Abstract

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

Tarín J, Ten J, Vendrell FJ, de Oliveira MN, Cano A.

Department of Paediatrics, Obstetrics and Gynaecology, Faculty of Medicine, University of Valencia, Spain.

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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