Section A-Research paper
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Three Step Synthesis and Characterization of novel -1,2,3-triazol-1-yl)-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile hybrids

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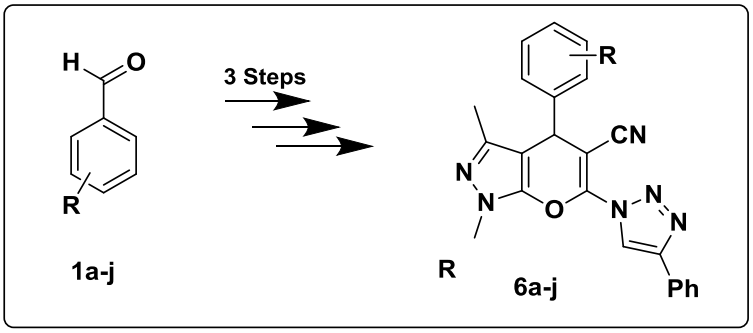
ABSTRACT:

At first blend of 6-amino-1,3-dimethyl-4-phenyl-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile (4a-j) via Knoevenagel condensation and Michael addition, followed by tautomeric cyclisation and conjugation by using Zn $(Proline)_2$ catalyst and then followed 6-azido-1,3-dimethyl-4-phenyl-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile (5a-j) by means of amine to azide conversion. Later on substituted (4-phenyl-1*H*-1,2,3-triazol-1-yl)-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile (6a-j) were synthesized 1,3-dipolar [3+2] cyclo addition using Sharpless catalystwith promising yields depicted (**Scheme I and tables 2-7**) in this manuscript.

Key words:*Pyrazole, 1,2,3-triazole, pyran, Sharpless catalyst*



Graphical Abstract

INTRODUCTION:

The development of novel material by distinctive properties to be worn in various utilizations [1,2]. The specifically huge shell region of nanoparticles makes them extremely active; thus, green chemistry has alert on preparing a biopolymer to serve as a protecting agent for nanoparticles [3]. Hence, in recent times received immense notice from chemists, and using eco-friendly and sustainable polymers for diverse functions has become very much desirable [4]. Starch is one of my favorite's sources of biopolymers. Due to its priceless features such as low price, biodegradability, starch has gained much attention [5].

Conversely, amalgamated benzo-4H-pyran, to be specific, the 4H-chromene derivative, were recognized as an key family of natural oxygen containing heterocyclic compounds be situated comprehensively available in fruitlets and vegetables. 4H-pyran offer diverse biological and pharmaceutical actions such as antibacterial, and anti-rheumatic activities [6,7].

The two families of such aromatic compounds, triazoles, have widely marked, both in terms of their chaste amalgamation and in provisos of usefulness within medication [8,9], farming [10], etc. The prospect to insert in simple and flexible ways functional negotiators in a straight line merged to the heterocycles, by means of click protocols [11,12].

