Maternal fish oil supplementation: its effect on behavior in adult rats fed a high-fat diet.

Poster

Comportamiento/Cognitivo - Behavioral/Cognitive

Yasna Muñoz [1], Juan Montiel [2], Heidy Kaune [3], Alexies Dagnino [4], Luis Tabilo [5], Manuel Maliqueo [6].

(1) University of Chile, Department of Nutrition, Faculty of Medicine, Santiago, Chile.
(2) Diego Portales University, Integrated Neurosciences Laboratory, Center for Biomedical Research, Faculty of Medicine, Santiago, Chile.
(3) Diego Portales University, Reproductive Laboratory, Center for Biomedical Research, Faculty of Medicine, Santiago, Chile.
(4) University of Valparaíso, Neurobiology and Stress Laboratory, Faculty of Science, Valparaíso, Chile.
(5) University of Valparaíso, Synaptopathy Laboratory, School of Medicine, Valparaíso, Chile.
(6) University of Chile, Laboratory of Endocrinology and Metabolism, Western Faculty of Medicine, Santiago, Chile.

yasnamunoz@uchile.cl

Supplementation with fish oil (FO) rich in n-3 polyunsaturated fatty acids (n-3 PUFAs), particularly docosahexaenoic acid (DHA), may mitigate the adverse effects of a high-fat diet (HFD) on neurodevelopment in offspring. We set out to determine whether maternal supplementation with FO mitigates the effects of the HFD on behavior in adult offspring in rats.

Method: Six Sprague-Dawley rats were fed a CD diet (10% fat calories) and six were fed a HFD diet (45% fat calories). A subgroup of five HFD rats received a dietary supplement of FO containing 1% DHA (HFD-FO). The offspring were fed the diets during pregnancy and the postnatal period; at weaning, the animals were switched to a standard diet. A subgroup of female offspring on days 60–120 underwent behavioral tests, including the open field, elevated maze (EPM), water maze (WM), and reverse learning tests.

Results: EPM test conducted with female rats, the HFD group showed a shorter

maximum distance in the open arms compared to the HFD-FO group (P = 0.038) and spent more time in the closed arms (P = 0.028). WM, females in the HFD group spent more time in the target quadrant (P < 0.001). Comparing the target and opposite quadrants, differences were observed between the HFD and HFD-FO groups (P = 0.048). Males fed the HFD showed greater locomotor activity (P = 0.001).

Conclusion: Our results highlight the essential role of n-3 PUFAs, particularly dietary DHA and EPA, which have a protective effect by mitigating the changes caused by HFD.

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