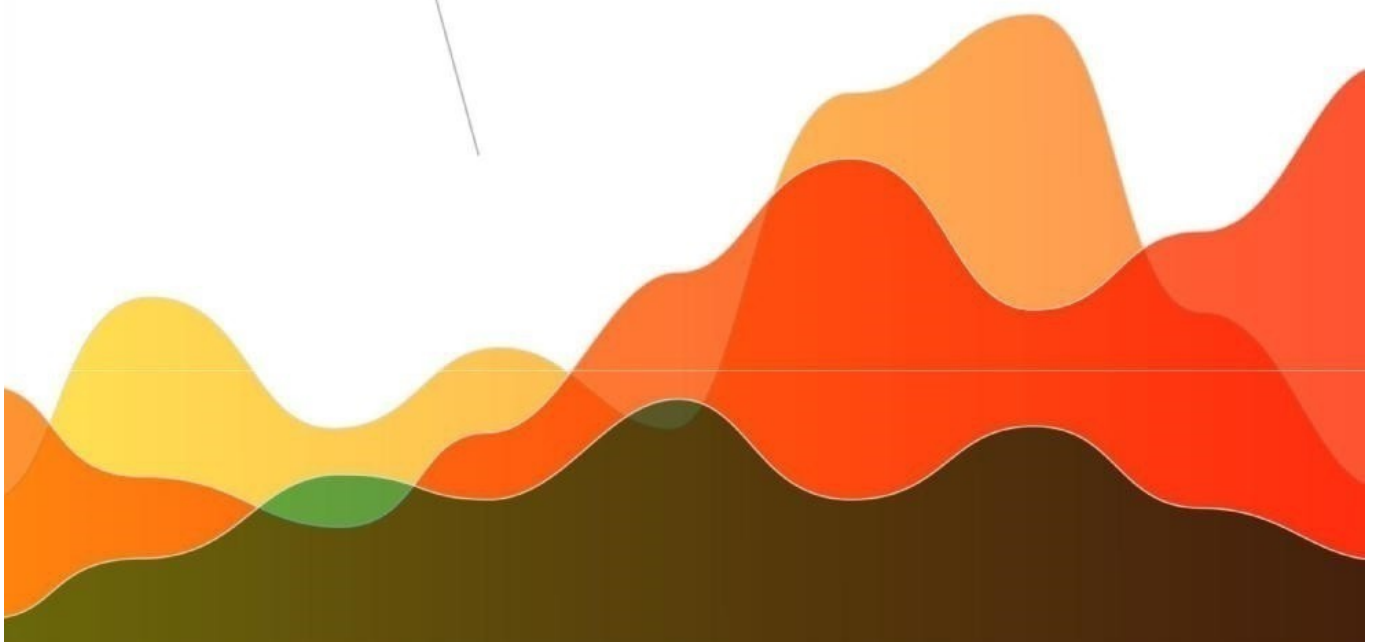


ADVANCES OF SCIENCE

**Proceedings of articles the international
scientific conference
Czech Republic, Karlovy Vary -
Ukraine, Kyiv, 28 September 2018**



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UDC 001
BBK 72
D728

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ADVANCES OF SCIENCE: Proceedings of articles the international scientific conference. Czech Republic, Karlovy Vary – Ukraine, Kyiv, 28 September 2018 [Electronic resource] / Editors prof. L.N. Katjuhin, I.A. Salov, I.S. Danilova, N.S. Burina. – Electron. txt. d. (1 файл 18,7 MB). – Czech Republic, Karlovy Vary: Skleněný Můstek – Ukraine, Kyiv: MCNIP, 2018. – ISBN 978-80-7534-078-8.

Proceedings includes materials of the international scientific conference « ADVANCES OF SCIENCE», held in Czech Republic, Karlovy Vary-Ukraine, Kyiv, 28 September 2018. The main objective of the conference - the development community of scholars and practitioners in various fields of science. Conference was attended by scientists and experts from Azerbaijan, Russia, Ukraine. At the conference held e-Conference "Perspectives of science and education". International scientific conference was supported by the publishing house of the International Centre of research projects.

ISBN 978-80-7534-078-8 (Skleněný Můstek, Karlovy Vary, Czech Republic)

Articles are published in author's edition. Editorial opinion may not coincide with the views of the authors

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STUDY OF ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY IN THE SERIES OF DERIVATIVES OF 1,3,4-THIADIAZOLE

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Antimicrobial and antifungal activity was studied for 10 synthesized compounds of the group 2-R1-N-(5-R-1,3,4-thiadiazole-2-yl) benzene sulphone amides and molecules which contains two thiadiazole cycles in its composition. The combination of two cycles of 1,3,4-thiadiazole in one molecule is prompting expectations of the antimicrobial properties improvements already evident according to the numerous of literature data, as well as cases of the new properties valuable biologically in compounds [1, 2, 4].

Antimicrobial and antifungal activity of the compounds obtained were determined by the conventional method of two-folds dilutions in a liquid nutritional medium under microbial burden of 1 mln of microbial bodies in 1 ml of Sabouraud broth [1, 3]. In accordance with recommendations by the World Health Organization, the studies were conducted on separate test cultures of microorganisms from both gram-positive and gram-negative microbial flora. The determination of antifungal activity was carried out on the *Candida albicans* strain-like fungus.

Evaluation of the results was made by measuring zones of statis which includes diameter of the disc itself.

In consequence of the results of study of 10 test connections it was revealed that they all have sensitivity in relation to both gram-positive and gram-negative bacteria. Also, almost all compounds have shown antifungal activity against *Candida albicans*.

Discussing the "structure - antimicrobial activity" dependence, it can be noted that the introduction of a fragment of benzene sulphone amide does not practically affect the level of biological activity of the test compounds. Introduction to the synthesized molecules of the other 1,3,4-thiadiazole cycle was conducted with a specific purpose - to trace how such the combination might influence on the antimicrobial properties of the molecule as a whole. Our forecasts have realized and the most promising compound has two thiadiazole cycles in its structure. Apparently, the main contribution to the fact that substance displays its antimicrobial and antifungal properties is caused by thiadiazole fragment of the molecule.

On the grounds of the results of studies conducted, it can be argued that there is a common antimicrobial activity for this group of compounds. Moreover, conspicuous is the fact that compounds of this group combine antibacterial activity with the antifungal. In that context, these compounds may be effective as potential antimicrobial medicines with the wide spectrum of activity. Therefore, certainly, further in-depth studies of this class of compounds should be considered promising and relevant.

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