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Synthesis and alkylation of 1-aryl-1,5-dihydro-4*H*-pyrazolo[3,4-*d*]pyrimidin-4-ones as possible anticonvulsant agents

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ABSTRACT

The synthesis of 1-(4-bromophenyl)- and 1-(2-chlorophenyl)-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidine-4-one as possible anticonvulsant agents was planned. It was carried out by the interaction of the corresponding phenylhydrazine hydrochloride with ethyletoxymethylencyanocetate with a further heating of obtained 5-amino-1-aryl-1H-pyrazole-4-carboxylate in excess of formamide. The direction of reaction of 1-aryl-1,5-dihydro-4H-pyrazolo[3,4-d] pyrimidine-4-one with N-arylsubstituted α-chloracetamides, 2-chloro-1-(4-arylpiperazine-1-yl)-ethanone and 2-chloro-N-(4-chlorobenzyl)acetamide in the presence of DMFA-$NaHCO_3$ had been investigated. Using the data of NMR and NOESY spectroscopy it was found out that reaction is selectively performed at 5 position of pyrazolo[3,4-d]pyrimidine system. Due to preliminary prognosis of biological activity pharmacological screening of substances synthesized as possible anticonvulsant agents on the penthyltetrazole seizures was planned

Key words: synthesis; pyrimidine; pyrazole; alkylation; acetamides, activity prediction

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INTRODUCTION

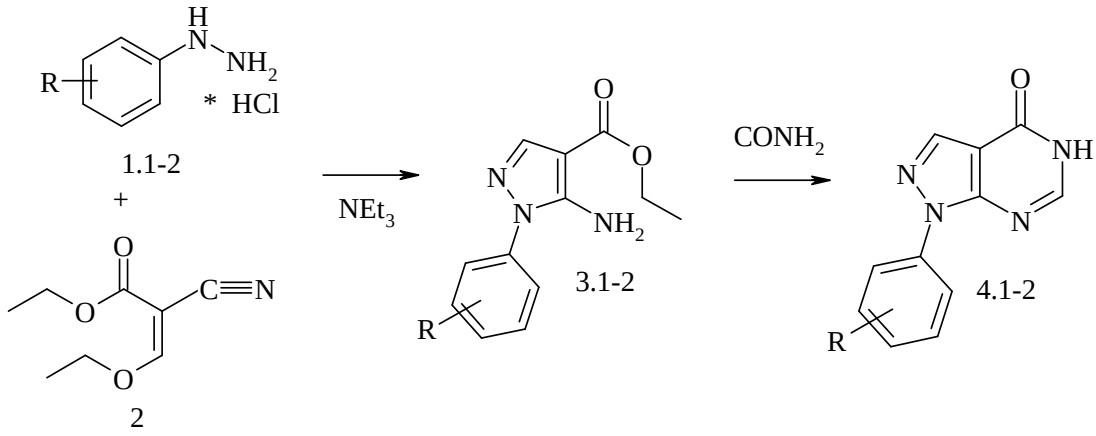
Currently there have been created a large number of medicines containing pyrimidine ring in their structure. Such medicines have found practical application in various fields of medicine. Pyrimidine derivatives make a major interest as potential neurotropic drugs, among which condensed with other nitrogencontaining heterocycles derivatives [1-5] take a special place. Analyzing the literature data, we have noticed the increase in number of publications devoted to determination of neurotropic activity among pyrazolopirymide derivatives. Besides the well-known hypnotic drugs as zaleplon [6] and indiplon [7,8], there were found compounds with pronounced sedative, anxiolytic [9] and hypnotic effects [10] among derivatives of this series. We have also noted that only a small number of reports concerned the study of anticonvulsant activity of pyrazolopyrimidine derivatives. Moreover, most of them relate to pyrazolo[1,5-a]pyrimidines [11-13].

Our own research [14] confirmed a variety of an anticonvulsant activity of alkylated pyrimidine-4(*3H*)-one derivatives. Therefore, we aimed to synthesize their condensed derivatives with pyrazole cycle such as 1-aryl-1,5-dihydro-4*H*-pyrazolo[3,4-d]pyrimidine-4-ones and to carry out their alkylation.

To establish the prospects of synthesis and an optimization of the further pharmacological screening, we performed a prediction of a biological activity that was planned for the synthesis of compounds using a computer PASS program [15]. Alkylated derivatives of 1-aryl-1,5-dihydro-4*H*-pyrazolo[3,4-d]pyrimidine-4-one have been selected for a synthesis. A marked psychotropic activity such as antiepileptic, anxiolytic, antidepressant, antineurotic, and convulsant activities (Ra ≥ 0,50) have been predicted for these compounds.

