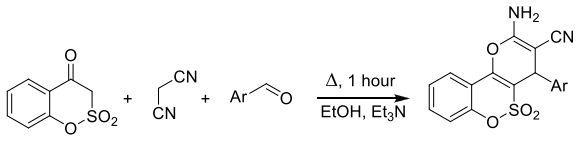
Aim. The purpose of the research was to synthesize 2-amino-4-aryl-4*H*-pyrano[3,2-*c*][1,2]benzoxathiine-3-carbonitrile 5,5-dioxides and to explore the anticoagulant properties of the obtained compounds.

Materials and methods. 1,2-Benzoxathiin-4(*3H*)-one 2,2-dioxide, malononitrile and series of substituted aromatic aldehydes were applied as starting materials. The Burker method was used to study the influence of the synthesized compounds on blood coagulation.

Results and discussion. The reaction of 1,2-benzoxathiin-4(3*H*)-one 2,2-dioxide (1) with malononitrile (2) and aromatic aldehydes (3a-e) proceeded smoothly in refluxing ethanol for 1 hour in the presence of triethylamine as a catalyst.



Cmp	Ar	Yield,%
4a	C_6H_5	65
4b	2-MeO-C_6H_4	58
4c	4-MeO-C_6H_4	85
4d	3-Cl-C_6H_4	78
4e	4-Cl-C_6H_4	40

Among the synthesized 2-amino-4-aryl-4*H*-pyrano[3,2-*c*][1,2]benzoxathiine-3-carbonitrile 5,5-dioxides (4a-e) the compound 4d in concentration of 1 mg/ml revealed a significant increase in the time of blood coagulation (1.9 times compared with the control), that indicates its anticoagulant properties.

Conclusions. Series of novel 1,2-benzoxathiin-4(3*H*)-one 2,2-dioxide derivatives were synthesized and according to the research assumption anticoagulant activity was detected for one of the obtained compounds, that gives the opportunity for further investigations in this field.

THE PSYCHO- AND NEUROTROPIC PROPERTIES OF 3-(N-R,R'-AMINOMETHYL)-2-METHYL-1H-QUINOLIN-4-ONES: *IN VIVO* VS *IN SILICO*

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Introduction. Methods “in silico” are the powerful tools for searching new biologically active compounds on the early stages of research. They allow to greatly optimize the selection of candidates for further experimental studies *in vitro* and *in vivo*.

Aim. The aim of the work was comparative analysis of the results of screening *in vivo* studies and retrospective *in silico* prediction of psycho- and neurotropic properties of 3-(N-R,R'-aminomethyl)-2-methyl-1H-quinolin-4-ones using the PASS Online service.

Materials and methods. Analysis of the results of previous screening *in vivo* studies of the psycho- and neurotropic properties of 3-(N-R,R'-aminomethyl)-2-methyl-1H-quinolin-4-ones was based on the data published previously. Computer-aided prediction of the spectrum of the biological properties of 3-(N-R,R'-aminomethyl)-2-methyl-1H-quinolin-4-ones was carried out retrospectively using the PASS Online system.

Results and discussion. The results of *in vivo* screening studies have shown that most of the compounds studied has pronounced nootropic properties that for some derivatives combine with high antidepressant activity, anti-anxiety effect, sedative or, conversely, stimulant properties. Analysis of certain subgroups of derivatives allowed us to reveal relationships between chemical structures and biological effects of the compounds. Thus, an analysis of *in vivo* studies of neurotropic properties of 3-(N-R,R'-aminomethyl)-2-methyl-1H-quinolin-4-ones has proven that this class of compounds is promising for further search of new objects.

According to the of PASS prediction results, the most probable biological effects are the ability to act as inhibitors of ubiquinol-cytochrome C reductase, gluconate 2-dehydrogenase, plastoquinol-plastocyanine reductase, kinase of platelet-derived growth factor (PDGF) receptors and enhancers of 3-

hydroxy-3-methylglutaryl-CoA synthase 2. Indicators of the effects that, at least indirectly, may affect the CNS functions are significantly lower.

