Determining Fat Preference for Triple Negative Breast Cancer Cells

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Breast cancer is the most prevalent cancer in women worldwide. Of the breast cancer subtypes, triple negative breast cancer (ER-, PR-, HER2-) has the worst prognosis due to the lack of effective receptor-targeting treatments. How to manage these patients presents a great challenge in healthcare. Fats are essential nutrients in diets. Dietary Guidelines for Americans recommend following a healthy dietary pattern by replacing saturated fats with unsaturated oils. However, the effect of consuming different unsaturated oils on triple negative breast cancer remains unclear. Herein, we cultured triple negative 4T1 and MDA-MB-231 cancer cells and treated them with common unsaturated fatty acids (FAs), including oleic acid (OA), linoleic acid (LA), eicosapentaenoic acid (EPA) and docosapentaenoic acid (DPA), respectively. The effect of these FAs on cancer cell growth and death was analyzed using different methods. We observed that OA and LA promoted proliferation of 4T1 and MDA-MB-231 cells whereas EPA and DPA induced the death of both types of cells. These data suggest that individual unsaturated FAs exert different effects on triple negative BC. Thus, women with triple negative BC might avoid consumption of oils high in OA/LA (e.g., olive, canola). Instead, oils high in EPA/DPA (e.g., fish oil) are highly recommended.

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