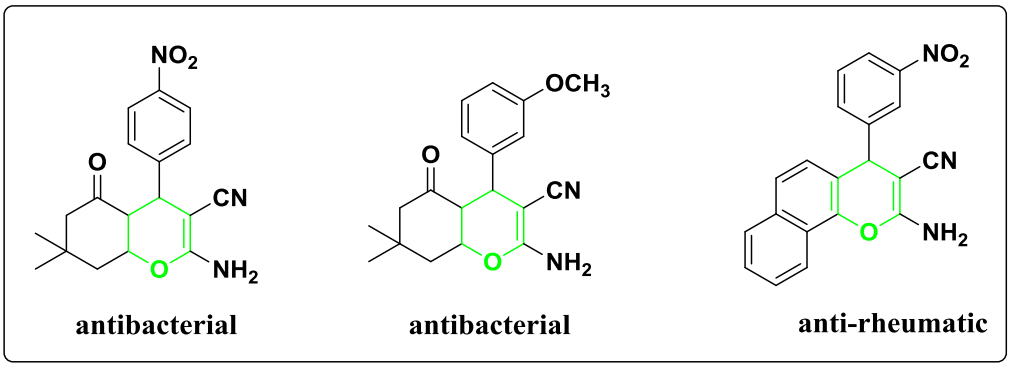


Fig:1 Biologically active pyran derivatives

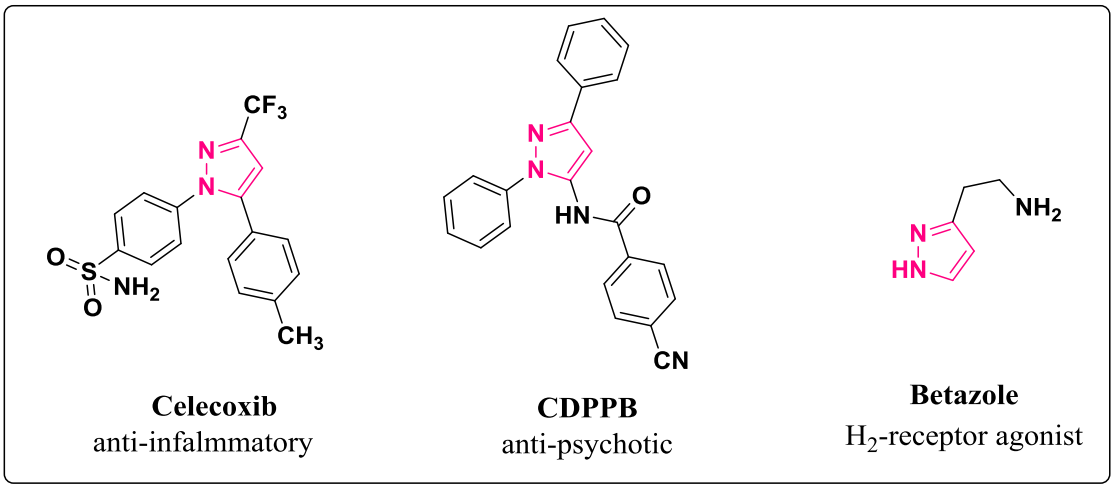


Fig: 2 Medicinally potent pyrazoles

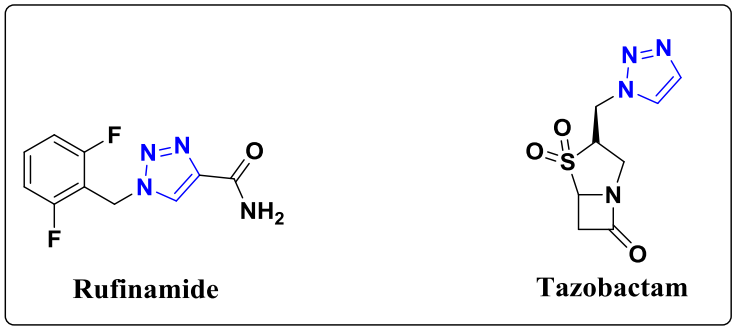


Fig:3 Drugs containing 1,2,3-triazoles

Keeping in mind, biological importance in continuation ofour research work, we planned to construct for the synthesis of noveltriazol- dihydropyrano-pyrazolesfrom readily available chemicals in excellent yields depicted below.

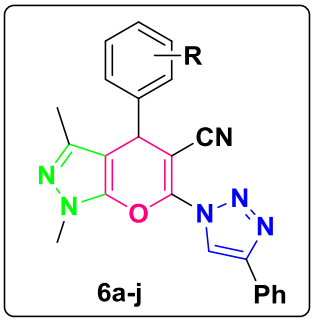


Fig: 4 Designed Target

RESULTS AND DISCUSSION:

Synthesis of 6-amino-1,3-dimethyl-4-phenyl-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile (4a-j):

In a one pot synthesis of**(4a-j)**, the mixture of 2,5-dimethyl-2,4-dihydro-3*H*-pyrazol-3-one(**2**), aromatic aldehydes (**1a-j**) and malononitrile (**3**) was stirred in the EtOH for 3 h under reflux conditions in the presence of the catalyst. The reaction was assumed to proceed through Knoevenagel condensation and Michael addition, followed by tautomeric cyclisation and conjugation by using Zn $(Proline)_2$ catalyst within a reaction time of 3 h gives excellent yields[13].

Synthesis of 6-azido-1,3-dimethyl-4-phenyl-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile (5a-j):

The compounds (4a-j) 1.48 mmol containing amine functionality was was dissolved in CH_3CN (2 mL) in a RB flask and cooled to 0°C in an ice bath. To this stirred mixture was added 2.22 mmol of *t*-BuONO followed by 1.77 mmol $TMSN_3$ drop-wise. The subsequent solution was stirred at RT for 1 h further followed by reaction mixture was focused under vacuum and the crude product was purified by silica gel chromatography (hexane) to give (5a-j).

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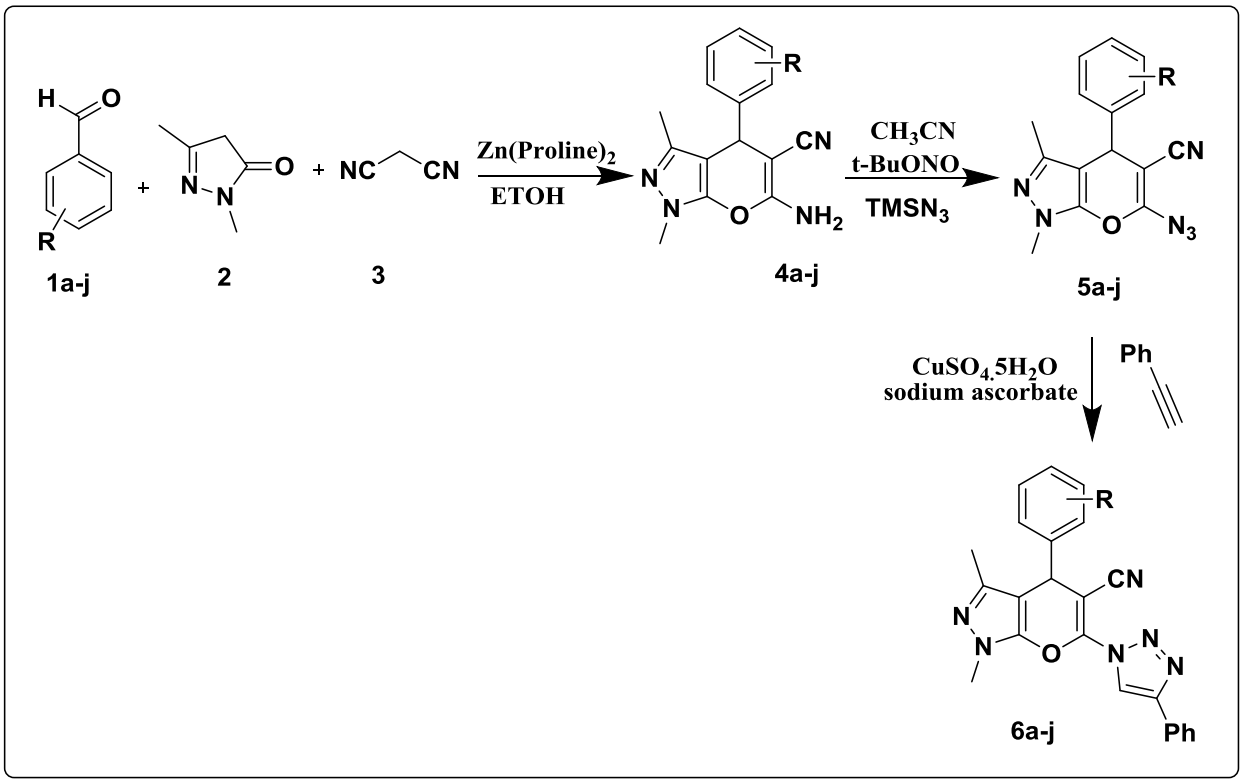
Synthesis of substituted (4-phenyl-1*H*-1,2,3-triazol-1-yl)-1,4-dihydropyrano[2,3 pyrazole-5-carbonitrile (6a-j):

