

PubMed

Display Settings: Abstract[Lipids Health Dis.](#) 2008 Nov 16;7:45.

The influence of feeding linoleic, gamma-linolenic and docosahexaenoic acid rich oils on rat brain tumor fatty acids composition and fatty acid binding protein 7 mRNA expression.

Nasrollahzadeh J, Siassi F, Doosti M, Eshraghian MR, Shokri F, Modarressi MH, Mohammadi-Asl J, Abdi K, Nikmanesh A, Karimian SM.

Department of Nutrition and Biochemistry, Tehran University of Medical Sciences, Tehran, Iran. jnasrolah@razi.tums.ac.ir

Abstract

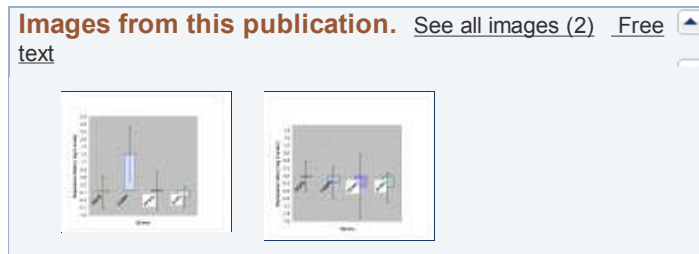
BACKGROUND: Experimental studies indicate that gamma linolenic acid (GLA) and docosahexaenoic acid (DHA) may inhibit glioma cells growth but effects of oral consumption of these fatty acids on brain tumor fatty acid composition have not been determined in vivo.

METHODS: GLA oil (GLAO; 72% GLA), DHA oil (DHAO; 73% DHA) were fed to adult wistar rats (1 mL/rat/day) starting one week prior to C6 glioma cells implantation and continued for two weeks after implantation. Control group were fed same amount of high linoleic acid safflower oil (74-77% linoleic acid). Fatty acid composition of tumor samples was determined in a set of 8-12 animals in each group and serum fatty acid in 6 animals per each group. Gene expression of tumor fatty acid binding protein 7 (FABP7), epidermal growth factor receptor (EGFR), peroxisome proliferator activated receptor gamma (PPAR-gamma) and retinoid x receptor-alpha (RXR-alpha) were determined in a set of 18 animals per group.

RESULTS: DHAO feeding increased EPA of brain tumors and decreased ratio of n-6/n-3 fatty acids. Serum levels of EPA were also increased in DHAO group. A similar trend in serum and tumor levels of DHA were observed in DHAO group but it did not achieve statistical significance. GLAO increased serum concentration of GLA but had no significant effect on tumor GLA or dihomo-gamma linolenic acid (DGLA) concentrations. Gene expression of FABP7 was up-regulated in tumors of DHAO group but no other significant effects were observed on EGFR, PPAR-gamma or RXR-alpha expression, and expression of these genes in tumors of GLAO were not different from SFO group.

CONCLUSION: Dietary supplementation of DHA containing oil could be an effective way to increase levels of long chain n-3 fatty acids in brain tumors and this increase may be mediated partly by up-regulation of FABP7 expression.

PMID: 19014610 [PubMed - indexed for MEDLINE] PMCID: PMC2605445 [Free PMC Article](#)



[+](#) MeSH Terms, Substances

[+](#) LinkOut - more resources