Synthesis and Antitumor Activities of 2-(Substituted)phenyl-1,2,4-triazolo[1,5-*a*]pyridines

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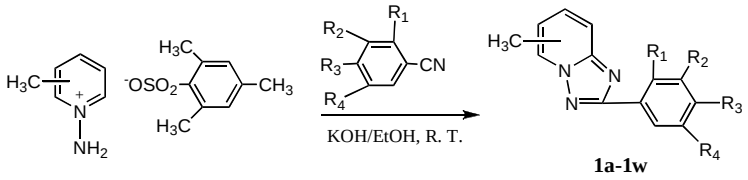

1a-1w

Twenty-three 2-(substituted)phenyl-1,2,4-triazolo[1,5-*a*]pyridines have been synthesized by cycloadditison reaction between *N*-amino methylpyridinium mesitylenesulfonates and substituted benzonitriles under the presence of potassium hydroxide at room temperature. The structures of all products were confirmed by ^{1}H NMR, MS and elemental analyses. The antitumor activities of these compounds were evaluated against human ovary cancer cell line (HO-8910) *in vitro* by MTT method. The preliminary results showed that compound **1e** (IC_{50} 28μM) and compound **1w** (IC_{50} 31μM) exhibited stronger antitumor activities than cisplatin (IC_{50} 35μM) *in vitro*. Hence, **1e** and **1w** have potential antitumor activities and are worth further investigation.

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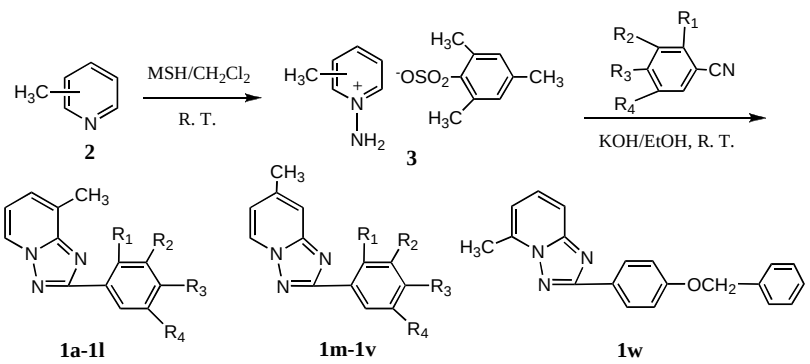
INTRODUCTION

It was well known that many compounds containing triazolopyridine skeleton have interesting bioactivities [1]. For example, 8-amino-2-aryl-1,2,4-triazolo[1,5-*a*]pyridine-6-carboxyl amide derivatives were proved to inhibit the human adenosine 2a (hA2a) receptor [2], the 1,2,4-triazolo[3,4-*a*]pyridine was considered as a constrained template for fibrinogen receptor (GPIIb/IIIa) antagonists [3]. Recently, 2-aryl-1,2,4-triazolo[1,5-*a*]pyridines have been found to have pregnancy interceptive activity [4]. The mechanism of pregnancy interceptive activity was cell apoptosis to cause luteolysis [5]. Because tumor cells grow vigorously like embryo cells, we are interested in whether or not 1,2,4-triazolo[1,5-*a*]pyridines have antitumor activities. Therefore, twenty-three compounds of 2-(substituted)phenyl-1,2,4-triazolo[1,5-*a*]pyridines have been synthesized and their antitumor activities have been evaluated. The most promising compounds were 2-(4-benzyloxyphenyl)-8-methyl-1,2,4-triazolo[1, 5-*a*]pyridine **1e** and 2-(4-benzyloxyphenyl)-5-methyl-1,2,4-triazolo-[1,5-*a*]pyridine **1w**. To the best of our knowledge, the antitumor activities of 1,2,4-triazolo[1,5-*a*]pyridine derivatives have not been yet reported in the literature.

RESULTS AND DISCUSSION

Scheme 1 outlines the synthetic sequences employed in our laboratories for the preparation of **1a-1w**. N-Amination of methylpyridines **2** with *O*-mesitylenesulfonyl hydroxylamine (MSH) afforded *N*-amino methylpyridinium mesitylenesulphonates **3**. Subsequently, 1,3-dipolar cycloaddition reaction between **3** and aromatic nitriles in the presence of potassium hydroxide solution gave target compounds **1a-1w**. Physical properties and