Compound (5a-j) was stirred at RT for 2 h in the presence of 0.54 mmol Phenyl acetylene, aq. solution (0.2 mL) 0.036 mmol of $CuSO_4.5H_2O$ and 0.108 mmol sodium ascorbate which is namely Sharpless catalyst were then added plus the reaction was stirred the produce was then precipitated with methanol to give the product an off white solid of 6a-j**.**

The structures of the commodities has-been elucidated on the root of ^{1}H NMR,^{13}C NMRMS statistics and basic study**.**



Scheme-1 Three step Synthesis of target 6a-j

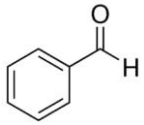
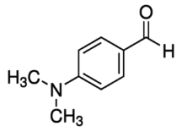
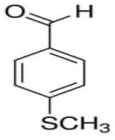
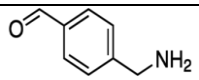
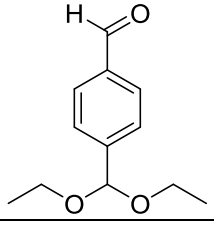
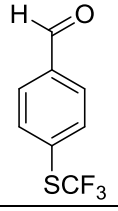
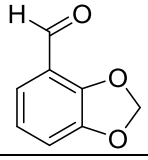
EXPERIMENTAL:

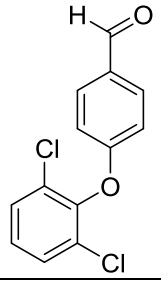
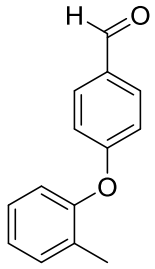
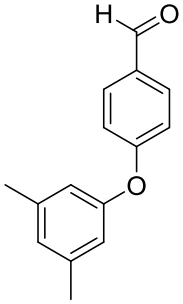
Melting points were determined using a Cintex melting point apparatus and are uncorrected. Thin-layer chromatography (TLC) was performed by using Merck silica gel 60 F254 precoated plates (0.25 mm) and column chromatography was performed by using Silica gel (particle size 100-200 mesh). ^{1}H NMR spectra were recorded on a Bruker AMX 400 MHz spectrometer. Chemical shift values were given in ppm (δ) with TMS as an internal standard. Mass spectra were determined on Agilent LC-1100 (LC-MS) series instrument. Elemental analyses were performed on a Carlo Erba 106 and Perkin Elmer model 240 analyzers.

The following steps are involved for the synthesis of desired target.

Step i: Synthesis of 6-amino-1,3-dimethyl-4-phenyl-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile **4a-j**
Step ii: Synthesis of 6-azido-1,3-dimethyl-4-phenyl-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile**5a-j**
Step iii: Synthesis of substituted (4-phenyl-1H-1,2,3-triazol-1-yl)-1,4-dihydropyrano[2,3-c]pyrazole-5-carbonitrile**6a-j (Shown in Scheme I)**

Table 1: Chemicals list purchased from sigma Aldrich Company

Entry	Name	Structure	CAS number
1a	**Benzaldehyde**		100-52-7
1b	4-(Dimethylamino) benzaldehyde		100-10-7
1c	4-(Methylthio)benzaldehyde		3446-89-7
1d	4-(Aminomethyl)benzaldehyde		186685-87-0
1e	4-(diethoxymethyl)benzaldehyde		81172-89-6
1f	4-((trifluoromethyl)thio)benzaldehyde		4021-50-5
1g	benzo[d][1,3]dioxole-4-carbaldehyde		7797-83-3

1h	4-(2,6-dichlorophenoxy)benzaldehyde		166049-76-9
1i	4-(o-tolyloxy)benzaldehyde		77422-28-7
1j	4-(3,5-dimethylphenoxy)benzaldehyde		287953-82-6

