Cytotoxic Potential of Nerol Derivatives Against Leukemia and Melanoma Cell Lines

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INTRODUCTION: For thousands years, the use of natural compounds with therapeutic properties has played a very important role in human health care. Within this context, nerol and other monoterpenes found in essential oils of plants and fruits represent a class of compounds that would be explored as potential anticancer agents. **OBJECTIVES:** In the present investigation, a collection of twenty two nerol derivatives, bearing 1,2,3-triazol portions, were synthesized and screened for their cytotoxic activity against human leukemias (HL60, Nalm6, and Jurkat), murine metastatic melanoma (B16F10), and murine fibroblast (NIH3T3) cell lines. In addition, the antimigratory and antiproliferative effects of the most cytotoxic compound were investigated. **MATERIAL AND METHODS:** Cells were treated with different concentrations (0 to 200 µM) of each compound for 48 h. MTT assays were performed to evaluate the cytotoxicity of each derivative and to determine the IC_{50} values. Furthermore, wound healing assays and trypan blue exclusion assays were performed to assess the impact of the most cytotoxic compound on cell migration and proliferation. **RESULTS AND DISCUSSION:** Most of the nerol derivatives were able to reduce cell viability and showed IC_{50} values lower than 100 µM. The compounds presented IC_{50} ranging between 9.84 to 84.2 µM against HL60, 36.0 to 98.7 µM against Nalm6 and 30.9 to 84.4 µM against Jurkat. Melanoma B16F10 was less sensitive to the compounds. However, four compounds were significantly active presenting IC_{50} values ranging between 74.7 to 98.2 µM. Noteworthily, the derivatives displayed low toxicity against the normal cell line NIH3T3. In addition, the most active compound (named herein as 9f) showed antiproliferative activity against Jurkat cells and reduced B16F10 cell migration *in vitro*. **CONCLUSION:** Several nerol derivatives were active against different cancer cell lines. Moreover, the effect of compound 9f on cell proliferation and migration suggest that pathways affecting these processes might be subjected to inhibition upon treatments.

Keywords: nerol, leukemia, melanoma.

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