



Abstract

Long-Term Sunflower Oil Diet Effects on Mouse Brain Lipid Metabolism [†]

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Abstract: Background and Objectives: Fatty acids play an important role in many physiological processes in different organs. Their effect is well documented in neurodegenerative diseases and inflammatory diseases. Also, the brain as an organ is known to be enriched by docosahexaenoic acid (DHA) and arachidonic acid (AA). However, there are not many studies showing the effect of long-term oil diets on brain lipid metabolism. The aim of this study was to investigate the effects of dietary sunflower oil (enriched with oleic acid, GA-ME-HA, Sarajevo, Bosnia and Hercegovina) on fatty acid profiles in the brain after 100 days of treatment. Methods: Six-week-old adult female C57BL/6 mice were used in these experiments. A total of 20 laboratory female C57BL/6 mice were randomly divided into two groups, the control (n = 10) and sunflower diet treatment groups (n = 10), enriched with 25% saturated/unsaturated fats in isocaloric diet conditions. Mice were obtained from the vivarium (Galenika a.d. Belgrade, Serbia) and housed at four or five animals per cage under identical and controlled conditions (temperature 22 ± 1 °C, humidity 65 ± 1%, 12 h circadian rhythm). Fatty acid ester analysis was performed by gas–liquid chromatography (Shimadzu, Kyoto, Japan) and presented as percentages of overall 100% fatty acids identified. Results: Our results showed that a sunflower oil diet increases DHA ($p < 0.05$) as well as arachidonic acid (AA) ($p < 0.05$). There was also a trend of increasing linoleic acid (LA), but it was not significant. Our future studies would perform more investigations.

Keywords: the brain; phospholipids; fatty acids; sunflower oil; C57BL/6 mice



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