Conclusions. The obtained results emphasize that, in spite of real usefulness of *in silico* approaches for prediction and study of properties of new classes of compounds, the probability of incorrect conclusions based on them always exists.

SYNTHESIS AND PROGNOSIS PHARMACOLOGICAL ACTIVITY OF DERIVATIVES OF N1-(4-(4-R- PHENYL)-1,3-THIAZOLYL-2)- N1-(4'-R'- PHENYL)ACETAMIDE

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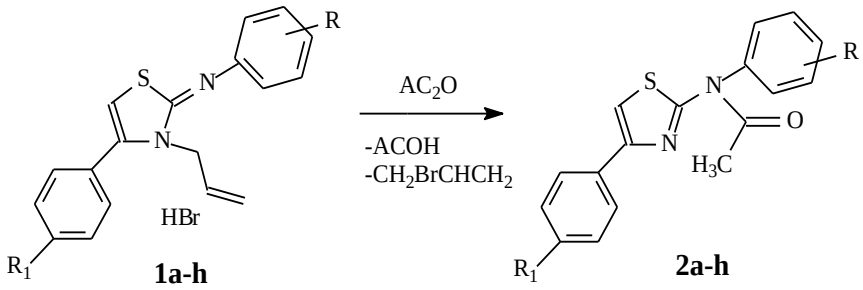
Introduction. Analysis of the scientific literature indicates that the derivatives of thiazole have a sufficiently wide spectrum of pharmacological activity and a large number of drugs is created on their basis. Therefore, the search for new biologically active substances based on thiazoles is a promising area of modern pharmaceutical science.

Aim. Synthesis of new biologically active compounds in a series of derivatives of N1-(4-(4-R-phenyl)-1,3-thiazolyl-2)-N1-(4'-R'-phenyl)acetamide, confirmation of their structure with ^{1}H-NMR spectroscopy and thin layer chromatography, prognosis pharmacological activity of synthesized compounds.

Materials and methods. The starting materials, auxiliary substances and solvents used in the work were obtained and purified using standard techniques. ^{1}H-NMR-spectra were recorded on a Varian Gemini 400 MHz instrument in DMSO-d_6. The forming of the final products of reaction was monitored by thin layer chromatography through the use of Fluka silica gel (60 F254) plates (0.25 mm). The visualization was carried out by UV-radiation.

Results and discussions. A new series of derivatives of N1-(4-(4-R- phenyl)-1,3-thiazolyl-2)-N1-(4'-R'-phenyl)acetamide (2a-h) was obtained by acetylation of hydrobromide derivatives of 3-allyl-4-(R-phenyl)-N-(R^1-phenyl)thiazole-2-imine (схема 1).

Scheme 1



2a R = CH_3, R_1 = OCH_3; 2b R = CH_3, R_1 = Cl; 2c R = CH_3, R_1 = 2',4'-$(Cl)_2$;
2d R = Br, R_1 = Cl

The structure of the compounds obtained is confirmed by modern physicochemical methods of analysis: ^{1}H-NMR spectroscopy and thin layer chromatography.

The signals of protons of the allyl fragment and proton NH^+ are absent on ^{1}H-NMR-spectra of the synthesized compounds, that indicates the formation of derivatives of N1-(4-(4-R-phenyl)-1,3-thiazolyl-2)-N1-(4'-R'-phenyl)acetamide.

Prediction of pharmacological activity for new derivatives of N1-(4-(4-R-phenyl)-1,3-thiazolyl-2)-N1-(4'-R'-phenyl)acetamide (2a-h) is made using the PASS program. According to the results obtained, the synthesized compounds have a wide range of pharmacological activity and act as mucomembranous protector, insulin promoter, ubiquinol-cytochrome-c reductase inhibitor, transcription factor STAT3 inhibitor, calcium channel N-type blocker, antianorexic, anti-Helicobacter pylori etc.