ABSTRACTS

DO ANTIOXIDANTS PREVENT GASTROINTESTINAL CANCER?

Conventional wisdom is that oxidative stress can cause cancer, and the human diet is a complex mixture of oxidants and antioxidants. It is also thought that the gastrointestinal tract is the major site of antioxidant action. So, the question of whether antioxidants can protect against cancer is currently attracting much attention, not least among the supplement and complementary medicine market.

However, the situation is far from clear cut as a recent paper in *The Lancet* shows. The authors used Cochrane Collaboration methodology to review all randomised trials comparing antioxidant supplements with placebo for the prevention of gastrointestinal cancer. They looked at the incidence of gastrointestinal cancers, overall mortality and adverse effects in 14 randomised trials, generally of high quality.

Analysis of these trials showed significant effects of supplementation with beta-carotene, vitamins A, C, E and selenium (alone or in combination) versus placebo on oesophageal, gastric, colorectal, pancreatic and liver cancer incidence. But the effect was not as the supplement manufacturers would have us believe. The significant effect was to increase mortality, selenium alone appearing to have a beneficial effect, although there was only one high-quality trial showing this.

The authors emphasise that their review analysed only the effect of certain antioxidant supplements and should not be translated into the potential effects of vegetables and fruits, which are rich in antioxidants and other substances. However, they also point out that, although most observational studies have reported that adequate intake of fruit and vegetables is associated with a low incidence of cancer, some have showed no significant effect. They also point out that their results are similar to those of other published meta-analyses or systematic reviews assessing the role of antioxidant supplementation for the prevention of lung cancer and cardiovascular diseases. These studies collectively suggest that antioxidant supplements might not be beneficial for preventing cancer.

Bjelakovic G *et al. Lancet* 2004; **364:** 1219-1228.

TESTOSTERONE PRESCRIBING IN AUSTRALIA

Testosterone is yet another substance that is widely believed to have anti-ageing properties. And as the author of this paper in the *Medical Journal of Australia* points out, during the 1990s there were no significant changes in the indications for testosterone treatment and, in particular, no convincing evidence that there is any benefit to quality of life that justifies testosterone therapy for older men without an overt androgen deficiency. However, in spite of this, there was a 20-fold increase in revenue from testosterone sales in the USA, driven by a significant increase in popular, professional and commercial interest in androgen therapy for ageing men.

The author sets out to analyse temporal trends and geographical variations in testosterone prescribing in Australia between January 1991 and December 2001, classified by state or territory. He found that there were two periods of striking upsurge, followed by declines in national total prescribing of testosterone. The changes were more prominent for oral than for injectable testosterone products and patterns were similar geographically, apart from a peak in Western Australia in 1998. This appears to have been related to the opening of a franchised men's sexual health clinic in Perth.

The author concludes that the striking upsurges in testosterone prescribing despite no convincing evidence of any benefits appear to reflect promotional activity to prescribe testosterone for older men, rather than any suggestion that there is an increase in diagnosis of androgen deficiency related to pituitary or testicular disease in younger men. The author suggests that professional and community education is needed on the appropriate diagnosis of genuine androgen deficiency in men, while discouraging unproven testosterone treatment for ageing men.

Handelsman D. *MJA* 2004; **181:** 419-422.

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