The initial compounds – 1-(4-bromophenyl)- and 1-(2-chlorophenyl)-1,5-dihydro-4*H*-pyrazolo[3,4-d]pyrimidine-4-ones **4.1-2** were obtained within two stages. The first stage included the synthesis of intermediate – ethyl 5-amino-1-aryl-1*H*-pyrazole-4-carboxylate **3.1-2** by interaction of the corresponding phenylhydrazine hydrochloride **1** and

ethyletoxymethylencyanocetate **2** in isopropyl alcohol medium in the presence of triethylamine. During our second stage the resulting carboxylate **3.1-2** have been heated in excess of formamide within two days leading to the formation of target pyrazolopyrimidines **4.1-2** (Scheme 1).



R= 3.1, 4.1 4-Br; 3.2, 4.2 2-Cl

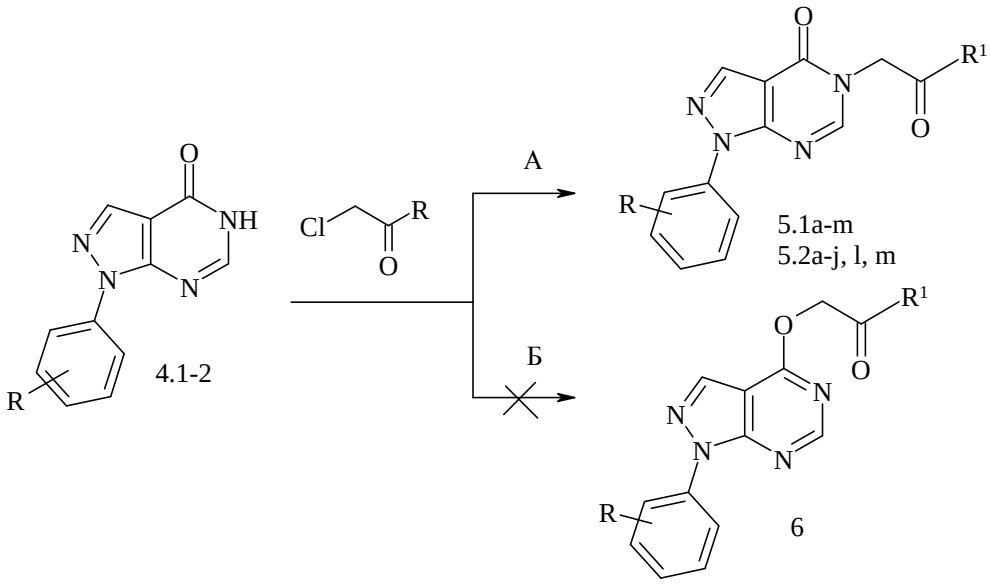
Scheme 1

In these conditions the reaction products **4.1-2** were obtained with good yields (Table. 1). The structure of the synthesized compounds **4.1-2** have been confirmed by ^{1}H NMR spectroscopy (Table 1).

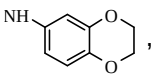
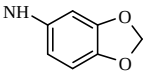
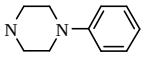
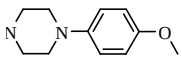
Table 1 Data of 1-aryl-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidine-4-one derivatives 4.1-2, 5.1-2 a-m obtained

