

Abstract

In vitro* anticancer effects of 1,2,4-triazole-3-carboxamides †*Diana Grigoreva ^{1,*}, Lyubov Grebenkina ², Varvara Maksimova ¹, Ekaterina Mikhina ², Ekaterina Lesovaya ^{1,3,4},
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Abstract: Ovarian cancer (OVC) is a current health problem for women around the world. The high mortality rate from OVC makes the development of new therapeutic drugs relevant. Ribavirin (RBV, chemical name 1,2,4-triazole-3-carboxamide) is commonly used as an antiviral agent. In recent years, research has focused on repurposing RBV as an anticancer drug. However, RBV reveals a number of side effects, so synthetic derivatives of 1,2,4-triazole-3-carboxamide (TCA) are being actively developed and tested as putative anticancer drugs. The purpose of this study is to estimate the anticancer effects of RBV, TCA and its derivatives (MGs) *in vitro*. Cytotoxic effect of the MGs on ovarian cancer cells (OVAR3 and OVAR4) was assessed using the MTT assay. The proliferation rate of OVC cells was assessed after 72 h of treatment RBV, TCA and MGs cell counting with trypan blue exclusion. Distribution of cell cycle phases was evaluated using flow cytometry with PI staining. RBV and MGs induced 40% cell death in OVC cells. MGs inhibited proliferation by 50-70% in OVC cells. After 72h RBV and MGs induces S-phase stunting. Furthermore, we demonstrated an increase in the number of cells in the subG1 phase (2.5%) after treatment with MG0 and MG1, as well as in G2/M-phase (10%) after treatment with MG5. According to the results obtained, 1,2,4-triazole-3-carboxamides can inhibit proliferation and induce apoptosis *in vitro*. These results provide the rationale for further studies of 1,2,4-triazole-3-carboxamides like anticancer drugs.

Keywords: ovarian cancer; ribavirin; 1,2,4-triazole-3-carboxamides; cell cycle

Supplementary Materials:

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