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Thalidomide Correlated Compounds as new promising tools for breast cancer treatment

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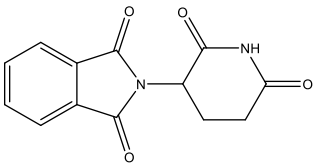
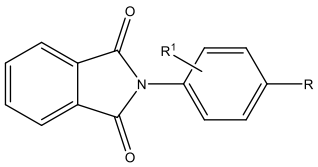
Thalidomide is an old well-known drug firstly used as morning sickness relief in pregnant women and then withdrawn from market because of its dramatic effects on fetal normal development. Over the last few decades, the interest in this old drug has been renewed, because of its efficacy in several important disorders as, for instance, multiple myeloma, breast cancer, and HIV-related diseases. It became clearer that thalidomide exerts multifaceted properties, directing the efforts of many research groups toward the synthesis of several derivatives and the study of their effects, mostly as new ant-cancer agents [1,2]. A recent work on thalidomide correlated compounds [3] allowed us to select active compounds which are very effective in inducing cancer cells death by triggering TNFα-mediated apoptosis. The most active compounds were able, as well, to reduce drastically the migration of breast cancer cells, through the regulation of the two major proteins involved in epithelial-mesenchymal transition (EMT), vimentin and E-cadherin. They diminished the intracellular level of vascular endothelial growth factor (VEGF), primarily involved in the promotion of angiogenesis that sustain tumor progression. Following this work, a small library of phthalimide derivatives were synthesized and studied for their activity on breast cancer cells, particularly on the estrogen-positive (ER+) MCF-7 and the triple negative MDA-MB-231 cells.



thalidomide



R = Alk-O, ArO, Hal
R^1 = H, Alk-O, Hal

In this study we report preliminary and promising results of these new compounds, as new antitumor agents.

References

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[3] D. Iacopetta, A. Carocci, S. Sinicropi, A. Catalano, G. Lentini, J. Ceramella, R. Curcio, M.C. Caroleo, *ChemMedChem*, 12, 381 (**2017**).