

Prospects and Problems of Searching for Highly Effective Drugs with Antiviral and Antimicrobial Activity

**Masharipov Valijon Orinovich, Zhuraeva Zulfiya Baratovna,
Abdullaev Ulugbek Meylik ogli, Mirvalieva Nafisa Rezhametovna,
Kudiyarov Islambek Abdinasirovich, Orinbaeva Zukhra Naurizbaevna**

Tashkent medical academy

Article Information

Received: January 02, 2022

Accepted: February 06, 2023

Published: March 06, 2023

Keywords: *infection, germs, antiviral drugs, antibiotics, retrospective epidemiological analysis*

ABSTRACT

In the presented work, a retrospective epidemiological analysis of the problem and prospects of morbidity and treatment of acute and chronic infections caused by different types of infection and microbes was carried out. The search for new biologically active compounds of plant origin for the treatment and prevention of immunosuppression of infectious diseases remains an active part of pharmaceutical research. The basis of antiviral therapy is the effect on the virus or its constituent components at a particular stage of reproduction. Practical medicine has a fairly impressive arsenal of antiviral agents capable of suppressing the reproduction of the virus at any of the three stages of reproduction of the virus.

Thus, in today's day, reliable diagnosis is possible only with the use of a complex of various diagnostic methods. The search for new biologically active compounds of plant origin for the treatment and prevention of immunosuppression, infectious diseases, oncology and metabolic diseases remains an active part of pharmaceutical research.

Relevance. Infectious diseases are one of the serious socially significant health problems in the world and occupy a leading place in human pathology, which is associated with their mobility, high prevalence and danger to public health [1]. Mortality and morbidity in severe form associated with various primary infections in early childhood are rare, but CNS lesions can lead to serious consequences, including hemiparesis, oligophrenia, epilepsy [2]. In recent years, there has been a significant increase in the number of people with immunodeficiency conditions, the causes of which are extremely diverse, which allows us to talk about the development of "population immunodeficiency". Considerable attention is paid to the problem of immunodeficiency and the infectious complications that accompany these conditions, and the term "opportunistic infections" (OI) has ceased to be strictly special for infectious disease specialists and epidemiologists. Now many doctors, including pediatricians, are facing this problem. These diseases are caused by conditionally pathogenic microorganisms of various types, including viruses, bacteria, protozoa, fungi and manifest themselves as an infectious process only in the absence of a full-fledged immune response. Some pathogens of OI are characterized by long-term, and sometimes lifelong persistence in the human body. In some cases, such pathogens can cause reactivation of infection, while in a healthy person this process can take place in an asymptomatic or erased form - under the mask of acute respiratory infections, as well as in the form of carrier [3,4]. According to the World Health Organization, the mortality rate from herpes infection alone is about 16% and is in second place after hepatitis

among viral diseases [5,6]. Premature babies, children with chronic lung diseases are most vulnerable to this infection. In them, the infection proceeds not only in a very severe form, but also leads to fatal outcomes [7-10].

The purpose of the review conducted. Retrospective epidemiological analysis of the problem and prospects of morbidity and treatment of acute and chronic infections caused by different types of infection and microbes.

Progress achieved study of triazole and oxadiazole derivatives. The search for new biologically active compounds of plant origin for the treatment and prevention of immunosuppression of infectious diseases remains an active part of pharmaceutical research. The basis of antiviral therapy is the effect on the virus or its constituent components at a particular stage of reproduction. Practical medicine has a fairly impressive arsenal of antiviral agents capable of suppressing the reproduction of the virus at any of the three stages of reproduction of the virus. However, antiviral chemotherapy begins to face a serious problem of the appearance of variants of the virus resistant to certain drugs. Herbal preparations with different chemical structures capable of exhibiting antiviral activity at various stages of virus reproduction are described. A wide variety of biologically active compounds found in plants allows us to count on the possibility of obtaining new highly active drugs with the ability to block various viruses, including those resistant to existing commercial chemotherapy drugs.

A number of dipicolic acid derivatives were synthesized and investigated for antimicrobial and antioxidant activity. Thiosemicarbazides were obtained by reaction of hydrazides with isothiocyanates and cyclized into triazoles, thiadiazoles, oxadiazoles and thiazolidinones.

The therapeutic effects of compounds containing triangular rings have been well studied in a number of pathological conditions, including inflammation and chronic pain. Moreover, the synthesis of triazoles has attracted wide attention due to their diverse use as antibacterial, antimycobacterial, antifungal and others activities [11-17].

Antiviral and antimicrobial drugs. Throughout its history, mankind has been in contact with the plant kingdom, using the latter to satisfy its economic, food and medicinal purposes. Therefore, it is not surprising that even modern medicines are developed on the basis of natural compounds. Among them, the most famous are vitamin C, aspirin, quinine, morphine and codeine. In recent decades, much attention has been paid to the study of the properties of taxol, arglabin, vinblastine and some other compounds derived from herbal preparations.

