AMIODARONE MAY HAVE CYTOSTATIC POTENTIAL ON TRIPLE NEGATIVE BREAST CANCER

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Triple-negative breast cancer is considered to have a poorer prognosis than other types of breast cancer, mainly because there are fewer targeted medicines that treat triple-negative breast cancer. Previously, we showed that desethylamiodarone (DEA), a major metabolite of the widely used antiarrhythmic drug amiodarone has anti-neoplastic, anti-metastasizing and direct mitochondrial effects in B16F10 melanoma cells.

In the present study, we suggest that amiodarone may have cytostatic potential on triple negative breast cancer. For our experiments we used a Triple Negative MDA-MB-231 breast cancer cell line. Amiodarone significantly reduced viability, colony formation and invasive growth at physiologically achievable concentrations. Apoptosis, induced by amiodarone, was detected by annexin V labeling, the shifting of Bax/Bcl-2 ratio, PARP-1 cleavage and caspase-3 activation. Amiodarone did decrease the mitochondrial transmembrane potential, as assessed by JC-1 dye and fluorescence microscopy. It also induced mitochondrial fragmentation, as visualized by confocal fluorescence microscopy. Novel compounds significantly interfering with the mitochondrial energy production may have therapeutic value in triple negative breast cancer. Amiodarone decreased maximal respiration, ATP production, coupling efficiency, glycolysis, and non-mitochondrial oxygen consumption in MDA-MB-231 TNBC cell line, measured by a Seahorse cellular energy metabolism analyzer.

All these data indicate that amiodarone may have potentiality in the therapy of TNBC, however the therapeutic dose have to be determined in animal models since the cell culture models translate poorly to the human clinical practice.

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