Effects of maternal ageing and dietary antioxidant supplementation on ovulation, fertilisation and embryo development in vitro in the mouse.

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OBJECTIVE: The present study aims to ascertain whether dietary supplementation with a mixture of vitamins C and E may prevent the maternal-age-associated decrease in both the number of ovulated oocytes after exogenous ovarian stimulation and embryo development in vitro in the mouse.

METHODS: Experimental females were fed a standard diet supplemented with i) high doses of vitamins C and E from the first day of weaning until 12 or 40 weeks of age; or ii) moderate doses of vitamins C and E from the first day of weaning until 12 weeks of age or from 22 to 33 weeks of age.

RESULTS: The age-related reduction in ovulation rate was partially prevented by supplementing diet with high doses of vitamins C and E from the first day of weaning. Shorter periods of treatment and lower doses of vitamins C and E were also efficient in preventing the maternal-age-associated reduction in ovulation rate after exogenous ovarian stimulation. No effect of maternal diet on fertilisation and embryo development was observed until the blastocyst stage.

CONCLUSION: Although any extrapolation to human fertility should be made with caution, these findings may have direct implications for preventing or delaying maternal-age-associated infertility in humans.

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