TETEBENE: Effects of the Experimental Therapeutic Model Isolated Peptide Toxic-Prodrug in the Inhibition of Poly(ADP)Ribose Polymerase for Breast Cancer Treatment by the Use of Molecular Nanotransporters

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Breast cancer has grown significantly in the Americas becoming one of the major public health problems in the region. Only in Mexico, over the past seven years, this disease has grown by more than 38% and this figure is expected to keep growing. Current treatments to combat this type of malignancy are ineffective and have been a major recurrence after application. The objective of this study was determined as the combination of peptides from some animal venoms together with cyclophosphamide and Trastuzumab, function as a new generation of inhibitors of poly (ADP) ribose polymerase (PARP); where the cancer cell death independently of the DNA repair pathways and with a high specificity to those cells which have a overexpression of HER2 occurs. To test this hypothesis studies of several months on six major existing tumor cell lines were performed; T47D , HeLa, MDA-MB-175-VII, 4T1, HCC70 and MCF-7. The results demonstrate a high level in the inhibition of tumor cell growth and an IC50 <20 µg/mL across all lines; approximately four times higher than a conventional therapy recognized by the American Association of cancer as Idarubicin or Capecitabine to perform the same test. It was found that there exist two peptides of low molecular weight in the venom of the scorpion Centruroides Suffusus which contain structures with an acceptor donating group, an amide group having at least one free hydrogen unsubstituted and rich aromatic ring in electrons which is possible to integrate different groups such as cyclophosphamide to achieve inhibit PARP. It is well demonstrated that TETEBENE could be a model for the treatment of breast neoplasms many times more effective and less expensive than therapies used today.

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