Particularly important is the field of their medical and biological use which is based on weak non-covalent interactions with enzymes and receptors, resulting in the manifestation of a branched spectrum of pharmacological action. Analysis of the literature convincingly shows that the range of therapeutic activity and affinity for various biotargets in a number of pyrazole derivatives is usually determined by the substituents nature in positions 3 and 4 of the heterocycle.

The presence of exocytic functional C = C and C = N fragments was found to have a significant effect on the bioactivity of pyrazole platform. In particular, among alkenyl-derived 4-formylpyrazoles effective anticancer agents have been found, among hydrazones of the corresponding aldehydes - compounds with antibacterial and anti-inflammatory effect, and in some thiosemicarbazones - with antiviral, antihyperglycemic, anti-inflammatory and anti-TB activity.

Analysis of the biological potential of 4-alkenyl- and iminofunctionalized pyrazoles derivatives is carried out, on the basis of which the design expediency of new structures with pharmacophore 5-(4-nitrophenyl) furanyl fragment is substantiated.

Equally important in the synthetic aspect is the use of imines, oximes, (get) aroylhydrazones and thiosemicarbazones of pyrazole-4-carbaldehydes as "building blocks" for the construction of bioperspective heterocyclic ensembles.

Antimicrobial activity of the test substances was studied by means of a micromethod using disposable polystyrene tablets and Takachi microtiters. In 96-well polystyrene plates, 0.05 ml of working dilutions of the microorganism cultures were added (1 ml of medium contained 105 CFU of bacteria; for C. ablicans, dilution of microorganisms 102 in Saburo liquid medium was used).

A 0.05 ml platinum basket was used to collect the matrix solution of the test sample and to addit to the first well. The following samples were added in the same way in the other wells of the first row. Sequentially turning the baskets, dilutions in all wells varied from 1: 2 to 1: 256. In the same way, an experiment was performed with other test cultures. After that, the plates were placed in a humid thermostat chamber at 37°C, incubated for 24 h (for mushrooms - respectively 28°C and 48 h).

The results were recorded taking into account the absence and presence of growth of microorganisms; the minimum static concentration was considered to be the sample dilution at which the growth of the microorganism was delayed. In order to obtain reliable results, the experiment was performed three times.

To determine bactericidal and fungicidal concentrations, microorganisms were removed from wells with liquid nutrient environment, where their growth was practically not observed, and transplanted to solid nutrient environment (MPA for bacteria, Saburo agar - for C. ablicans). Accounting was performed after culturing microorganisms at the optimum temperature and time. The minimum bactericidal and fungicidal concentrations were considered to be those at which the vital activity of the microorganisms was not restored, i.e. its growth was not observed on a solid nutrient environment.

The results of microbiological evaluation of the synthesized pyrazole derivatives showed that they have a pronounced effect on strains of *S. aureus*, *E. coli* and fungi of the genus *Candida* and are promising for creating effective antimicrobial agents.

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## SYNTHESIS OF POTENTIALLY BIOLOGICALLY ACTIVE FUNCTIONAL DERIVATIVES OF 3- [5- (4-NITROPHENYL) -2-FURYL] -4-PYRAZOLECARBALDEHYDES

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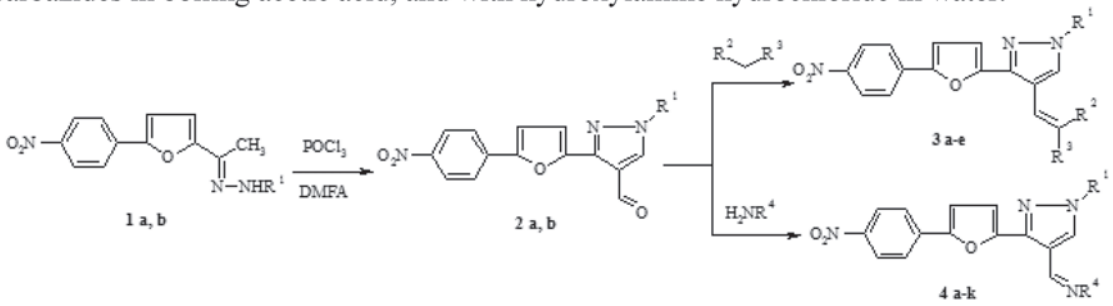
The study has proposed a method of synthesis, which includes a structural modification of 3-[5-(4-nitrophenyl)furan-2-yl]pyrazole-4-carbaldehyde to the corresponding alkenyl derivatives under the action of malononitrile, ethyl cyanoacetate, cyanoacetamide and thioxoimidazolidine. One of the preferred options for creating bioactive compounds is the modification of pyrazole scaffold by pharmacophore fragments, in particular, the 5- (4-nitrophenyl) furan group. Previously,

