

Effect of maternal food restriction on the folliculogenesis and steroidogenesis in female rat offspring

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Fetal development is a critical determinant of adult physiology. Indeed, maternal malnutrition during pregnancy leads to structural and functional changes in many organs such as the liver, kidney and lung of rat offspring. The present study aims to determine the impact of food restriction during pregnancy on structure and proteins expression in ovary from female rat offspring. Virgin Wistar female rats are weighted and housed individually in cages with constant temperature and humidity, and provided a food *ad libitum*. The second group named the first generation of food-restricted group received 50% of the food consumed by controls from day 1 of pregnancy until birth. Offspring of the FR1 had free access to food. A subgroup of FR1 were mated and treated as their mothers to produce the second generation. At week 4 of age, a number of females from different groups were sacrificed, and their blood and ovaries were collected and prepared for histological and molecular studies. Results showed that exposure to food restriction during pregnancy triggered a decrease in ovarian weight in FR1 and FR2 compared to control. Moreover, we observed that ovaries of both FR1 and FR2 contain multi-oocytes follicles (MOF) and the incidence of these MOF was higher in FR2 compared to FR1 and control. The food restriction has also influenced the expression of some steroidogenic enzymes in the ovary such as the aromatase (Cyp19a1) and 17alpha-hydroxylase (Cyp17a1), of estrogen receptors 1 and 2 (Er1 and Er2), insulin-like factor 3 (Insl3) and the growth differentiation factor (Gdf9). These data suggest that maternal malnutrition during pregnancy has affected the structure and proteins expression of ovary in rat offspring.

Biography

Abdel Halim Harrath is an Associate Professor in Reproductive and Developmental Biology at King Saud University, Riyadh. His academic career has been involved in several fields of Biology. He has participated in a large-scale multidisciplinary of biology related to both basic and applied research projects. He is particularly interested in the effect of external factors (pollutants, nutrition, bioactive molecules, herb extracts, and drug) on female reproductive processes. He is an Editor-in-Chief of several international journals.

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