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Fish oil as an adjuvant to chemotherapeutic treatment in experimentally induced colon carcinogenesis

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5-Fluorouracil (5-FU) is used for the treatment of colorectal cancer but has low therapeutic response rate and severe side effects. Recently fish oil (FO) rich in n-3 PUFAs has been reported to chemo-sensitize tumor cells to anticancer drugs, thereby, increasing their efficacy. Therefore, we decided to evaluate the effect of fish oil supplementation on 5-FU mediated cytotoxicity and side effects in experimental colon cancer. Colon cancer was induced by N, N'-dimethyl hydrazine dihydrochloride/dextran sodium sulphate (DMH/DSS) treatment. We observed not only a significant increase in survival rate and decrease in tumor volume count but also amelioration of side effects. Moreover, the combination dosage significantly augmented apoptosis, DNA damage and inhibition of cell cycle progression by 5-FU. It is hypothesized that n-3 PUFAs are incorporated in membrane and alter not only its structure, transport but also several signaling pathways and proteins implicated in tumor progression. Our observations indicate that there was an increase in the levels of n-3PUFAs in tumor tissue. Moreover, there was an altered drug distribution with more drugs being targeted to the tumor. To conclude, this preclinical study demonstrates that FO may prove as a powerful adjuvant for the chemotherapeutic regimens by chemo sensitization of cancer cells.

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Protective potential of *Euphorbia neriifolia* and its isolated flavonoid against N-Nitrosodiethylamine induced hepatic carcinogenesis in Swiss albino mice

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The aim of this study was to examine the impacts of N-Nitrosodiethylamine (DENA), a potent environment carcinogen on liver tissue of mice which was attenuated by isolated flavonoid and hydro-ethanolic extract of *Euphorbia neriifolia* (HEEN) leaves. Carcinogenicity was induced in albino mice by a single oral administration of DENA (50 mg/kg body weight). The HEEN (150 and 400 mg/kg body weight), butylated hydroxyanisole (BHA; 0.5 and 1%) and *E. neriifolia* flavonoid (ENF; 50 mg/kg body weight) were estimated to examine the possible anti-cancer potential. DENA exposed animals showed alterations in normal hepatic histo-architecture which comprised of necrosis (N), dilated sinusoids and vacuolization of the cells. Mice treated with *E. neriifolia* lower (ENL) and higher (ENH) dose and ENF before intoxicated with DENA showed that the liver cells were normal with very little necrosis (Day 31). On the other hand, BHA higher (BHAH) and lower (BHAL) dose failed to diminish the abnormalities caused by the DENA. A result of the present study suggests that the ENH and ENF protect the hepatic tissue against DENA-induced hepatic carcinoma. The results could also be expressed in the order of ENH>ENF>ENL>BHAH>BHAL.

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