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TITLE

EFFECT OF SPECIFIC NUTRIENTS ON OVULATION, OOCYTES DEVELOPMENT, GENE EXPRESSION AND COUPLING SUCCESS IN MICE

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ABSTRACT

Context: Pregnancy success and arriving to a healthy term depends on a number of factors amongst which are the genetic and epigenetic, immune, cardiovascular, metabolic amongst others, but the reproductive process is also sensitive to the nutritional state of the mother.

Objective: Can we improve the probability of pregnancy and healthy fetus. We have been studying the role of metabolic, antioxidant and minerals and our data as well as that of other researchers is showing that indeed we can positively influence the egg quality as well as pregnancy rate.

Methods: Female 12 and 5 weeks old CD1 mice were divided into four groups of ten each and treated daily for 3 weeks by intragastric gavage. G1: Vehicle; G2: Carnitines (L-carnitine 0.4 mg and acetyl-L-carnitine 0.12 mg/mouse); G3: Microelements (Zinc 4 ng, Copper 0.8 ng, Iron 7 ng /mouse); G4: G3+G2. After treatment superovulation was induced, oocyte collected to assess quality and quantity. To evaluate the preimplantation embryos development, in vitro fertilization (IVF) experiments were performed. To assess the successful rate of birth in old and young female, mice were in vivo fertilized.

Results: Mean number of oocytes was significantly higher in groups 2 and 4: respectively, versus control group. The number of oocytes in group 3 was not affected. Number of degraded oocytes was 29,1% and 19,3% (group 2 and 4) versus 34,3% (control). The numbers of embryos arriving to successful birth was also increased in G4, both in old and young mice. Preliminary analysis of genes affected in this processes showed some trends, AMH was upregulated in the ovary and KITL in the uterus in group 2.

Conclusion: Results evidence that L-carnitine, acetyl-L-carnitine and micronutrients may improve both oocytes quality and success of pregnancy. We are continuing studies to examine ways to improve pregnancy and fetal health.

INSTITUTE

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