

An Investigation on the *in vitro* Effects of Elaidic Acid and Gamma-Linolenic Acid on the Survival of MDA-MB-231 and RKO Cell Lines †

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Abstract: Colorectal and breast cancer are a major cause of mortality worldwide. They can be caused due to an array of factors, of which diet plays an important role. Previous studies have suggested that Elaidic acid (EA), a trans fatty acid, supports the growth of colon cancer cell lines, like-RKO, LoVo, and HT29;. In contrast, Gamma-linolenic acid (GLA), a poly-unsaturated fatty acid, has tumoricidal effects. Therefore, the objective of this study was to investigate and delineate the *in vitro* dose-dependent effects of EA and GLA on the survival of MDA-MB-231 (breast cancer cell line) and RKO cells (colon cancer cell line), through cell viability assay. The principal findings of this study were that EA induced a stimulatory effect. At the same time, GLA had an inhibitory effect on both cell lines. There was no statistical significance in the percentage viability of the MDA-MB-231 cells after treatment with EA. At the same time, there was a statistical difference in percentage viability after treatment with GLA. The highest test concentration of GLA that caused approximately 99% inhibition of MDA-MB-231 cells was 500µM, and its IC50 was mathematically calculated to be 239.687µM. For RKO cells, there was a statistical difference in percentage cell viability after treatment with EA. At the same time, there was no statistical difference in percentage cell viability after treatment with GLA. These results suggested that MDA-MB-231 cells were more susceptible to the effects of EA and GLA and also that EA should be consumed in moderation, while GLA appeared as a promising therapeutic option either by itself or in combination with other chemotherapeutic drugs.

Keywords: cancer; Elaidic acid; poly-unsaturated fatty acid; viability.

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Conflicts of Interest

The authors declare no conflict of interest.