Compound	Yield, %	M.p., °C	Calculated N, %	Found N, %	Mol. formula	[MH$^+$]
4.1	89	179-181	19,25	19,31	$C_{11}H_7BrN_4O_2$	–
4.2	88	197-198	22,71	22,78	$C_{11}H_7ClN_4O$	–
5.1a	85	285-287	16,51	16,57	$C_{19}H_{14}BrN_5O_2$	425
5.1b	78	283-285	19,49	19,53	$C_{20}H_{16}BrN_5O_2$	–
5.1c	84	285-287	15,42	15,46	$C_{20}H_{16}BrN_5O_2$	–
5.1d	80	232-234	14,46	5114,	$C_{21}H_{18}BrN_5O_4$	–
5.1e	83	265-267	15,27	15,34	$C_{19}H_{13}BrClN_5O_2$	459
5.1f	76	273-275	14,33	14,37	$C_{20}H_{15}BrClN_5O_3$	–
5.1g	84	239-241	15,42	15,47	$C_{20}H_{16}BrN_5O_3$	–
5.1h	81	224-226	15,98	16,03	$C_{20}H_{16}BrN_5O_3$	–
5.1i	79	275-277	14,81	14,89	$C_{20}H_{15}BrClN_5O_2$	–
5.1j	78	289-291	14,52	14,58	$C_{21}H_{16}BrN_5O_4$	–
5.1k	84	222-224	17,03	17,10	$C_{23}H_{21}BrN_6O_2$	494
5.1l	83	230-232	16,06	16,11	$C_{24}H_{23}BrN_6O_3$	480
5.1.m	82	243-245	14,96	15,03	$C_{20}H_{14}BrN_5O_4$	–
5.2a	85	240-242	18,44	18,52	$C_{19}H_{14}ClN_5O_2$	380
5.2c	84	245-247	17,09	17,16	$C_{20}H_{16}ClN_5O_3$	–
5.2d	87	215-217	15,92	15,99	$C_{21}H_{18}ClN_5O_4$	–
5.2e	89	245-247	16,91	17,02	$C_{19}H_{13}Cl_2N_5O_2$	–
5.2f	84	262-264	15,76	15,79	$C_{20}H_{15}Cl_2N_5O_3$	–
5.2g	83	267-269	17,06	17,14	$C_{20}H_{16}ClN_5O_3$	–
5.2h	80	223-225	17,78	17,84	$C_{20}H_{16}ClN_5O_2$	–
5.2i	87	223-225	16,35	16,39	$C_{20}H_{15}Cl_2N_5O_2$	–
5.2l	84	213-215	18,72	18,80	$C_{23}H_{21}ClN_6O_2$	–
5.2m	84	228-230	17,55	17,61	$C_{24}H_{23}ClN_6O_3$	–

The following modifications of the obtained pyrazolopyrimidines **4.1-2** we carried out by their alkylation by N-arylsubstituted α-chloracetamides, 2-chloro-1-(4-arylpiperazine-1-yl)-ethanone or 2-chloro-N-(4-chlorobenzyl) acetamide (Scheme 2). The reaction has been performed maintaining the mixture of reagents during 2 hours at 70°C in dimethylformamide medium in the presence of $NaHCO_3$.



5 R^1 : a = NHPh, b = NHPh (4-Me), c = NHPh(4-OMe), d = NHPh(2,4-diOMe), e= NHPh(4-Cl), f = NHPh (3-Cl, 4-OMe), g = NHPh (2-OMe), h= NMePh, i = NHBn(4-Cl),

j =  , k =  , l =  , m = 

Scheme 2

The presence of several reaction centers in the molecule of 1-aryl-1,5-dihydro-4*H*-pyrazolo [3,4-d] pyrimidine-4-ones 4.1-2 makes it possible to achieve several directions of the reaction. Thus, alkylation can occur at the Nitrogen atom in 5 position (route A) as well as at the Oxygen atom in position 4 (route B) (Scheme 2). Also, having these conditions we divined the formation of a mixture of products N- **5** and O-alkylation **6**.

According to chromatomass-spectrometry data the synthesized products are individual substances. (Table 1). Alkylated derivatives have been obtained with satisfactory yields. After the crystallization from isopropyl alcohol, the synthesized compounds turn into white or light yellow crystalline substances with well-defined melting points.

Comparing the ^{1}H NMR spectra of alkylated derivatives with the spectra of initial 1-aryl-1,5-dihydro-4*H*-pyrazolo [3,4-d]pyrimidine-4-ones **4.1-2**, the absence of imine signal proton of pyrimidine cycle had been noted, as well as the appearance of singlets of NH-group of amide residue at δ 9,6-10,8 ppm **(5a-k)** and signals of aryl protons the multiplicity and intensity of which corresponded to the nature and location of substituents. The spectra of compounds **5.1-2 l**, **m** are characterized by two multiplets at 3.10-3.73 ppm.

The position of the proton signals of methylene groups in the alkyl radical at 4,80-4,95 ppm shows the reaction in the direction A (Scheme 2). Since the formation of the type 6 compounds shifted the signals on 0.1-0.2 ppm. For a more reliable verification of N-alkylated derivatives **5.1-2** formation, we used the NOESY spectroscopy data following the example of a compound **5.1a.** NOESY spectrum is characterized by cross-peak CH_2 of protons of acetamide residue and CH proton at position 6 of pyrazolo[3,4-d]pyrimidine system that clearly indicates the formation of N-alkylated derivative and, therefore, confirms the formation of compounds of type **5**.