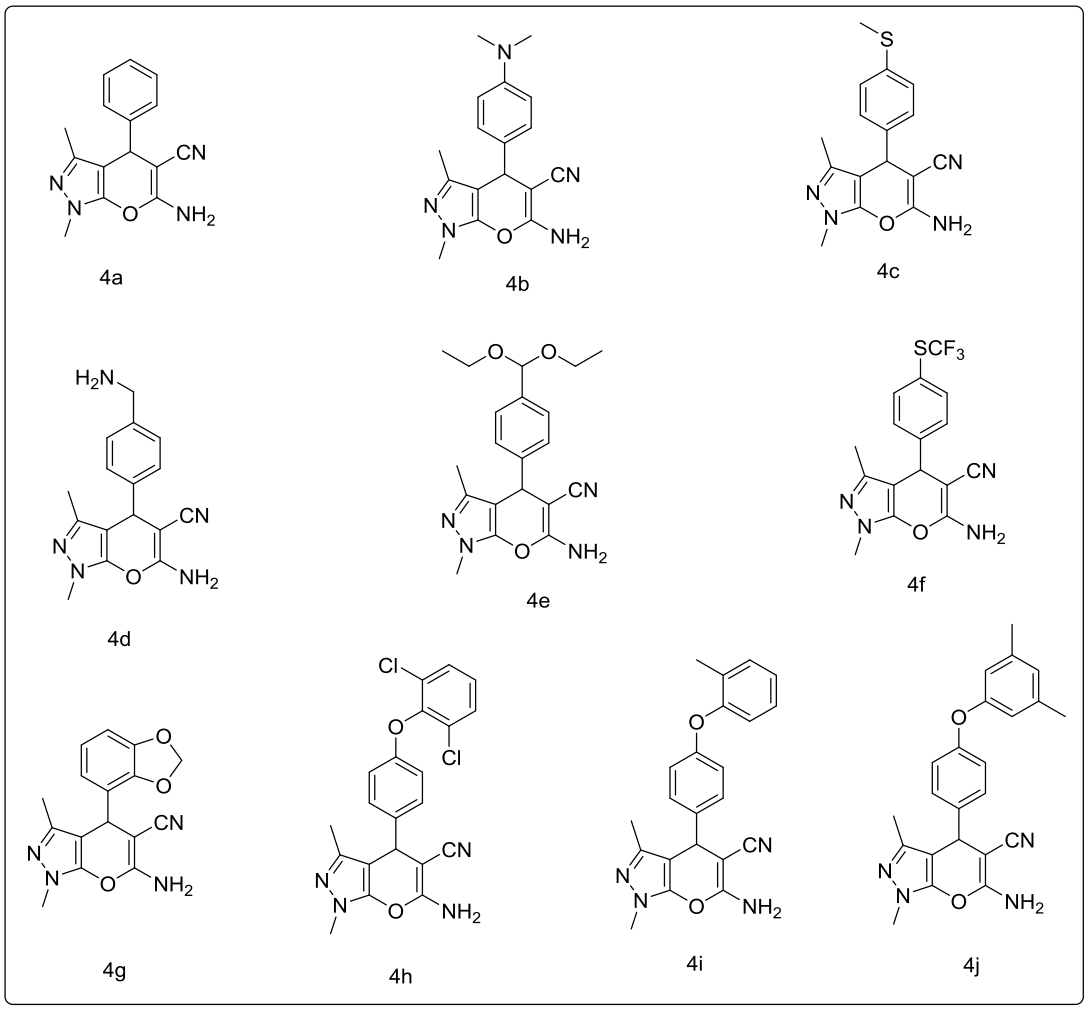


Fig: 5 Structures of compounds 4a-j

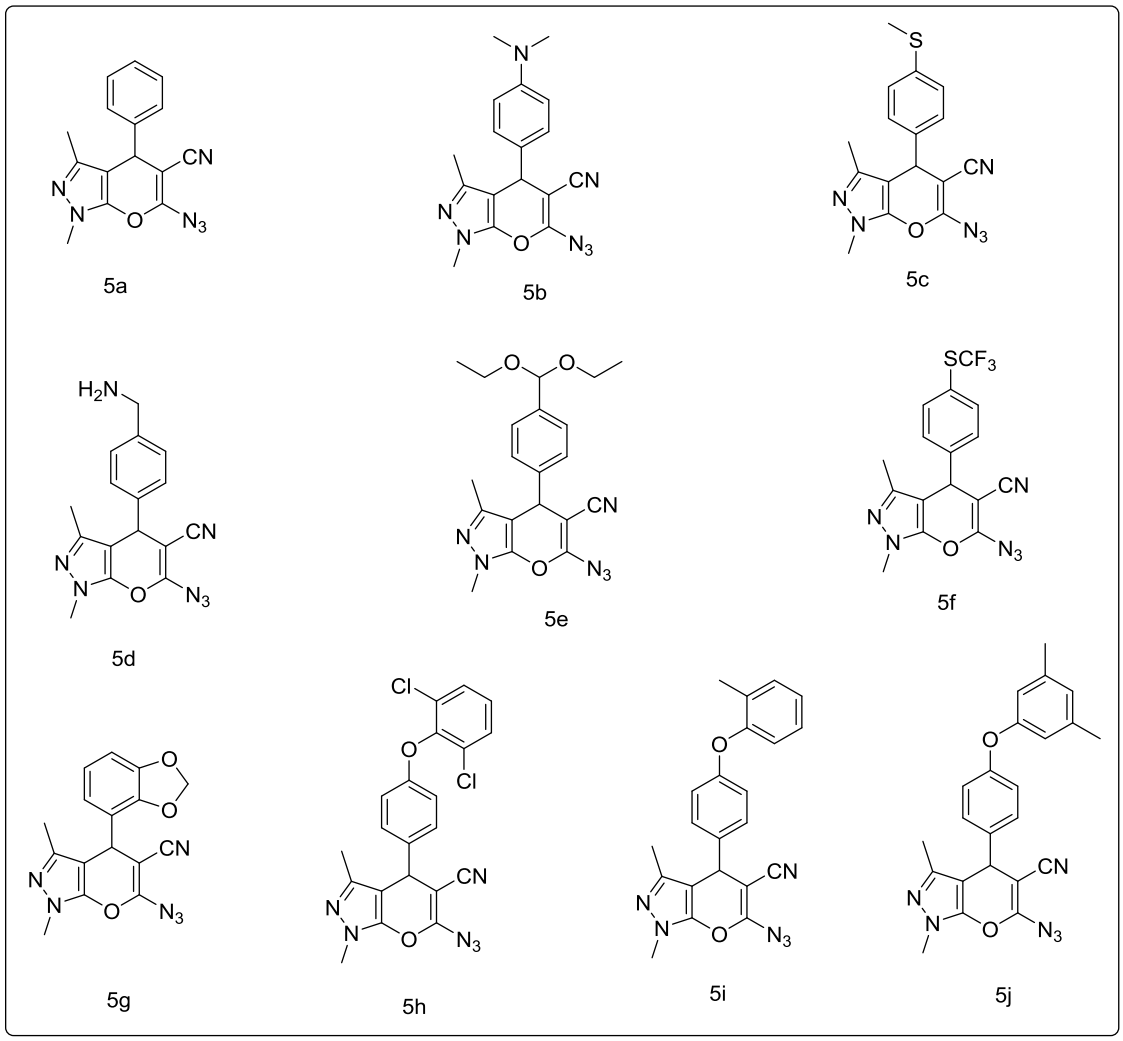


Fig: 6 Structures of compounds containing azidegroup 5a-j

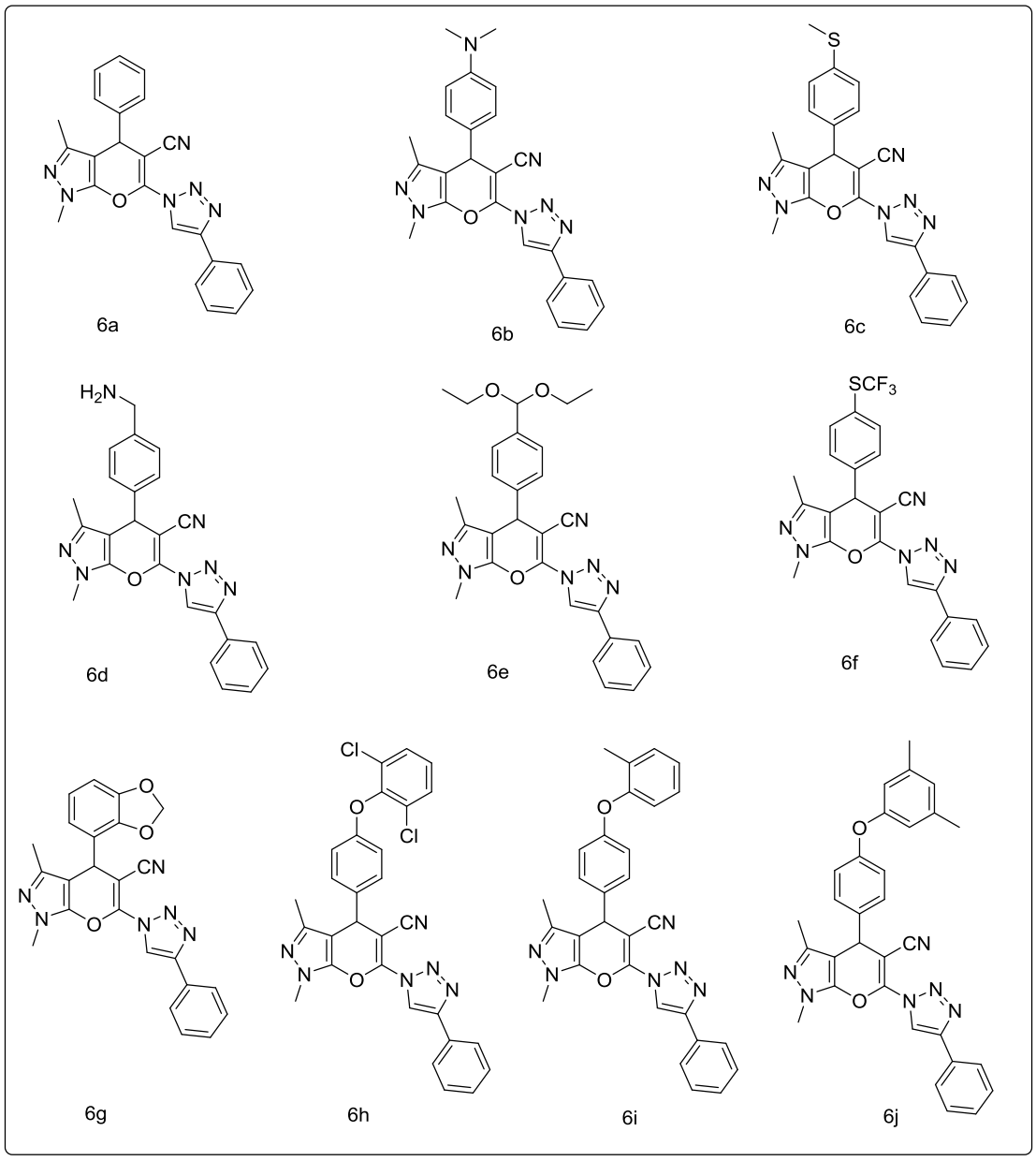


Fig: 7 Structures of newly designed target6a-j

Table 2:Physical data and analytical data of compounds 4a-j

Entry	m.p.°C	Yield (%)	Mol. Formula	Found (%) (Calcd)		
				C	H	N
4a	202	84	$C_{15}H_{14}N_4O$	67.77 (67.65	5.31 5.30	21.06 21.04)

4b	187	90	$C_{17}H_{19}N_5O$	66.12 (66.00	6.20 6.19	22.66 22.64)
4c	255	92	$C_{16}H_{16}N_4OS$	61.64 (61.52	5.17 5.16	17.96 17.94)
4d	186	86	$C_{16}H_{17}N_5O$	65.19 (65.07	5.81 5.80	23.73 23.71)
4e	218	80	$C_{20}H_{24}N_4O_3$	65.32 (65.20	6.58 6.57	15.23 15.21)
4f	224	82	$C_{16}H_{13}F_3N_4OS$	52.58 (52.46	3.60 3.58	15.31 15.29)
4g	216	90	$C_{16}H_{14}N_4O_3$	62.05 (61.93	4.56 4.55	18.08 18.06)
4h	268	83	$C_{21}H_{16}Cl_2N_4O_2$	59.15 (59.03	3.78 3.77	13.13 13.11)
4i	234	91	$C_{22}H_{20}N_4O_2$	71.07 (70.95	5.42 5.41	15.06 15.04)
4j	196	82	$C_{23}H_{22}N_4O_2$	71.60 (71.48	5.75 5.74	14.52 14.50)

