


## Antioxidants and ageing:

# harmless placebo or dangerous to your health?

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IN A RECENT BEST PRACTICE ARTICLE (  “Alternative remedies and lifestyle measures for longevity” BPJ11, February 2008) we discussed the role of antioxidants in the ageing process. Antioxidants are known to counteract the effect of free-radicals which contribute to ageing. Eating fruit and vegetables, which contain antioxidants, can reduce the risk of some age related diseases. However there is very little evidence that supplements containing antioxidants can provide any benefit additional to dietary consumption and there is no evidence that they have any effect on human ageing.

A recently published systematic review of the effect of antioxidant supplements on mortality assessed 67 randomised controlled trials, with a total of 232 550 participants. The authors concluded that there was no evidence that antioxidants prevented ageing and in fact, some may increase mortality.

Overall, 13.1% of study participants randomised to receive antioxidant supplements died, compared to 10.5% of those receiving placebo or no intervention. Analysis of

individual supplements found that vitamin A (Relative Risk RR 1.16, 95% C.I. 1.10 to 1.24), beta-carotene (RR 1.07, 95% C.I. 1.02 to 1.11) and vitamin E (RR 1.04, 95% C.I. 1.01 to 1.07) were all significantly associated with an increase in mortality, when given alone or combined with other antioxidants.

There were no differences in the effect of the antioxidants between study participants who were healthy or those who had various diseases. Treatment duration had no significant effect on the results but dose was significant. What this means is that someone who takes vitamin A supplements, especially at a dose close to or exceeding the recommended daily intake, may increase their risk of mortality by 16%.

The other antioxidants included in the study were vitamin C and selenium. There was no evidence that vitamin C increased longevity and a lack of evidence for selenium, although neither supplement increased mortality. More research is needed to establish the benefit or harm of these antioxidants.

### So what do you tell your patients?

- Antioxidant supplements are unlikely to increase longevity.
- It is not necessary for a healthy individual to take antioxidant supplements.
- Excessive use of vitamins A and E and beta carotene may have a negative effect on lifespan.
- Fruit and vegetables containing antioxidants are not harmful.
- It is unknown if antioxidants have a role in the treatment of specific diseases or in specific patient groups, more research is needed.

### Reference:

Bjelakovic G, Nikolova D, Gluud L et al. Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases. *Cochrane Database Syst Rev* 2008;2:CD007176.

## Antioxidants

**Vitamin A** encompasses the retinoid group including retinol, retinal and retinoic acid. Vitamin A preparations may also be in the form of retinyl acetate or palmitate.

**Beta carotene** is a precursor (inactive) form of vitamin A and is the substance in carrots that makes them orange.

**Vitamin E** is also known as  $\alpha$ -tocopherol and is most commonly sourced from wheat germ and soybean oils.

**Vitamin C** is also known as L-ascorbate and occurs naturally in many fruits and vegetables.

**Selenium** is a chemical element which occurs in different forms in the environment including as a trace element in soil. Other forms may be selenide salts or selenic acid.