MATERIALS AND METHODS

Experimental Part

All of the solvents and reagents were obtained from the commercial sources. The melting points (°C) were measured with a Kofler melting point apparatus and were not corrected. 1H NMR spectra were recorded on a Varian Mercury (200 MHz) spectrometer in DMSO-*d6* using TMS as an internal standard (chemical shifts are in ppm). NOESY spectra were recorded on a Varian Gemini (300 MHz) spectrometer in DMSO-*d6* using TMS as an internal standard

(chemical shifts are in ppm). LC/MS was recorded with PE SCIEX API 150EX chromatograph equipped with a mass-spectrometer.

1-Aryl-1,5-dihydro-4*H*-pyrazolo[3,4-*d*]pyrimidin-4-ones (4). The mixture of 0,1 mol of arylhydrazine hydrochloride 1 and 0,1 mol of ethylethoxymetylencyanocetate 2 is heated in isopropyl alcohol with triethylamine (1,1 mol) at 60°C during 4 hours. The reaction mixture was cooled to the room temperature, isopropyl alcohol was evaporated under vacuum, and the residue was diluted with 200 ml of water. The formed precipitate of ethyl 5-amino-1-aryl-1*H*-pyrazole-4-carboxylate **3** was filtered, rinsed with water, and dried. 0,1 mol of obtained carboxylate was heated in 200 ml of formamide at 120˚C within 48 hours. The reaction mixture was cooled to the room temperature, the precipitate was isolated, diluted with isopropyl alcohol, filtered, and dried at 60-70˚C within 12 hours.

1-(4-bromophenyl)-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidin-4-one (4.1). 1H NMR spectrum: 7.72 (2H, d., Ar); 8.01 (2H, d., Ar); 8.18 (1H, s., CH); 8.32 (1H, s., CH); 12.52 (1H, br.s., NH).

1-(2-chlorophenyl)-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidin-4-one (4.2). 1H NMR spectrum: 7.35-7.74 (4H, m., Ar); 8.09 (1H, s., CH); 8.34 (1H, s., CH); 12.42 (1H, s., NH).

General procedure of the synthesis of N-alkylated derivatives of 1-aryl-1,5-dihydro-4*H*-pyrazolo[3,4-d]pyrimidine-4-one (5).
To a solution of 0,001 mol of 1-aryl-1,5-dihydro-4*H*-pyrazolo[3,4-d] pyrimidine-4-one **4** in 10 ml of dimethylformamide 0,0015 mol (0.12 g) of sodium bicarbonate and 0,001 mol of appropriate alkyl halide was added and heated for 5 hours at 70˚C. The reaction mixture was cooled to room temperature, the precipitate was isolated, diluted by isopropyl alcohol, filtered and dried. It was crystallized from isopropanol.