Table 3:Physical data and analytical data of compounds 5a-j

Entry	m.p.^oC	Yield (%)	Mol. Formula	Found (%) (Calcd)		
				C	H	N
5a	214	85	$C_{15}H_{12}N_6O$	61.76 (61.64	4.15 4.14	28.77 28.75)
5b	192	83	$C_{17}H_{17}N_7O$	61.00 (60.88	5.12 5.11	29.26 29.24)
5c	245	80	$C_{16}H_{14}N_6OS$	56.91 (56.79	4.18 4.17	24.86 24.84)
5d	168	88	$C_{16}H_{15}N_7O$	59.92 (59.80	4.72 4.71	30.53 30.51)
5e	215	87	$C_{20}H_{22}N_6O_3$	61.02 (60.90	5.63 5.62	21.33 21.31)
5f	220	90	$C_{16}H_{11}F_3N_6OS$	49.00 (48.98	2.84 2.83	21.44 21.42)
5g	262	78	$C_{16}H_{12}N_6O_3$	57.26 (57.14	3.61 3.60	25.01 24.99)
5h	258	81	$C_{21}H_{14}Cl_2N_6O_2$	55.77 (55.65	3.12 3.11	18.56 18.54)
5i	274	74	$C_{22}H_{18}N_6O_2$	66.44 (66.32	4.56 4.55	21.11 21.09)

5j	203	79	$C_{23}H_{20}N_6O_2$	67.00 (66.98	4.90 4.89	20.40 20.38)

Table 4:Physical data and analytical data of compounds 6a-j

Entry	m.p.°C	Yield (%)	Mol. Formula	Found (%) (Calcd)		
				C	H	N
6a	230	80	$C_{23}H_{18}N_6O$	70.16 (70.04	4.61 4.60	21.33 21.31)
6b	206	88	$C_{25}H_{23}N_7O$	68.75 (68.63	5.31 5.30	22.43 22.41)
6c	254	87	$C_{24}H_{20}N_6OS$	65.47 (65.44	4.59 4.58	19.10 19.08)
6d	274	90	$C_{24}H_{21}N_7O$	68.19 (68.07	5.01 5.00	23.17 23.15)
6e	235	78	$C_{28}H_{28}N_6O_3$	67.85 (67.73	5.69 5.68	16.94 16.92)
6f	252	76	$C_{24}H_{17}F_3N_6OS$	58.31 (58.29	3.48 3.47	17.02 17.00)
6g	243	80	$C_{24}H_{18}N_6O_3$	65.87 (65.75	4.15 4.14	19.19 19.17)
6h	268	77	$C_{29}H_{20}Cl_2N_6O_2$	62.83 (62.71	3.64 3.63	15.15 15.13)
6i	280	82	$C_{30}H_{24}N_6O_2$	72.01 (71.99	4.84 4.83	16.81 16.79)
6j	243	81	$C_{31}H_{26}N_6O_2$	72.48 (72.36	5.10 5.09	16.35 16.33)

Table 5: Spectral data of compounds 4a-j

Entry	^{1}H NMR (400 MHz, $CDCl_3$) (δ, ppm)	^{13}CNMR (100 MHz, $CDCl_3$) (δ, ppm)	MS(LCMS): *m/z*
4a	8.21 (s, 2H), 7.33 (d, *J* = 40.6 Hz, 5H), 4.84 (s, 1H), 4.04 (s, 3H), 2.50 (s, 3H).	154.27,151.20,140.41,128.69,127.60, 118.20,89.50,57.33,45.58,35.44,13.62.	266.12
4b	8.22 (s, 2H), 7.20 (s, 2H), 6.64 (d, *J* = 7.5 Hz, 2H), 4.81 (s, 1H), 4.08 (s, 3H), 2.92 (s, 6H), 2.49 (s, 3H).	154.27,151.20,140.41,128.28, 125.89, 118.20, 111.84, 89.50, 57.33, 45.58, 41.90, 35.44, 13.62.	309.16
4c	7.30 (dd, *J* = 19.2, 7.5 Hz, 4H), 6.78 (s, 2H), 4.81 (s, 1H), 4.08 (s, 3H), 2.54 (d, *J* = 47.3 Hz, 6H).	154.27,151.20,145.53,140.41,134.15, 131.14, 123.45, 118.20, 89.50, 57.33, 45.58, 35.44, 16.53, 13.62.	312.10
4d	7.40 (d, *J* = 7.5 Hz, 2H), 7.28 (d, *J* = 7.5 Hz, 2H), 7.07 (s, 2H), 4.81 (s,	154.27,151.20,142.82,140.41,138.73, 131.20, 127.50, 118.20, 89.50, 57.33,	295.14

	1H), 4.07 (d, *J* = 8.8 Hz, 5H), 2.49 (s, 3H), 1.29 (s, 2H).	46.19, 45.58, 35.44, 13.62.	
4e	7.39 (s, 4H), 6.90 (s, 2H), 6.38 (s, 1H), 4.82 (s, 1H), 4.07 (s, 3H), 3.50 (d, *J* = 17.8 Hz, 4H), 2.49 (s, 3H), 1.20 (d, *J* = 11.7 Hz, 6H).	154.27,151.20,141.80,140.41,137.80, 129.54,126.58,118.20,101.01,89.50, 62.98,57.33,45.58,35.44,15.52,13.62.	368.18
4f	7.31 (s, 4H), 6.71 (s, 2H), 4.79 (s, 1H), 4.04 (s, 3H), 2.47 (s, 3H).	154.27,151.20,140.41,140.09, 135.93,132.41,126.31,124.21,122.12, 120.02,118.20,89.50,57.33,45.58, 35.44, 13.62.	366.08
4g	8.16 (s, 2H), 6.96 – 6.54 (m, 3H), 5.90 (s, 2H), 5.48 (s, 1H), 4.04 (s, 3H), 2.52 (s, 3H).	155.16,151.69,148.59,147.85, 140.41,125.63,123.77,118.20,115.17, 102.69, 91.01, 57.80, 37.21, 35.44, 13.62.	310.11
4h	8.47 (s, 2H), 7.33 (s, 2H), 7.16 (s, 2H), 6.94 (d, *J* = 15.9 Hz, 3H), 4.84 (s, 1H), 4.09 (s, 3H), 2.51 (s, 3H).	154.60,154.27,151.20,147.86, 140.41,134.13,129.89,126.95,118.20, 89.50, 57.33, 45.58, 35.44, 13.62.	426.07
4i	7.32 (d, *J* = 7.5 Hz, 2H), 7.20 – 6.87 (m, 6H), 6.74 (s, 2H), 4.79 (s, 1H), 4.07 (s, 3H), 2.43 (d, *J* = 74.7 Hz, 6H).	154.60,154.27,151.20,140.41, 134.56,131.19,130.73,130.17,127.81, 122.74,118.66,118.20, 117.68, 89.50, 57.33, 45.58, 35.44, 15.02, 13.62.	372.16
4j	7.33 (d, *J* = 7.5 Hz, 2H), 6.98 (d, *J* = 7.5 Hz, 2H), 6.80 (t, *J* = 7.2 Hz, 5H), 4.78 (s, 1H), 4.08 (s, 3H), 2.50 (s, 3H), 2.35 (s, 6H).	157.65,154.27,154.09,151.20, 139.68,134.96,130.36,124.22,118.20, 117.80, 115.43, 89.50, 57.33, 45.58,	386.17

