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**Supplementation with antioxidant vitamins C and E
for the prevention of pre-eclampsia: a randomised
controlled trial.**

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ABSTRACT

Background: Oxidative stress has been implicated in the pathogenesis of pre-eclampsia. Supplementing women with the antioxidant vitamins C and E during pregnancy may help counteract oxidative stress and thereby reduce the risk of pre-eclampsia and its related complications.

Methods: 1,538 nulliparous women between 14⁺⁰ and 21⁺⁶ weeks' gestation were randomised to either supplementation with vitamin C and E (n=770) or placebo (n=768). Primary outcome measures were the risk of having a small for gestational age infant (birth weight < 10th centile), pre-eclampsia and death or serious adverse outcome for the infant.

Results: Women in each treatment group were comparable for all important baseline maternal characteristics. No difference was seen between treatment groups for the risk of the infant being born small for gestational age (vitamin group 66 [8.6%] vs. placebo 71 [9.4%], Relative Risk (RR) 0.92, 95% Confidence Intervals (CI) 0.67 to 1.27, p=0.614) or the risk of pre-eclampsia (vitamin group 60 [7.8%] vs. placebo group 51 [6.6%], RR 1.17, 95% CI 0.82 to 1.68, p=0.383). Supplementation with vitamin C and E was associated with a 30 percent reduction in the relative risk of death or serious adverse outcome for the infant (vitamin group 54 [7.0%] vs. placebo group 77 [10.0%], RR 0.70, upper 95% CI <0.93, p=0.021, one-tailed test). This was associated with an absolute risk reduction of three percent, whereby 33 women would need to take vitamin C and E supplements in pregnancy in order for one infant to benefit. Mean head circumference at birth was greater for infants in the vitamin C and E group (vitamin group 34.6 cm [SD 1.7] vs. placebo group 34.4 cm [SD 1.9], mean difference 0.18 cm, 95% CI 0.00 to 0.36, p=0.047), and these infants also had a reduced risk of developing respiratory distress syndrome (vitamin group 1 [0.1%] vs. placebo group 9 [1.2%], RR 0.11, 95% CI 0.01 to 0.87, p=0.011).

Conclusion: Vitamin C and E supplementation cannot be recommended as a prophylaxis for pre-eclampsia for nulliparous women. The impact of supplementation on the risk of death or adverse health outcomes for the infant, including respiratory morbidity, requires further confirmation.