Epidemiological and preclinical studies have revealed that omega-3 fatty acids have anticancer properties. We have previously shown that the omega-3 fatty acid docosahexaenoic acid (DHA) induces apoptosis of neuroblastoma cells in vitro by mechanisms involving intracellular peroxidation of DHA by means of 15-lipoxygenase or autoxidation. In our study, the effects of DHA supplementation on neuroblastoma tumor growth in vivo were investigated using two complementary approaches. For the purpose of prevention, DHA as a dietary supplement was fed to athymic rats before the rats were xenografted with human neuroblastoma cells. For therapeutic purposes, athymic rats with established neuroblastoma xenografts were given DHA daily by gavage and tumor growth was monitored. DHA levels in plasma and tumor tissue were analyzed by gas liquid chromatography. DHA delayed neuroblastoma xenograft development and inhibited the growth of established neuroblastoma xenografts in athymic rats. A revised version of the Pediatric Preclinical Testing Program evaluation scheme used as a measurement of treatment response showed that untreated control animals developed progressive disease, whereas treatment with DHA resulted in stable disease or partial response, depending on the DHA concentration. In conclusion, prophylactic treatment with DHA delayed neuroblastoma development, suggesting that DHA could be a potential agent in the treatment of minimal residual disease and should be considered for prevention in selected cases. Treatment results on established aggressive neuroblastoma tumors suggest further studies aiming at a clinical application in children with high-risk neuroblastoma.

Omega-3 fatty acid supplementation delays the progression of neuroblastoma in vivo.

Int J Cancer. 2011 Apr 1;128(7):1703-11. doi: 10.1002/ijc.25473.

dha by itself somewhat effective but only with dose levels that are impractical

it is the synergism celecoxib and etoposide at much lower levels that make it practical