its introduction into a number of heterocycles structures allowed to obtain compounds with antibacterial, fungicidal, leishmanicidal action, as well as selective inhibitors of phosphodiesterase and P-glucoprotein. That is why it seemed appropriate to synthesize a series of new functionalized pyrazoles with 5- (4-nitrophenyl) furyl substituent.

Hydrazones of [5- (4-nitrophenylfuran-2-yl)] methyl ketones 1a, b, were selected as base substrates for designing the target compounds, which under the conditions of the Wilsmeyer-Haak reaction were transformed into 3-[5- (4-nitrophenyl) furan-2-yl] pyrazole-4-carbaldehyde 2a, b. Their further structural functionalization with such methylene active reagents as malononitrile, ethyl cyanoacetate, cyanoacetamide and thiooxoimidazolidin-2-one in boiling acetic acid in the presence of sodium acetate allowed to obtain alkenyl derivatives of 3a-e with yields of 67-80%. In turn, aldehydes 2a, b were converted into the corresponding hydrazones 4a-c, e-i, semicarbazone 4d, c, thiosemicar and oxime 4d with yields of 67-88% by condensation with hydrazides and (thio) semicarbazides in boiling acetic acid, and with hydroxylamine hydrochloride in water.




1: $R^1$=C(O)$NH_2$ (a), Ph (b); 2 $R^1$=H (a), Ph (b); 3: $R^1$=H; $R^2$=$R^3$=CN (a); $R^2$=CN, $R^3$=$CO_2$Et (b); $R^2$=CN, $R^3$=C(O)$NH_2$ (c); $R^1R^2$=C(S)NHC(O)NH (d); $R^1$=Ph, $R^2$=$R^3$=CN (e);
4: $R^1$=H, $R^4$=NHC(O)Ph (a); NHC(O)-4- pyridyl (b); $NHSO_2C_6H_4$-4-Me (c); $NHC(O)NH_2$ (d); $R^1$=Ph; $R^4$=OH (e), NHC(O)Ph (f), NHC(O)-4- pyridyl (g); $NHSO_2C_6H_4$-4-Me (h); $NHC(O)NH_2$ (i); $NHC(S)NH_2$ (k).

The synthesized compounds 3a-e and 4a-k were highly fusible substances, sparingly soluble in most organic solvents, with the exception of DMSO and DMF. Their individual composition and structure were proved by the measurements results of chromato-mass, IR and NMR$^1$H spectra. While analyzing the latter for 1-phenyl-substituted hydrazones 4e-h, the fact of their existence in the form of a mixture of E- and Z-isomers was recorded. Taking into account the results of the study, the percentage of each isomer content was determined based on the ratio of the doubled signals of the protons H5 of the pyrazole cycle and the H-C= hydrazone fragment.

It is known, that the increase in number of multidrug-resistant strains that are difficult to treat in recent decades has been the impetus for discovering a number of antimicrobials. At the same time, for many of them, the issues of narrow antimicrobial spectrum, adverse side effects and high toxicity remain unresolved. That is why the development of structurally new antimicrobial agents, in particular, from the class of pyrazoles with a clear mechanism of therapeutic action, does not lose its relevance.

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## QUALITATIVE DETERMINATION OF Ig M ANTIBODIES TO NUCLEOCAPSIDE ANTIGEN OF CORONAVIRUS SARS-CoV-2 IN THE BLOOD SERUM AND ITS PREDICTIVE IMPLICATIONS

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Application of enzyme-linked immunosorbent assay for detection of specific antibodies to SARS-CoV-2 or its antigens for the detection of SARS-CoV-2, additional to PCR, can be proposed especially to patients with mild or asymptomatic cases of infection.

The purpose and objectives of the study were to analyze the frequency of detection of IgM to SARS-CoV-2 in patients during planned hospitalization without signs of severe acute respiratory