The search for new biologically active compounds of plant origin for the treatment and prevention of immunosuppression, infectious diseases, oncology and metabolic diseases remains an active part of pharmaceutical research. In recent years, more than more new drugs of natural origin have appeared on the market, having passed the full path from research to clinical trials [18, 24]. Such attention of researchers to natural compounds is primarily due to the lower toxicity of herbal preparations and a wider spectrum of action. Some medicinal compounds of plant origin have found the ability to effectively block the development of various viruses, including herpes simplex virus, influenza, human immunodeficiency virus, hepatitis C and B viruses, and many others.

The main antiviral therapy is the effect on the virus or its constituent components at a particular stage of reproduction. The whole process of virus reproduction can be conditionally divided into three phases. The first phase covers events that lead to the adsorption and penetration of the virus into the cell, the release of its internal structural components and its modification in such a way that it is able to cause infection. The second phase of reproduction is associated with complex processes during which the expression of the viral genome occurs. The final stage of reproduction is the exit of the viral offspring from the cell by budding or by lysis, and in the latter case the cell dies. The arsenal of antiviral agents available today is capable of influencing

any of the stages of reproduction of the virus. [23,18, 21, 22,].

Conclusions. Thus, in today's day, reliable diagnosis is possible only with the use of a complex of various diagnostic methods.

To date, practical medicine has a fairly impressive arsenal of antiviral agents capable of suppressing the reproduction of the virus at any stage of the process. However, despite certain successes achieved in viral chemotherapy, clinical practice faces a serious problem of the appearance of virus variants resistant to certain drugs.

The search for new biologically active compounds of plant origin for the treatment and prevention of immunosuppression, infectious diseases, oncology and metabolic diseases remains an active part of pharmaceutical research.

List of used literature.

1. Кравченко И.Э., Галиева А.М., Гатауллин М.Р., Вафин А.Ю. Актуальные вопросы совершенствования медицинской помощи больным с инфекционной патологией в Республике Татарстан. Эпидемиология и инфекционные болезни. 2019; 24(3): 108-117. DOI: <http://dx.doi.org/10.18821/1560-9529-2019-24-3-108-117>.
2. М. Ю. Калугина, Н. В. Каражас, Т. Н. Рыбалкина, Р. Е. Бошьян, Т. М. Ермакова, А. В. Тебеньков. Актуальность диагностики инфекции, вызванной вирусом герпеса человека 6-го типа. Детский инфекции 2012, № 1. Ст. 60-63.
3. https://www.who.int/healthtopics/influenzaseasonal?gclid=Cj0KCQiA3eGfBhCeARIsACpJNU928mXvr95O2194ud6s5tQlGBO5fBI09Cj8j_QjAZupmmMSTA4aAt9BEALw_wcB#tab=tab_1
4. Савинков П.А., Рыбалкина Т.Н., Каражас Н.В., Корниенко М.Н., Калугина М.Ю., Русакова Е.В., Солдатова И.А., Пчелкина Д.С., Крупенио Т.В., Цирульникова И.Е., Силина О.В. Роль герпесвирусов и пневмоцист в этиологии инфекционных заболеваний у детей с иммуносупрессией различной природы. Клин микробиол антимикроб химиотер 2015, Том 17, № 4.ст.254-261.
5. Рыбалкина Т. Н., Каражас Н. В., Савинков П. А., Бошьян Р. Е., Лысенкова М. Ю., Корниенко М. Н., Веселовский П. А., Бурмистров Е. М., Лебедева Т. М., Маркин П. А. Значение герпесвирусов в этиологии ряда инфекционных и соматических заболеваний детей. Детские инфекции. 2017. 16(3):10-19. DOI:10.22627/2072-8107-2017-16-3-10-19
6. Кускова Т.К., Белова Е.Г. Семейство герпесвирусов на современном этапе. Лечащий Врач. 2004, 5:64—69. [Kuskova T.K.,Belova E.G. The family of herpes viruses at the present stage. Therapist. 2004, 5:64—69. (In Russ.)]
7. Respiratory syncytial virus. In: Pickering L. K. ed. Red Book: 2006 Report of the Committee on Infectious Diseases. 29 th edn. Elk Grove Village, IL: American Academy of Pediatrics, 2009: 560–569.
8. Thorburn K. Pre-existing disease is associated with a significantly higher risk of death in severe respiratory syncytial virus infection // Arch Dis Child. 2009; 94: 99–103.
9. Buckingham S. C., Quasney M. W., Bush A. J. et al. Respiratory syncytial virus infections in the pediatric intensive care unit: clinical characteristics and risk factors for adverse outcomes // Pediatr Crit Care Med. 2001; 2: 318–323.
10. Aripov A.N., Aripov O.A., Akhunjanova L.L., Nabiev A.O', Muhammadjonov B.B., Karimov Sh.B., & Khamroev T.T. (2022). Problems and relevance of early diagnosis and treatment of severe hereditary and acquired diseases in children. Frontline Medical Sciences and Pharmaceutical Journal, 2(07), 6–15. <https://doi.org/10.37547/medical-fmspj-02-07-02>

