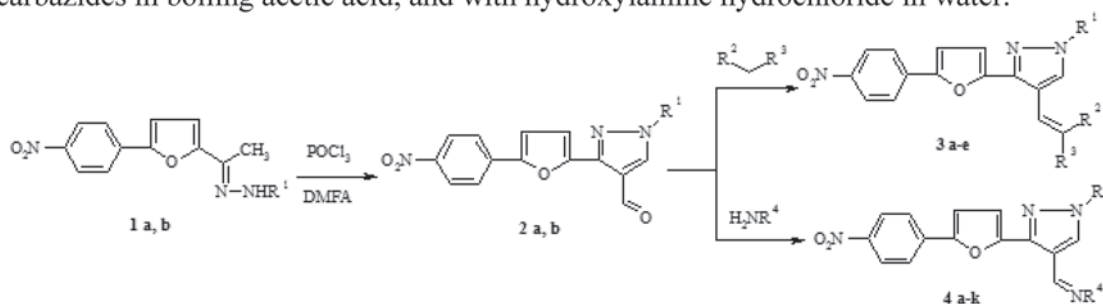




its introduction into a number of heterocycles structures allowed to obtain compounds with antibacterial, fungicidal, leishmanicidal action, as well as selective inhibitors of phosphodiesterase and P-glucoprotein. That is why it seemed appropriate to synthesize a series of new functionalized pyrazoles 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 Wilsmeier-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: R¹=C(O)NH₂ (a), Ph (b); 2 R¹=H (a), Ph (b); 3: R¹=H; R²=R³=CN (a); R²=CN, R³=CO₂Et (b); R²=CN, R³=C(O)NH₂ (c); R¹R²=C(S)NHC(O)NH (d); R¹=Ph, R²=R³=CN (e);
 4: R¹=H, R⁴=NHC(O)Ph (a); NHC(O)-4- pyridyl (b); NHSO₂C₆H₄-4-Me (c); NHC(O)NH₂ (d); R¹=Ph; R⁴=OH (e), NHC(O)Ph (f), NHC(O)-4- pyridyl (g); NHSO₂C₆H₄-4-Me (h); NHC(O)NH₂ (i); NHC(S)NH₂ (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 chromat-mass, IR and NMR¹H 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.

Cherniukh O.G.

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

*Department of Bioorganic and Biological Chemistry and Clinical Biochemistry
 Bukovinian State Medical University*

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



syndrome (SARS) and / or other SARS. Blood serum of 486 patients was examined for the presence of IgM antibodies to SARS-CoV-2 by the method of "IgM-capture" enzyme-linked immunosorbent assay (ELISA) by monoclonal antibodies with the formation of anti-IgM-IgM complexes and with subsequent detection by peroxidase conjugate. Optical density of samples during conduction of the study is measured in two phases at a wavelength of 450/620 nm and is proportional to the concentration of IgM to SARS-CoV-2 in them. We use the test of the «DiaProphMed» system in this work (Kyiv, Ukraine).

Between August 19 and October 20, 2020, serum samples of 486 patients were examined, including 476 samples of female blood serum and 10 male samples. For positive control we used recombinant protein G Streptococcus, conjugated with horseradish peroxidase and for negative control we used inactivated human serum that does not contain HBsAg, p24 HIV-1, SARS-SoV-2 antibodies, HIV-1/2, and hepatitis C virus (HCV). During this period of study, the optical density of the samples studied regarding the high-quality content of IgM to SARS-SoV-2 varied/ranged from 0.012 to 0.054 (92% of samples). Optical density limit of 6.5% of samples was higher and amounted to be between 0.064 and 0.130. Six samples were questionable and corresponded to the limit (boundary value) for the detection of the studied parameters (0.187; 0.212; 0.233; 0.237; 0.264; 0.295) in accordance with the rules for calculating marginal and positive results. For example, the limit (boundary value) was calculated:

$$\text{Boundary Value} = \text{Average Value} + 0.2,$$

where Average Value – is the average value of optical density of negative control
(at least two, while examining more than 24 samples
at the same time, the number of controls reaches four, etc.).

The value of the average arithmetic value ($M \pm m$) for the samples studied was 0.037 ± 0.006 ($p < 0.001$). The optical density of positive control samples ranged from 1,268 to 2,694 depending on the series of controls. The amount of negative control was within: 0,012 -0,026. Conducting the analysis in accordance with the requirements of the methodology is considered reliable if optical density Average Value < 0.1 , and the optical density of positive control samples > 0.6 . Interesting was the fact that the value of IgM to SARS-SoV-2 was 0,233 and 0,212 in the same patient with a difference of two days. The PCR study was negative. Two others people with questionable results were hospitalized to a special isolation unit (i.e. there was still some symptomatology, currently there is no data concerning their PCR tests).

Thus, during the research period, we did not indicate high positive results. The percentage of marginal results was 1.23% and they were not in the verge of positive ones (> 0.9). For the comparison of sensitivity of test systems of different manufacturers to detection of IgM to SARS-SoV-2 it is planned to conduct a similar study using sets of Ukrainian manufacturer to compare the value of results and to analyze the sensitivity of sets.

Davydova N.V.

**THE CONTENT OF CERULOPLASMIN AND CATALASE ACTIVITY IN THE BLOOD
IN CASE OF ALCOHOL INTOXICATION, ITS COMBINATION WITH MODIFIED
PHOTOPERIOD AND MELATONIN ADMINISTRATION**

*Department of Bioorganic and Biological Chemistry and Clinical Biochemistry
Bukovinian State Medical University*

Alcoholism is one of the most serious medical and social problems. Ukraine ranks fifth in the world by the amount of alcohol consumed per capita. Numerous studies have found that the basis of toxic effects of ethanol is the activation of free radical oxidation of biomolecules. In modern life, the use of ethanol is often combined with the influence of other harmful factors, such as the violation of light regime. Light affects a modern person practically all around the clock. The biological rhythms are regulated by melatonin, which is produced in pineal gland in darkness, and besides many physiological effects has potent antioxidant action.