Scheme 1



2 **3** **1a-1l** **1m-1v** **1w**

Table 1

Physical and Analytical Data of Compounds **1a-1w**

Compound	R_1	R_2	R_3	R_4	Mp (°C)	Yield %	Molecular Formula	Analysis % Calcd./Found C	H	N
1a	H	H	OMe	H	123-125	43	$C_{14}H_{13}N_3O$	70.28	5.48	17.56
								70.25	5.46	17.57
1b	H	H	OEt	H	128-129	46	$C_{15}H_{15}N_3O$	71.13	5.97	16.59
								71.14	6.00	16.57
1c	H	H	OBu-n	H	106-108	42	$C_{17}H_{19}N_3O$	72.57	6.81	14.94
								72.50	6.73	14.86
1d	H	H	Cl	H	193-195	40	$C_{13}H_{10}ClN_3$	64.07	4.14	17.24
								64.05	4.13	17.28
1e	H	H	OBz	H	116-118	40	$C_{20}H_{17}N_3O$	76.17	5.43	13.32
								76.25	5.39	13.23
1f	H	H	H	H	100-101	44	$C_{13}H_{11}N_3$	74.62	5.30	20.08
								74.65	5..32	20.05
1g	H	H	NMe_2	H	190-192	46	$C_{15}H_{16}N_4$	71.40	6.39	22.21
								71.42	6.38	22.24
1h	H	OMe	OMe	H	154-156	50	$C_{15}H_{15}N_3O_2$	66.90	5.61	15.60
								66.92	5.59	15.54
1i	H	OCH_2O		H	155-157	46	$C_{14}H_{11}N_3O_2$	66.40	4.38	16.59
								66.42	4.35	16.61
1j	H	OMe	OMe	OMe	127-129	40	$C_{16}H_{17}N_3O_3$	64.20	5.72	14.04
								64.21	5.70	14.01
1k	OMe	H	H	H	123-125	35	$C_{14}H_{13}N_3O$	70.28	5.48	17.56
								72.26	5.47	17.57
1l	H	OMe	H	H	99-101	41	$C_{14}H_{13}N_3O$	70.28	5.48	17.56
								72.30	5.47	17.54
1m	OMe	H	H	H	96-98	36	$C_{14}H_{13}N_3O$	70.28	5.48	17.56
								72.30	5.50	17.58
1n	H	OMe	H	H	143-144	40	$C_{14}H_{13}N_3O$	70.28	5.48	17.56
								72.29	5.50	17.53
1o	H	H	OEt	H	145-147	46	$C_{15}H_{15}N_3O$	71.13	5.97	16.59
								71.16	6.00	16.60
1p	H	H	OBu-n	H	110-112	48	$C_{17}H_{19}N_3O$	72.57	6.81	14.94
								72.62	6.78	14.92
1q	H	H	OBz	H	172-174	33	$C_{20}H_{17}N_3O$	76.17	5.43	13.32
								76.19	5.42	13.33
1r	H	H	NMe_2	H	>250	38	$C_{15}H_{16}N_4$	71.40	6.39	22.21
								71.44	6.37	22.22
1s	H	OMe	OMe	H	136-138	46	$C_{15}H_{15}N_3O_2$	66.90	5.61	15.60
								66.93	5.62	15.57
1t	H	OCH_2O		H	196-198	49	$C_{14}H_{11}N_3O_2$	66.40	4.38	16.59
								66.44	4.37	16.58
1u	H	OMe	OMe	OMe	168-170	46	$C_{16}H_{17}N_3O_3$	64.20	5.72	14.04
								64.21	5.70	13.99
1v	H	H	H	H	139-141	53	$C_{13}H_{11}N_3$	74.62	5.30	20.08
								74.65	5.31	20.05
1w	/	/	/	/	124-126	34	$C_{20}H_{17}N_3O$	76.17	5.43	13.32
								76.14	5.42	13.29

elemental analyses data of **1a-1w** are summarized in Table 1.

The antitumor activities of **1a-1w** were evaluated against human ovary cancer cell line (HO-8910) *in vitro* by MTT method [6]. The results are summarized in Table 2. The IC_{50} value represents the drug concentration (μM) required to inhibit the cell growth by 50%. The preliminary results showed that some synthetic compounds exhibited activities against human ovary cancer cell line (HO-8910) *in vitro*. The most promising compounds were 2-(4-benzyloxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine **1e** and 2-(4-benzyloxyphenyl)-5-methyl-1,2,4-triazolo[1,5-*a*]pyridine **1w**. Their IC_{50} values were 28μM and 31μM, respectively. They are more potent than cisplatin (IC_{50} 35μM) and are worth farther investigation.

