derived food might be protective against excess oxidant activity whilst retaining the required level of such activity for defence against infection.

Conclusion

Basic foods and condiments like herbs and spices are extensive sources of antioxidants. The benefits of antioxidants may depend on their variety and interactions. We know that we can optimise health by encouraging the consumption of a wide variety of nutritious foods, but we cannot, so far, be sure about the risks and benefits of taking antioxidant supplements.

REFERENCES

- Halliwell B. Antioxidants in human health and disease. Annu Rev Nutr 1996;16:33-50.
- Key TJ, Thorogood M, Appleby PN, Burr ML. Dietary habits and mortality in 11,000 vegetarians and health conscious people: results of a 17 year follow up. Br Med J 1996;313:775-9.
- 3. Ziegler RG. Vegetables, fruits, and carotenoids and the risk of cancer. Am J Clin Nutr 1991;53(1 Suppl):251S-9S.
- Christen WG, Glynn RJ, Hennekens CH. Antioxidants and age-related eye disease. Current and future perspectives. Annals Epidemiol 1996;6:60-6.
- Ortega RM, Requejo AM, Andres P, Lopez-Sobaler AM, Quintas ME, Redondo MR, et al. Dietary intake and cognitive function in a group of elderly people. Am J Clin Nutr 1997;66:803-9.
- Kant AK, Schatzkin A, Harris TB, Ziegler RG, Block G. Dietary diversity and subsequent mortality in the First National Health and Nutrition Examination Survey Epidemiologic Follow-up Study. Am J Clin Nutr 1994;59:950-1.
- Aruoma OI. Free radicals, antioxidants and international nutrition. Asia Pacific J Clin Nutr 1999;8:53-63.
- Johnson EJ, Qin J, Krinsky NI, Russell RM. Ingestion by men of a combined dose of beta-carotene and lycopene does not affect the absorption of beta-carotene but improves that of lycopene. J Nutr 1997;127:1833-7.

- Wahlqvist ML, Wattanapenpaiboon N, Macrae FA, Lambert JR, MacLennan R, Hsu-Hage BH. Changes in serum carotenoids in subjects with colorectal adenomas after 24 mo of beta-carotene supplementation. Am J Clin Nutr 1994;60:936-43.
- National Health and Medical Research Council. Nutrition Policy Statements. Canberra: Australian Government Publishing Service; 1990.
- Podmore ID, Griffiths HR, Herbert KE, Mistry N, Mistry P, Lunec J. Vitamin C exhibits pro-oxidant properties [letter]. Nature 1998;392:559.
- Palozza P. Prooxidant actions of carotenoids in biologic systems. Nutr Rev 1998;56:257-65.
- Kushi LH, Folsom AR, Prineas RJ, Mink PJ, Wu Y, Bostick RM. Dietary antioxidant vitamins and death from coronary heart disease in postmenopausal women. N Engl J Med 1996;334:1156-62.
- 14. Jha P, Flather M, Lonn E, Farkouh M, Yusuf S. The antioxidant vitamins and cardiovascular disease. A critical review of epidemiologic and clinical trial data. Ann Intern Med 1995;123:860-72.
- Stephens NG, Parsons A, Schofield PM, Kelly F, Cheeseman K, Mitchinson MJ. Randomised controlled trial of vitamin E in patients with coronary disease: Cambridge Heart Antioxidant Study (CHAOS). Lancet 1996;347:781-6.
- 16. The Alpha-Tocopherol, Beta Carotene Cancer Prevention Study Group. The effect of vitamin E and beta carotene on the incidence of lung cancer and other cancers in male smokers. N Engl J Med 1994;330:1029-35.

Self-test questions

The following statements are either true or false (answers on page 151)

- 7. Naturally-occurring antioxidants have no adverse effects
- 8. A beneficial effect of an antioxidant found in food may not occur if the antioxidant is taken as a supplement.

Dental implications

Prepared by Associate Professor R.G. Woods of the Australian Dental Association

Digoxin in the 21st century (page 136)

The cardiac glycoside digoxin is taken by an increasing number of dental patients. The drugs used in dental treatment which may interact with digoxin include tetracyclines, erythromycin, catecholamines in local anaesthetic preparations (which may increase the risk of arrhythmia) and non-steroidal anti-inflammatory drugs such as diclofenac.

It is prudent to use an alternative to adrenaline or other catecholamine vasoconstrictors in local anaesthetics. Alternative vasoconstrictors available in dental preparations include felypressin with prilocaine hydrochloride.

Notwithstanding this comment, clinically there appears to be no reaction to up to 4 mL of local anaesthetics containing adrenaline in the low concentration of 1:200 000 (5 microgram/mL). Extra care should be taken to avoid intravascular injection.

Treatments should be carefully planned. Consultation with the patient's medical practitioner may be necessary. Appointments for patients taking digoxin should be kept as brief as practicable. If extensive treatment is planned it is often prudent to monitor the patient with an electrocardiograph and oximetry. Sometimes oxygen may be needed, so it should be available in the surgery.