1H NMR spectra (compounds 5):
2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-phenylacetamide (5.1a). 4.92 (2H, s., CH_2); 7.02 (1H, t., Ar); 7.32 (2H, t., Ar); 7.58 (2H, d., Ar); 7.80 (2H, d., Ar); 8.12 (2H, d., Ar); 8.36 (1H, s., CH); 8.55 (1H, s., CH); 10.42 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(4-methylphenyl)acetamide (5.1b): 2.25 (3H, s., CH_3); 4.89 (2H, s., CH_2); 7.09 (2H, d., Ar); 7.43 (2H, d., Ar); 7.79 (2H, d., Ar); 8.12 (2H, d., Ar); 8.32 (1H, s., CH); 8.50 (1H, s., CH); 10.35 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(4-methoxyphenyl)acetamide (5.1c): 3.75 (3H, s., OCH_3); 4.88 (2H, s., CH_2); 6.92 (2H, d., Ar); 7.44 (2H, d., Ar); 7.75 (2H, d., Ar); 8.01 (2H, d., Ar); 8.42 (1H, s., CH); 8.51 (1H, s., CH); 10.31 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(2,4-dimethoxyphenyl)acetamide (5.1d): 3.75 (3H, s., OCH_3); 3.85 (3H, s., OCH_3); 4.95 (2H, s., CH_2); 6.40-6.65 (2H, m., Ar); 7.64 (2H, d., Ar); 7.80 (2H, d., Ar); 8.05 (2H, d., Ar); 8.40 (1H, s., CH); 8.55 (1H, s., CH); 9.62 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(4-chlorophenyl)acetamide (5.1e): 4.80 (2H, s., CH_2); 7.32 (2H, d., Ar); 7.50 (2H, d., Ar); 7.73 (2H, d., Ar); 8.09 (2H, d., Ar); 8.31 (1H, s., CH); 8.50 (1H, s., CH); 10.60 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(3-chloro-4-methoxyphenyl)acetamide (5.1f): 3.75 (3H, s., OCH_3); 4.82 (2H, s., CH_2); 7.10 (1H, d., Ar); 7.41 (1H, d., Ar); 7.60-7.91 (3H, m., Ar); 8.05 (2H, d., Ar); 8.32 (1H, s., CH); 8.50 (1H, s., CH); 10.42 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(2-methoxyphenyl)acetamide (5.1g): 3.80 (3H, s., OCH_3); 4.92 (2H, s., CH_2); 6.82-6.99 (1H, m., Ar); 7.05-7.19 (2H, m., Ar); 7.72 (2H, d., Ar); 7.90 (1H, d., Ar); 8.09 (2H, d., Ar); 8.40 (1H, s., CH); 8.51 (1H, s., CH); 9.81 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-methyl-N-phenylacetamide (5.1h): 3.22 (3H, s., CH_3); 4.51 (2H, s., CH_2); 7.32-7.60 (5H, t., Ar); 7.75 (2H, d., Ar); 7.58 (2H, d., Ar); 7.80 (2H, d., Ar); 8.12 (2H, d., Ar); 8.42 (1H, s., CH); 8.50 (1H, s., CH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(4-chlorobenzyl)acetamide (5.1i): 4.60 (2H, d., CH_2); 4.92 (2H, s., CH_2); 7.32 (2H, d., Ar); 7.50 (2H, d., Ar); 7.73 (2H, d., Ar); 8.09 (2H, d., Ar); 8.31 (1H, s., CH); 8.50 (1H, s., CH); 9.42 (1H, s., NH).

2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(2,3-dihydro-1,4-benzodioxin-6-yl)acetamide (5.1j): 4.22 (4H, s., $2CH_2$); 4.85 (2H, s., CH_2); 6.78-7.00 (2H, dd., Ar); 7.20 (1H, s., Ar); 7.75 (2H, d., Ar); 8.05 (2H, d., Ar); 8.42 (1H, s., CH); 8.50 (1H, s., CH); 10.31 (1H, s., NH).

N-(1,3-benzodioxol-5-yl)-2-[1-(4-bromophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]acetamide (5.1k): 4.82 (2H, s., CH_2); 5.92 (2H, s., CH2); 6.80-6.92 (2H, m., Ar); 7.31 (1H, s., Ar); 7.85 (2H, d., Ar); 8.05 (2H, d., Ar); 8.32 (1H, s., CH); 8.50 (1H, s., CH); 10.42 (1H, s., NH).

1-(4-bromophenyl)-5-[2-oxo-2-(4-phenylpiperazin-1-yl)ethyl]-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidin-4-one (5.1l): 3.10-3.26 (4H, m., $2CH_2$); 3.58-3.73 (4H, m., $2CH_2$); 4.92 (2H, sc., CH_2); 6.8 (1H, t., Ar); 7.00 (2H, d., Ar); 7.22 (2H, t., Ar); 7.77 (2H, d., Ar); 8.09 (2H, d., Ar); 8.31 (1H, s., CH); 8.50 (1H, s., CH).

1-(4-bromophenyl)-5-{2-[4-(4-methoxyphenyl)piperazin-1-yl]-2-oxoethyl}-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidin-4-one (5.1m): 3.00-3.26 (4H, m., $2CH_2$); 3.58-3.73 (4H, m., $2CH_2$); 3.80 (3H, s., OCH_3); 4.92 (2H, s., CH_2); 6.82 (2H, d., Ar); 7.00 (2H, d., Ar); 7.75 (2H, d., Ar); 8.01 (2H, d., Ar); 8.42 (1H, s., CH); 8.51 (1H, s., CH).

2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-phenylacetamide (5.2a): 4.92 (2H, s., CH_2); 6.92-7.10 (1H, m., Ar); 7.21-7.40 (2H, m., Ar); 7.50-7.80 (6H, m., Ar); 8.36 (1H, s., CH); 8.51 (1H, s., CH); 10.42 (1H, s., NH).

