Subject: levels of docosahexaenoic acid

Several studies demonstrated that certain fatty acids have specific effects on tumor cells. n-3 series fatty acids (alpha-linolenic acid, eicosapentaenoic acid and docosahexaenoic acid) may suppress the carcinogenesis, whereas n-6 series fatty acids (arachidonic acid, linoleic acid) may exert tumor promoting effects. In this study, 19 patients with various brain tumors and 12 control brain tissues were studied. n-3, n-6, n-9 unsaturated fatty acids and certain saturated fatty acids levels were measured in the plasma membrane of tumor or control brain tissues by capillary gas chromatography. We found that the level of docosahexaenoic acid from n-3 series fatty acids was significantly lower in gliomas and meningiomas than controls ($p = 0.000$). Total n-3 fatty acids level was also significantly lower in tumors than controls ($p = 0.000$). The levels of linoleic acid, arachidonic acid and dihomogamma linolenic acid from n-6 series were significantly higher in gliomas and meningiomas compared with controls ($p = 0.000$). Total n-6 fatty acids level was also significantly higher in tumors than controls ($p = 0.000$). Furthermore, in total n-9 fatty acids, total unsaturated fatty acids and total saturated fatty acids levels, there were no significant differences in gliomas and meningiomas compared with controls ($p = 0.6840$, $p = 0.4388$ and $p = 0.4343$, respectively). This findings suggest that n-6 fatty acids can act as a tumor-promoting agent in human brain tumors.