11. Rashidov S.Z., Rakhimboev S.D., Sanoev Z.I., Abdinazarov I.T., Khamroev T.T., Ismailova D.S., & Elmuradov B.J.. (2022). Study of psychoactive activity potassium salt 5-(o-aminophenyl)-1,3,4-oxadiazole-2-thion (D-361). *International Journal of Medical Sciences And Clinical Research*, 2(09), 1–5. <https://doi.org/10.37547/ijmscr/Volume02Issue09-01>
12. R. Paprocka, M. Wiese, A. Eljaszewicz, A. HelminBasa, A. Gzella, B. Modzelewska-Banachiewicz, J. Michalkiewicz Synthesis and anti-inflammatory activity of new 1,2,4-triazole derivatives *Bioorg. Med. Chem. Lett.*, 25 (13) (2015), pp. 2664-2667
13. Sanoev Zafar Isomiddinovich, Rashidov Sokhib Zamon ugli, Raximboev Sukhrob Davlatyor ugli, Abdinazarov Ibrokhim Tuychievich, Khamroev Tolmas Tolibovich, Ismailova Dilnoza Safaralievna, & Elmuradov Burkhon Juraevich. (2022). Research of Anticonvulsant Activity of Compound 5- (P-Aminophenyl) - 1,3,4-Oxadiazole-2-Thion. *Texas Journal of Medical Science*, 13, 17–21. Retrieved from <https://zienjournals.com/index.php/tjms/article/view/2434>
14. N. Seelam, S.P. Shrivastava, P. S., S. Gupta Synthesis and in vitro study of some fused 1,2,4-triazole derivatives as antimycobacterial agents *J. Saudi Chem. Soc.*, 20 (4) (2016), pp. 411-418
15. Rakhimboev S.D., Sanoev Z.I., Rashidov S.Z., Abdinazarov I.T., Khamroev T.T., Ismailova D.S., & Elmuradov B.J.. (2022). Screening Study of the Anxiolytic Activity of New Triazole Compounds. *Texas Journal of Medical Science*, 13, 1–4. Retrieved from <https://zienjournals.com/index.php/tjms/article/view/2450>
16. S.D. Rakhimboev, Z.I. Sanoev, T.T. Khamroev, S.Z. Rashidov, I.T. Abdinazarov, D.S. Ismailova, & B.J. Elmuradov. (2022). Screening study of neurotropic properties of new triazole derivative. *Oriental Journal of Medicine and Pharmacology*, 2(04), 12–20. <https://doi.org/10.37547/supsci-ojmp-02-04-02>
17. T. Ni, L. Pang, Z. Cai, F. Xie, Z. Ding, Y. Hao, R. Li, S. Yu, X. Chai, T. Wang, Y. Jin, D. Zhang, Y. Jiang Design, synthesis, and in vitro antifungal evaluation of novel triazole derivatives bearing alkynyl side chains *J. Saudi Chem. Soc.*, 23 (5) (2019), pp. 576-585
18. Богоявленский А.П., Турмагамбетова А.С., Березин В.Э. Противовирусные препараты растительного происхождения // *Фундаментальные исследования*. – 2013. – № 6-5. – С. 1141-1145; URL: <https://fundamental-research.ru/ru/article/view?id=31703> (дата обращения: 25.02.2023).
19. Preziosi P. Influenza pharmacotherapy: present situation, strategies and hopes // *Expert Opin. Pharmacotherapy*. – 2011. – P. 23–30.
20. Safrin S. Antiviral agents. Basic and clinical pharmacology. In: Katzung B.G., editor, McGraw-Hill. – New York, 2007. – P. 815.
21. Thayer A.M. Flu fighters // *Chem. Eng. News*. – 2009. – Vol. 87. – P. 15–26.
22. Calland N., Dubuisson J., Rouillé Y., Séron K. Hepatitis C Virus and Natural Compounds: A New Antiviral Approach? // *Viruses*. – 2012. – № 4. – P. 2197–2217.
23. Покровский В.И., Онищенко Г.Г., Черкасский Б.Л. Современные представления об инфекционной патологии и основные направления совершенствования стратегии ее профилактики // *Вестник РАМН*. – 2000. – № 1. – С. 3–6.
24. Balunas, M.J.; Kinghorn, A.D. Drug discovery from medicinal plants // *Life Sci*. – 2005. – 78. – P. 431–441