Table 6: Spectral data of compounds 5a-j

Entry	^{1}H NMR (400 MHz, $CDCl_3$) (δ, ppm)	^{13}CNMR (100 MHz, $CDCl_3$) (δ, ppm)	MS(LCMS): *m/z*
5a	δ 7.50 – 7.09 (m, 5H), 4.91 (s, 1H), 4.04 (s, 3H), 2.45 (s, 3H).	172.31,152.43, 140.52, 128.69, 127.60, 116.53, 89.41, 66.50, 47.45, 35.44, 13.62.	292.11
5b	7.22 (d, *J* = 7.5 Hz, 2H), 6.77 (d, *J* = 7.5 Hz, 2H), 4.93 (s, 1H), 4.04 (s, 3H), 2.91 (s, 6H), 2.46 (s, 3H).	172.31,152.43, 150.83, 140.41, 128.28, 125.89, 116.53, 111.84, 89.41, 66.50, 47.45, 41.90, 35.44, 13.62.	335.15
5c	7.26 (q, *J* = 7.6 Hz, 4H), 4.90 (s, 1H), 4.04 (s, 3H), 2.59 (s, 3H), 2.47 (s, 3H).	172.31,152.43, 145.53, 140.41, 134.15, 131.14, 123.45, 116.53, 89.41, 66.50, 47.45, 35.44, 16.53, 13.62.	338.09
5d	7.31 (dd, *J* = 51.7, 7.5 Hz, 4H), 4.92 (s, 1H), 4.06 (s, 5H), 2.46 (s, 3H), 1.34 (s, 2H).	172.31,152.43, 142.82, 140.41, 138.73, 131.20, 127.50, 116.53, 89.41, 66.50, 47.45, 46.19, 35.44, 13.62.	321.13
5e	7.31 (dd, *J* = 51.7, 7.5 Hz, 4H), 6.77 (d, *J* = 7.5 Hz, 2H),4.92 (s, 1H), 4.06 (s, 5H), 2.46 (s, 3H), 1.34 (s, 2H).	172.31,152.43, 141.80, 140.41, 137.80, 129.54, 126.58 , 116.53, 101.01, 89.41, 66.50, 62.98, 47.45, 35.44, 15.52	394.18

5f	7.29 (q, *J* = 7.6 Hz, 4H), 4.92 (s, 1H), 4.04 (s, 3H), 2.42 (s, 3H).	172.31,152.43,140.41, 140.09, 135.95, 134.03132.41, 126.31, 124.21, 122.12, 116.53,89.41,66.50,47.45,35.44,13.62.	392.07
5g	6.87 – 6.57 (m, 3H), 5.90 (s, 2H), 5.61 (s, 1H), 4.04 (s, 3H), 2.49 (s, 3H).	171.96,152.99,148.59, 147.85, 140.41, 125.63,123.77,116.53, 115.17, 102.69, 91.24, 65.97, 39.37, 35.44, 13.62.	336.10
5h	7.31 (d, *J* = 7.5 Hz, 2H), 7.06 (dd, *J* = 56.0, 7.5 Hz, 4H), 6.86 (t, *J* = 7.5 Hz, 1H), 4.91 (s, 1H), 4.04 (s, 3H), 2.49 (s, 3H).	172.31,154.60,152.43,147.86, 140.41, 134.13,130.16,129.89, 126.95, 118.32, 116.53,89.41,66.50,47.45,35.44,13.62.	452.06
5i	7.30 (d, *J* = 7.3 Hz, 2H), 7.23 – 6.79 (m, 6H), 4.93 (s, 1H), 4.04 (s, 3H), 2.48 (s, 3H), 2.27 (s, 3H).	172.31,154.60,154.28, 152.43, 140.41, 134.56,131.19,130.73, 130.17, 127.81, 122.74, 118.66, 117.68, 116.53, 89.41, 66.50, 47.45, 35.44, 15.02, 13.62.	398.15
5j	7.33 (d, *J* = 7.5 Hz, 2H), 7.04 (d, *J* = 7.5 Hz, 2H), 6.70 (d, *J* = 25.6 Hz, 3H), 4.91 (s, 1H), 4.05 (s, 3H), 2.50 (s, 3H), 2.34 (s, 6H).	172.31,157.65,154.09, 152.43, 140.41, 139.68,134.96,130.36,124.22, 117.80, 116.53,115.43, 89.41, 66.50, 47.45, 35.44, 21.80, 13.62.	412.16

