In vitro evaluation of phthalimide derivatives against cancer cell lines

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Lung, prostate, and liver cancers are among the most prevalent in men. Breast, cervical, and thyroid cancer are among the most prevalent in women (WHO, 2019). Cancer treatment usually includes chemotherapy and radiation therapy; however, available anticancer drugs have low selectivity and cause serious adverse effects, such as nephrotoxicity, neurotoxicity, and myelosuppression (Matsuo et al., 2010). Therefore, the design and development of compounds as new anticancer agents against the types of cancer with the highest incidence are of vital importance in the field of health. Phthalimide derivatives are promising compounds for the development of new anticancer agents (Li et al., 2011; Grigalius and Petrikaite, 2017; Kamal et al., 2002). Based on the above, this work aimed to evaluate the antiproliferative activity of 43 phthalimide derivatives against a main cancer cell line in men (HepG2) and two main cancer cell lines in women (HeLa and 4T1). Furthermore, the cytotoxicity of the compounds against a normal murine fibroblast cell line (3T3) was determined. The results showed that compounds C16, E11 and E16 presented the best antiproliferative activity against HeLa and 4T1 cell lines. Compound H16 alone decreased cell proliferation by 32 % against the HepG2 cell line. Compounds H5, H16, E2, E16 and C1 did not affect the proliferation of the 3T3 cell line. Demonstrating that it would be important to continue with the analysis of this type of compounds against different cancers to find new compounds with better activity than those currently available on the market.