

POSTER PRESENTATIONS

SYNTHESIS AND GROWTH-INHIBITORY ACTIVITY OF NOVEL PYRAZOLO[3,4-d]PYRIMIDINE–ALKALOID HYBRIDS

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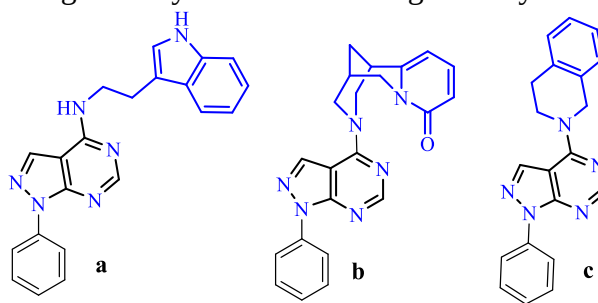
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In recent years, the targeted synthesis of biologically active heterocyclic compounds and the investigation of their biological properties have become one of the most important areas of organic chemistry. In particular, pyrazolo[3,4-d]pyrimidine derivatives have attracted considerable interest among nitrogen-containing fused heterocyclic compounds. These compounds exhibit anticancer, antimicrobial, enzyme inhibitory and growth-regulating properties [1]. In addition, conjugation of natural alkaloid fragments such as tryptamine, cytosine, and 1,2,3,4-tetrahydroisoquinoline with the pyrazolo[3,4-d]pyrimidine core provides opportunities for the development of novel biologically active compounds.

In this study, novel molecular hybrids containing alkaloid fragments based on pyrazolo[3,4-d]pyrimidine were synthesized. Initially, 1-phenyl-4-chloropyrazolo-pyrimidine was obtained as a starting material, followed by nucleophilic substitution reactions with alkaloids. As a result, “pyrazolopyrimidine–alkaloid” hybrid molecules were synthesized in high yields. The structures of the obtained compounds were confirmed using modern physicochemical methods.

The growth-inhibitory activity of the synthesized compounds (**a**–**c**) on plants was investigated. The obtained results demonstrated that the inhibitory effect depended on the nature of the compounds and their concentration. The higher concentration solution (0.1%) exhibited a stronger inhibitory effect compared to the diluted solution (0.01%). The highest biological activity was observed for compounds **a** and **b**. Specifically, compound **a** inhibited root and shoot growth by 83% and 66%, respectively, at concentration of 0.1%. Compound **b** reduced root growth by 60.2% and shoot growth by 58.5%.



According to the obtained results, compounds **a** and **b** exhibited high inhibitory activity and can be considered promising biologically active substances for further investigations.

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References:

1. Nishimura T., Hayashi K.I., Suzuki H., Gyohda A., Takaoka C., Sakaguchi Y., Koshiba T. Tryptamine derivatives as potent inhibitors of auxin biosynthesis and signaling in plants. *Organic & Biomolecular Chemistry*, 2014, 12(45), 9209-9214.