

Benzofuran-Tetrahydrodipyrzoloypyridine Hybrids: Novel Compounds for Potential Lung Cancer Treatment

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Aims:

Benzofuran and tetrahydrodipyrzoloypyridine are heterocyclic compounds with diverse biological activities. Benzofuran derivatives have potent anticancer, antiviral, and antimicrobial properties [1]. Tetrahydrodipyrzoloypyridines are used in various pharmaceuticals and exhibit anticancer, antiallergic, and antiherpetic properties [2, 3]. The hybridization of these two molecular frameworks presents an innovative approach to crafting novel compounds with significant biological activity. Lung cancer is one of the most common types of cancer worldwide and is a serious health problem affecting both men and women. Although current lung cancer treatment methods are effective against certain types of the disease, many patients may develop resistance or develop side effects. Therefore, the discovery and development of new molecules that are more effective, have fewer side effects and can prevent the development of resistance is an important need in lung cancer treatment [4].

Methods:

In this study, benzofuran-tetrahydrodipyrzoloypyridine hybrids were successfully synthesized with high efficiency via a room-temperature condensation reaction. The synthesis involved the benzofuran derivatives with an aldehyde functional group, ethyl acetoacetate, hydrazine, and ammonium acetate. The biological activity of the new molecules synthesized within the scope of the study was obtained by MTT test on A549 lung adenocarcinoma cells.

Results and Conclusions: The resulting hybrids were characterized using proton (¹H) and carbon (¹³C) nuclear magnetic resonance (NMR) spectroscopy, which confirmed their structure and purity. As a result of the MTT test, the IC₅₀ values for the molecule coded DB-1 were determined as 5.26 μm for 24 hours at the lowest concentration, while the 24 hour value for the other molecule coded DB-2 was determined as 15.58 μm.

Keywords:

Benzofuran, tetrahydrodipyrzoloypyridine, lung cancer, hybrid

Reference:

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