

Book Review

Frank Eperjesi and Stephen Beatty (editors). *Nutrition and the Eye – A Practical Approach*. Philadelphia: Butterworth-Heinemann Elsevier 2006. £ 59.95. pp. 280. ISBN 0 7506 8816 5

The editors have provided a compact book with a surprisingly large amount of information. As the title suggests, the emphasis is on nutrition and includes both the fundamentals of a healthy diet as well as much information on the nutritional studies done to delay onset of, as well as provide relief from, various eye diseases.

The content of the book is set out in seven sections but most information is provided in the first four: (1) introduction to nutrition for eye-care practitioners, (2) the macro- and micro-nutrients, (3) deficiencies of vitamins A, C and E and ocular disease and (4) nutrition and ocular senescence. Section 5 provides details on an important multicentre observational and intervention study, i.e. Age-Related Eye Disease Study (AREDS), and on a number of ongoing intervention studies aimed at reducing the risk of age-related maculopathy (ARM) and preventing its progression to age-related macular degeneration (AMD). Sections 6 and 7 are very short and deal with contra-indications of nutritional supplements and conclusions, respectively.

The introductory section is primarily a discussion of food groups and types, what constitutes a healthy diet, how we utilize the materials in foods and bioavailability. There are also two other chapters on measurement of status and optimal nutrition. The chapter on status mainly concerns anthropometry. Information on the use of biochemical indicators is limited, which may explain why there is no mention of the influence of inflammation. The chapter entitled 'Optimal nutrition' in this section is something of a misnomer since it mainly deals with nutritional requirements.

Much of the discussion in the book is targeted at oxidation and its potential role in causing the diseases associated with increasing age. Section 2 develops this when discussing the micronutrients and includes an important chapter on oxidation and the various endogenous and exogenous antioxidant mechanisms. Damage caused by oxidation of tissue components due to high metabolic activity or incident blue light or both, and the accumulation of oxidative products through life are currently believed to be contributory factors for a number of the age-related eye diseases. In this section there is also an important chapter on the carotenoids, including the xanthophyll carotenoids, lutein and zeaxanthin. The AREDS trial provided evidence that antioxidant supplements lowered the risk of ARM but the mechanism is elusive, especially as β -carotene, one of the supplements used, is not found in the eye. I also question the authors' belief that retinol is a

radical-scavenging antioxidant. Retinol is protected at all times by a number of binding proteins that prevent it becoming oxidized, so it can hardly act as a radical scavenger. An interesting point the authors discuss is the finding that obesity is a risk factor for ARM and that fat may retain the xanthophyll pigments, impairing their availability to the retinal tissues. As women also have a higher risk of ARM and higher body fat than men, there may be something in the observation. However, the absolute amount of xanthophyll pigment in the eye is very small compared with the amount in the circulation, suggesting there must also be other factors involved.

Section 3 mainly deals with the classical vitamin A-deficiency disease, xerophthalmia. There are also short paragraphs on the clinical effects of vitamin E and C deficiency and a discussion of retinitis pigmentosa and some of the intervention trials with vitamins E and A to protect against progression of the disease.

Although the book is targeted at 'eye-care practitioners', it will also be useful to anyone who wants to know more about the physiological function and pathological features of common eye diseases of the elderly. Section 4 includes a comprehensive chapter on 'The ageing eye' and separate chapters on the nutrition of the elderly and nutritional interventions to alleviate dry-eye disorders, glaucoma, cataract and AMD. While reading this section, one of the noticeable features is that most of the nutrition studies described have used pharmacological doses of nutrients in an attempt to have an effect and there are far fewer studies that have tried to evaluate nutritional status and its relationship to the different eye diseases.

Section 5 provides a good résumé of the findings of the AREDS trial and brings the reader up to date in terms of the trials that are currently in progress and what results are likely to be published over the next few years. Thus the book is a valuable source of information both on the many nutritional intervention studies that have taken place and of ongoing studies. The book is a 'must' for 'eye-care practitioners', but also anyone contemplating nutritional intervention work in man or researching the literature in this area will find this book a useful resource.

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doi: 10.1017/S0007114507723929