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[Intervention Review]

# Antioxidants for preventing pre-eclampsia

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## ABSTRACT

### Background

Oxidative stress has been proposed as a key factor involved in the development of pre-eclampsia. Supplementing women with antioxidants during pregnancy may help to counteract oxidative stress and thereby prevent or delay the onset of pre-eclampsia.

### Objectives

To determine the effectiveness and safety of any antioxidant supplementation during pregnancy and the risk of developing pre-eclampsia and its related complications.

### Search methods

We searched the Cochrane Pregnancy and Childbirth Group Trials Register (June 2004) and the Cochrane Central Register of Controlled Trials (*The Cochrane Library*, Issue 3, 2004).

### Selection criteria

All randomised and quasi-randomised trials comparing one or more antioxidants with either placebo or no antioxidants during pregnancy for the prevention of pre-eclampsia, and trials comparing one or more antioxidants with another, or with other interventions.

### Data collection and analysis

Two review authors independently assessed trials for inclusion, data extraction and trial quality. Data were double-entered into the Review Manager software.

### Main results

Seven trials involving 6082 women are included in this review. The largest trial (5021 women) was quasi-random and only three of the seven included trials were rated high quality. Supplementing women with any antioxidants during pregnancy compared with control or placebo was associated with a 39% reduction in the risk of pre-eclampsia (relative risk (RR) 0.61, 95% confidence intervals (CI) 0.50 to 0.75, seven trials, 6082 women). Women receiving antioxidants compared with control or placebo also had a reduced risk of having a small-for-gestational-age infant (RR 0.64, 95% CI 0.47 to 0.87, three trials, 634 women), their infants had a greater mean birthweight (weighted mean difference 91.83 g, 95% CI 11.55 to 172.11, three trials, 451 women), but they were more likely to give birth preterm (RR 1.38, 95% CI 1.04 to 1.82, three trials, 583 women). There were insufficient data for reliable conclusions about possible effects on any other outcomes.

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**Authors' conclusions**

These results should be interpreted with caution, as most of the data come from poor quality studies. Nevertheless, antioxidant supplementation seems to reduce the risk of pre-eclampsia. There also appears to be a reduction in the risk of having a small-for-gestational-age baby associated with antioxidants, although there is an increase in the risk of preterm birth. Several large trials are ongoing, and the results of these are needed before antioxidants can be recommended for clinical practice.

**PLAIN LANGUAGE SUMMARY****Antioxidants in pregnancy, like vitamin C and vitamin E, for preventing pre-eclampsia**

Pre-eclampsia can occur during pregnancy when women have high blood pressure and protein in their urine. In some cases, it can lead to serious complications for women and babies, including mortality. A possible contributing factor to the development of pre-eclampsia may be the presence of excessive amounts of chemicals called 'free radicals'. Antioxidants, such as vitamin C, vitamin E, selenium and lycopene, can neutralize free radicals and may help prevent pre-eclampsia. The review of trials found studies of not the best quality, which indicated antioxidants might reduce the risk of pre-eclampsia. However, although antioxidants appeared to reduce the risk of having a small baby, there was an increase in the risk of the baby being born too soon. Further studies are needed to confirm whether or not antioxidants do more good than harm. Several trials are currently in progress on this topic.