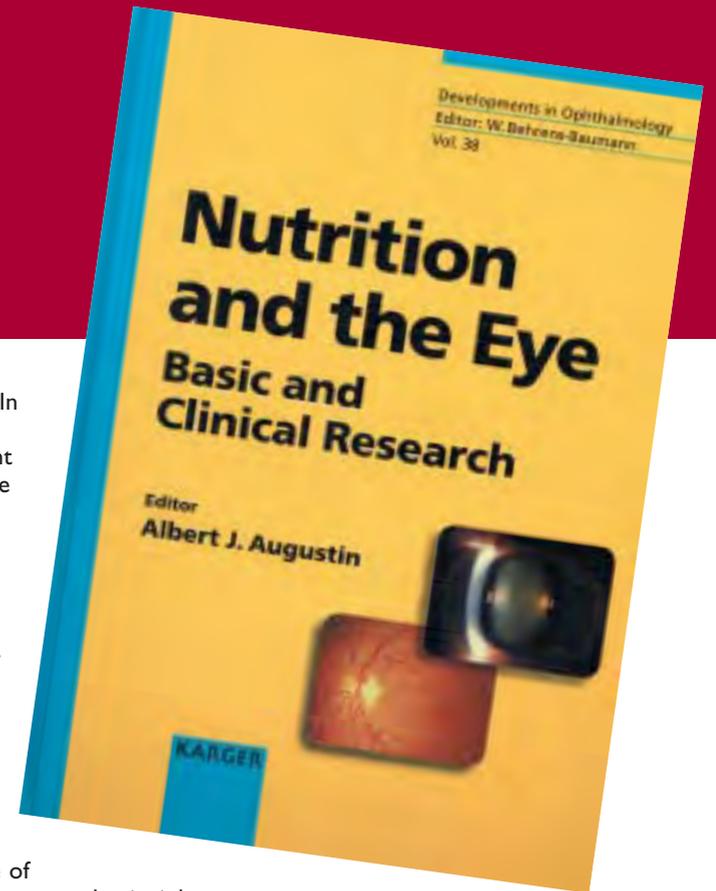
definitive evidence. In terms of cancer, selenium enrichment produced impressive results in an undernourished population, but the picture is by no means clear in a well-nourished one. And selenium is undoubtedly toxic in high doses.

After Schreier's long introductory chapter – which is a neat summary of the current state of knowledge about the general principles and the evidence underlying antioxidant therapies – there follow chapters on the more particular relationship between particular antioxidants and nutrients and eye disease. Almost all of the contributors – including Jansch et al on vitamin C, E and the flavinoids, Flohe on selenium, Meyer and Sekundo on antioxidants and cataract formation – conclude that there is no good evidence to routinely advise patients to take supplements for prophylactic reasons.

The exception is Stahl's chapter on macular carotenoids, which concludes that the macular carotenoids – the pigments lutein and zeaxanthin – do certainly have a role in protecting the central retina against degenerative processes. Supplementation is apparently associated with an increase in lutein in the retina and a lower risk for age-related macular degeneration. "One of the major tasks for the future will be to provide unequivocal evidence that an increased consumption of macular carotenoids helps to prevent AMD", Stahl concludes.

Ursula Schmidt-Erfuth's closing chapter, "Nutrition and Retina," discusses the Age-Related Eye Disease Study, the only prospective, controlled, clinical trial providing proven benefit of antioxidant therapy for a retinal disease. Having said that, "high-dose antioxidant supplements according to the AREDS trial should currently only be recommended to non-smokers with at least intermediate AMD."

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punches above its weight. The biochemistry of nutrition is explained in great detail.

Generally, the book is easy to read. Naturally there are relatively few colour illustrations. The book features more line diagrams and tables than bright, full-colour images of the eye. The authors are at pains to make the book clinically useful; of course, the lack of definitive evidence either way precludes the dispensing of all that much advice.