



# Maternal Perinatal Undernutrition Attenuates T-Cell Function in Adult Male Rat Offspring

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## Abstract:

**OBJECTIVE:** We investigated the impact of maternal food restriction during gestation and lactation on the number and function of peripheral T cells in adult male offspring. **STUDY DESIGN:** Pregnant rats either received ad libitum (control) feed or were 50% food restricted (FR) from day zero of gestation to delivery and during the lactation period. After weaning, pups from control and FR mother rats were fed normally until they reached 8 weeks of age. At 8 weeks of age, blood parameters, plasma cytokine levels, and T cell number and function were determined in 10 male offspring from each group. **RESULTS:** FR offspring exhibited decreased numbers of total and CD4+ and CD8+ T lymphocytes and a significant reduction in plasma IL-2 and IL-7 compared with control offspring. In addition, T lymphocytes from FR offspring exhibited a 2-fold decrease in IL-2- and IL-7-mediated AKT and STAT5 phosphorylation, altered actin polymerization, and diminished superantigen-mediated proliferation and cytokine production as compared with control offspring. **CONCLUSIONS:** Taken together, these findings suggest that early undernutrition, particularly during the prenatal and lactation periods, attenuates T cell survival and the immune response.

## Keywords:

Maternal malnutrition □ Offspring □ T cells □ Polyfunction □ Cytokines

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