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Effects of maternal diet on offspring in terms of behavior and overall health

Katie Koelling & Cheryl Rosenfeld

Polyunsaturated fatty acids have been touted to affect mammalian health and fecundity. Since stressed rodents tend to produce a surfeit of female pups, we studied the effects of these diets on female offspring behavior. NIH Swiss females were placed on complete diets enriched in either N-3 or N-6 PUFA for 15 weeks, with a chow diet group as controls. Females were bred and pup sex determined. Each dam was re-bred to the same male one week after pup weaning. The offspring were placed on 5015 so that the mothers diet is what is tested. The mazes ran in September 2007 showed N-3 and N-6 offspring spent less time ($P \leq 0.02$) in the open arms of the elevated maze than the 5015 offspring. In the open field test in May 2007, N-6 females traveled less distance than both the N-3 and 5015 females and displayed less exploratory behavior. In the open field test in September 2007, N-6 females traveled less distance than both the N-3 and 5015 females and displayed less exploratory behavior. The decreased exploratory behavior in the N-6 female offspring is consistent with increased anxiety, which was unexpected based on our results in the dams on the various diets.