2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(4-methoxyphenyl)acetamide (5.2c): 3.75 (3H, s., OCH_3); 4.88 (2H, s., CH_2); 6.82 (2H, d., Ar); 7.44 (2H, d., Ar); 7.55-7.87 (4H, m., Ar); 8.38 (1H, s., CH); 8.46 (1H, s., CH); 10.31 (1H, s., NH).

2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(2,4-dimethoxyphenyl)acetamide (5.2d): 3.75 (3H, s., OCH_3); 3.85 (3H, s., OCH_3); 4.95 (2H, s., CH_2); 6.40-6.65 (2H, m., Ar); 7.54-7.80 (5H, m., Ar); 8.40 (1H, s., CH); 8.55 (1H, s., CH); 9.62 (1H, s., NH).

N-(4-chlorophenyl)-2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]acetamide (5.2e): 4.86 (2H, s., CH_2); 7.32 (2H, d., Ar); 7.50-7.81 (6H, m., Ar);); 8.28 (1H, s., CH); 8.51 (1H, s., CH); 10.60 (1H, s., NH).

N-(3-chloro-4-methoxyphenyl)-2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]acetamide (5.2f): 3.75 (3H, s., OCH_3); 4.82 (2H, s., CH_2); 7.10 (1H, d., Ar); 7.41 (1H, d., Ar); 7.60-7.91 (3H, m., Ar); 7.90 (2H, d., Ar); 8.32 (1H, s., CH); 8.50 (1H, s., CH); 10.46 (1H, s., NH).

2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-(2-methoxyphenyl)acetamide (5.2g): 3.80 (3H, s., OCH3); 4.92 (2H, s., CH2); 6.82-6.99 (1H, m., Ar); 7.05-7.19 (2H, m., Ar); 7.50-7.72 (5H, m., Ar); 7.90 (1H, d., Ar); 8.40 (1H, s., CH); 8.51 (1H, s., CH); 9.79 (1H, s., NH).

2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]-N-methyl-N-phenylacetamide (5.2h): 3.22 (3H, s., CH_3); 4.55 (2H, s., CH_2); 7.32-7.80 (9H, m., Ar); 8.32 (1H, s., CH); 8.45 (1H, s., CH).

N-(4-chlorobenzyl)-2-[1-(2-chlorophenyl)-4-oxo-1,4-dihydro-5H-pyrazolo[3,4-d]pyrimidin-5-yl]acetamide (5.2i): 4.62 (2H, d., CH_2); 4.72 (2H, s., CH_2); 7.32 (2H, d., Ar); 7.50 (2H, d., Ar); 7.55-7.88 (4H, d., Ar); 8.31 (1H, s., CH); 8.50 (1H, s., CH); 9.42 (1H, s., NH).

1-(2-chlorophenyl)-5-[2-oxo-2-(4-phenylpiperazin-1-yl)ethyl]-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidin-4-one (5.2l): 3.10-3.26 (4H, m., $2CH_2$); 3.58-3.73 (4H, m., $2CH_2$); 4.92 (2H, s., CH_2); 6.8 (1H, t., Ar); 7.00 (2H, d., Ar); 7.22 (2H, t., Ar); 7.55-7.85 (4H, m., Ar); 8.31 (1H, s., CH); 8.50 (1H, s., CH).

1-(2-chlorophenyl)-5-{2-[4-(4-methoxyphenyl)piperazin-1-yl]-2-oxoethyl}-1,5-dihydro-4H-pyrazolo[3,4-d]pyrimidin-4-one (5.2m): 3.00-3.26 (4H, m., $2CH_2$); 3.58-3.73 (4H, m., $2CH_2$); 3.80 (3H, s., OCH_3); 4.92 (2H, s., CH_2); 6.72-7.09 (4H, м., Ar); 7.51-7.89 (4H, m., Ar); 8.32 (1H, s., CH); 8.41 (1H, s., CH).

CONCLUSION

Using PASS program a synthesis of potential anticonvulsants had been planned. The synthesis of 1-(4-bromophenyl)- and 1-(2-chlorophenyl)-1,5-dihydro-4*H*-pyrazolo[3,4-d]pyrimidine-4-one and their alkylation had been carried out. It was found that the reaction of 1-aryl-1,5-dihydro-4*H*-pyrazolo[3,4-d] pyrimidine-4-one with alkyl halides in DMFA conditions - $NaHCO_3$ is selectively performed at 5 position of pyrazolopyrimidine cycle to form N-alkylated derivatives.

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