Table 7: Spectral data of compounds 6a-j

Entry	^{1}H NMR (400 MHz, $CDCl_3$) (δ, ppm)	^{13}CNMR (100 MHz, $CDCl_3$) (δ, ppm)	MS(LCMS) : *m/z*
6a	8.91 (s, 1H), 7.59 (d, *J* = 7.5 Hz, 2H), 7.47 – 7.17 (m, 8H), 4.93 (s, 1H), 4.09 (s, 3H), 2.51 (s,3H).	151.29, 146.82, 140.52, 133.27, 130.41, 128.86, 128.69, 128.49, 127.60, 126.28, 125.77, 124.83, 119.04, 90.99, 65.14, 48.42, 35.44, 13.62.	394.15
6b	9.08 (s, 1H), 7.61 (d, *J* = 8.8 Hz, 2H), 7.48 – 7.28 (m, 3H), 7.18 (d, *J* = 7.3 Hz, 2H), 6.61 (d, *J* = 7.3 Hz, 2H), 4.88 (s, 1H), 4.12 (s, 3H), 2.92 (s, 6H), 2.51 (s,3H).	151.29, 150.83, 146.82, 140.41, 133.27, 130.41, 128.86, 128.28, 126.28, 125.77, 124.83, 119.04, 111.84, 90.99, 65.14, 48.42, 41.90, 35.44, 13.62.	437.20
6c	δ 8.87 (s, 1H), 7.57 (d, *J* = 7.5 Hz, 2H), 7.45 – 7.17 (m, 7H), 4.94 (s, 1H), 4.09 (s, 3H), 2.53 (s, 3H), 2.49 (s, 3H).	151.29, 146.82, 145.53, 140.41, 134.15, 133.27, 131.14, 130.41, 128.86, 126.28, 125.77, 124.83, 123.45, 119.04, 90.99, 65.14, 48.42, 35.44, 16.53, 13.62.	440.14
6d	9.08 (s, 1H), 7.62 (dd, *J* = 7.5, 1.3 Hz, 2H), 7.47 – 7.17 (m, 7H), 4.93 (s, 1H), 4.09 (d, *J* = 32.4 Hz, 5H), 2.51 (s, 3H), 1.29 (s, 2H).	151.29, 146.82, 142.82, 140.41, 138.73, 133.27, 131.20, 130.41, 128.86, 127.50, 126.28, 125.77, 124.83, 119.04, 90.99, 65.14, 48.42, 46.19, 35.44, 13.62.	423.18
6e	9.08 (s, 1H), 7.72 – 7.55 (m, 2H), 7.50 – 7.23 (m, 7H), 6.38 (s, 1H), 4.94 (s, 1H), 4.12 (s, 3H), 3.52 (s,	151.29,146.82,140.41,140.09,135.90,134.19,133.27,132.41,130.41,128.86,126.30, 125.77, 124.83, 124.21, 122.12, 120.02,	496.22

	4H), 2.51 (s, 3H), 1.20 (t, *J* = 5.9 Hz, 6H).	119.04, 90.99, 65.14, 48.42, 35.44, 13.62.	
6f	9.08 (s, 1H), 7.61 (d, *J* = 7.5 Hz, 2H), 7.48 – 7.20 (m, 7H), 4.95 (s, 1H), 4.12 (s, 3H), 2.51 (s,3H).	151.80,148.59,147.85,146.82,140.41,132.06,130.41,128.86,126.28,125.70,125.45,124.83,123.77,119.04,115.17,102.69,92.43,66.05, 40.56, 35.44, 13.62.	494.11
6g	δ 9.09 (s, 1H), 7.62 (d, *J* = 8.8 Hz, 2H), 7.37 (dt, *J* = 17.8, 8.2 Hz, 3H), 7.12 (d, *J* = 8.9 Hz, 1H), 6.99 – 6.68 (m, 2H), 5.90 (s, 2H), 5.26 (s, 1H), 4.12 (s, 3H), 2.52 (s, 3H).	134.13,133.27,130.41,130.16,129.89,128.86,126.95,126.28,125.77, 124.83, 90.99, 65.14, 48.42,	438.14
6h	9.10 (s, 1H), 7.62 (d, *J* = 8.8 Hz, 2H), 7.50 – 7.10 (m, 7H), 6.95 (dd, *J* = 13.4, 7.4 Hz, 3H), 4.92 (s, 1H), 4.13 (s, 3H), 2.52 (s, 3H).	134.56,133.27,131.19,130.73,130.41,130.17,128.86,127.81,126.28,125.77,124.83, 122.74, 90.99, 65.14, 48.42, 35.44, 15.02, 13.62 .	554.10
6i	9.08 (s, 1H), 7.62 (d, *J* = 7.5 Hz, 2H), 7.53 – 7.26 (m, 5H), 7.22 – 6.82 (m, 6H), 4.95 (s, 1H), 4.12 (s, 3H), 2.52 (s, 3H), 2.36 (s,3H).	154.60,154.28,151.29,146.82,140.41,134.56,133.27,131.19,130.73,130.41,130.17, 128.86,127.81,126.28,125.77,124.83,122.74,119.04,118.66,117.68,90.99, 65.14, 48.42, 35.44, 15.02, 13.62.	500.20
6j	9.10 (s, 1H), 7.62 (d, *J* = 8.8 Hz, 2H), 7.39 (dt, *J* = 45.5, 8.5 Hz, 5H), 7.00 (d, *J* = 7.5 Hz, 2H), 6.80 (d, *J* = 16.6 Hz, 3H), 4.94 (s, 1H), 4.13 (s, 3H), 2.52 (s, 3H), 2.35 (s, 6H).	157.65, 154.09, 151.29, 146.83, 140.41, 139.79,134.96,133.28,130.25,128.6,126.28,125.97,124.83,124.22,119.05,117.60, 115.24,90.99, 65.15,48.43,35.45,21.60, 13.63.	514.21

CONCLUSION:

In the current study, we enclose fuse novel triazol- dihydropyrano- pyrazoles with an excellent yields and high purity. The designed compounds were later on confirmed through spectral techniques.

CONFLICT OF INTEREST:

The writers declare no argument of concern, financial or otherwise.

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