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Abstract

Screening of naphthalimides as antimetastatic agents

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Abstract: Metastasis is a major problem in the management of cancer, remaining as the principal cause of cancer death. Despite recent advances, treatment options are still limited. Naphthalimide (1H-benzo[de]isoquinoline-1,3-(2H)-dione) analogs have been considered as promising anticancer agents against different tumor types. However, antimetastatic potential of naphthalimides has not been previously established. The aim of this work was to evaluate the possible antimetastatic activity of a panel of 21 naphthalimides which were synthesized in the laboratory. We studied the inhibitory effects of these compounds on cancer proliferation, clonogenicity and cell cycle progression. We identified 5 naphthalimides with a potent and selective inhibition of growth in SW620 metastatic cells compared to CRL1790 non-tumoral ones. In addition, these 5 naphthalimides induced a significant arrest at S and G2/M phase in SW620 cells. Finally, we selected the leading compound 20B, which inhibited clonogenic expansion in SW620 cells even at 10 μM. These results shed light on 20B naphthalimide as an emerging antimetastatic agent. Future studies are required to determine its mechanism of action.

Keywords: antimetastatic; naphthalimides; cancer

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