Flaxseed oil-trastuzumab interaction in breast cancer.


Abstract

Flaxseed oil (FO), which is rich in n-3 fatty acid, is commonly consumed by breast cancer patients because of its potential anti-cancer effects. Trastuzumab (TRAS) is the primary drug for epidermal growth factor receptor 2 (HER2) positive breast cancer. We investigated in athymic mice whether combining dietary FO (8%) with TRAS treatment (2.5 or 5mg/kg body weight) can cause better or adverse effect on established human breast tumors overexpressing HER2 (BT-474). Control tumors significantly grew 187%, TRAS2.5 treated tumors did not change, while TRAS5, FO+TRAS2.5 and FO+TRAS5 treated tumors significantly regressed 75%, 89% and 84%, respectively, after 4 weeks treatment. Two weeks after stopping TRAS treatment while continuing on same diet, tumor size in FO+TRAS2.5 group was 87% lower than in TRAS2.5 group and was not different from TRAS5 group with or without FO. Combined TRAS2.5 treatment with FO caused a significantly lower tumor cell proliferation and higher apoptosis compared to TRAS2.5 treatment alone and showed similar effect to TRAS5 treatment with or without FO. Hence, FO did not interfere with TRAS but rather enhanced its tumor-reducing effects and combined FO and low dose TRAS was as effective as high dose TRAS treatment.

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