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Recent research has suggested that an increased (n-3) fatty acid intake and/or increased (n-3)/(n-6) polyunsaturated fatty acid (PUFA) ratio in the diet is associated with a lower breast cancer risk. This case-control study investigated the association between intake of (n-3) and other fatty acids and the (n-3)/(n-6) PUFA ratio and breast cancer risk. After combining data from two related case-control studies in Connecticut, we had information available on a total of 1119 women (565 cases and 554 controls). Cases were all histologically confirmed, incident breast carcinoma patients. Controls were hospital-based (Yale-New Haven Hospital study site) and population-based (Tolland County study site). Information on dietary intake was obtained through a validated food-frequency questionnaire. Standard multivariate methods were used to address the independent effects of specific fatty acids, fat classes and macronutrients on breast cancer risk. In the full study population, there were no significant trends for any macronutrient/fatty acid when comparing the highest to the lowest quartile of intake. When the analysis was restricted to premenopausal women, consumption of the highest compared with the lowest quartile of the (n-3)/(n-6) PUFA ratio was associated with a nonsignificant 41% lower risk of breast cancer [odds ratio (OR) = 0.59, 95% confidence interval (CI) 0.29, 1.19, P for trend = 0.09]. A higher (n-3)/(n-6) PUFA ratio was significantly associated with a lower risk of breast cancer when the data were restricted to the Tolland County (population-based) study site; OR = 0.50, 95% CI 0.27, 0.95, P for trend = 0.02. These results are consistent with the hypothesis that a higher (n-3)/(n-6) PUFA ratio may reduce the risk of breast cancer, especially in premenopausal women.

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