EXPERIMENTAL

Melting points were recorded on a BUCHI melting point B-540 apparatus and are uncorrected. ^{1}H NMR spectra were determined in $CDCl_3$ on a Bruker 400 MHz or 500 MHz

Table 2

Antitumor Activities of Compounds **1a-1w**

Compound	**1a**	**1b**	**1c**	**1d**	**1e**	**1f**	**1g**	**1h**	**1i**
IC_{50} μM	920	*	*	*	28	*	*	*	*
Compound	**1j**	**1k**	**1l**	**1m**	**1n**	**1o**	**1p**	**1q**	**1r**
IC_{50} μM	*	618	*	*	958	*	*	*	*
Compound	**1s**	**1t**	**1u**	**1v**	**1w**	cisplatin			
IC_{50} μM	1400	*	237	212	31	35			

*: The IC_{50} values were more than 1500 μM.

spectrometer with $SiMe_4$ as the internal standard. J values are given in Hz. Mass spectral data were obtained by electron ionization (70 eV) on HP5989B instrument. *N*-Aminomethyl-pyridinium mesitylenesulfonates were prepared by the procedure described in reference [7]. Column chromatography purifycations were carried out using silica gel (200-300 mesh) with hexane-EtOAc.

General Procedure for the Synthesis of 2-(substituted)-phenyl-1,2,4-triazolo[1,5-*a*]pyridines (1a-1w). A solution of 3.08 g (10 mmol) *N*-amino methylpyridinium mesitylene-sulfonate (**3**) and 10 mmol substituted benzonitrile dissolved in 15 ml of ethanol was cooled by ice-water then 5.2 ml of 2 *M* KOH was added dropwise. After the addition was complete, the solution was allowed to warm to room temperature and continued to stir for an additional 24 hours. Most of the ethanol was evaporated under reduced pressure. The residual was extracted with $CHCl_3$ (3 x 10 ml). The $CHCl_3$ layer was dried over anhydrous Na_2SO_4 and evaporated to dryness under reduced pressure. The residue was purified by column chromatography to afford the target compound.

2-(4-Methoxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1a). This compound was obtained as a white solid. ^{1}H nmr:2.71 (s, 3H, 8-CH_3), 3.90 (s, 3H, 4-OCH_3), 6.90 (t, 1H, 6-H, J=6.9Hz), 7.02 (d, 2H, phenyl protons, J=8.8Hz), 7.27 (d, 1H, 7-H, J= 6.9Hz), 8.25 (d, 2H, phenyl protons, J=8.8Hz), 8.45 (d, 1H, 5-H, J=6.9Hz); ms: m/z 239 (M^+).

2-(4-Ethoxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1b). This compound was obtained as a white solid. ^{1}H nmr:1.45 (t, 3H, -CH_2**CH_3**, J=7.0Hz), 2.70 (s, 3H, 8-CH_3), 4.11 (q, 2H, -OCH_2, J=7.0Hz), 6.89 (t, 1H, 6-H, J=6.9Hz), 7.00 (d, 2H, phenyl protons, J=8.8Hz), 7.26 (dd, 1H, 7-H, J=0.8, 6.9Hz), 8.23 (d, 2H, phenyl protons, J=8.8Hz), 8.43 (d, 1H, 5-H, J= 6.9Hz); ms: m/z 253 (M^+).

2-(4-Butoxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1c). This compound was obtained as a white solid. ^{1}H nmr: 1.02 (t, 3H, CH_3, J=7.5Hz), 1.54 (m, 2H, -**CH_2**CH_3), 1.82 (m, 2H, -CH_2**CH_2**CH_2CH_3), 2.71 (s, 3H, 8-CH_3), 4.06 (t, 2H, -O**CH_2**CH_2-CH_2CH_3, J=6.5Hz), 6.89 (t, 1H, 6-H, J=7.0Hz), 7.02 (d, 2H, phenyl protons, J=8.8Hz), 7.27 (d, 1H, 7-H, J=7.0Hz), 8.24 (d, 2H, phenyl protons, J=8.8Hz), 8.44 (d, 1H, 5-H, J=7.0Hz); ms: m/z 281 (M^+).

2-(4-Chlorophenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1d). This compound was obtained as a white solid. ^{1}H nmr: 2.70 (s, 3H, 8-CH_3), 6.93 (t, 1H, 6-H, J=6.9Hz), 7.30 (d, 1H, 7-H, J=6.9Hz), 7.46 (d, 2H, phenyl protons, J=8.6Hz), 8.25 (d, 2H, phenyl protons, J=8.6Hz), 8.45 (d, 1H, 5-H, J= 6.9Hz); ms: m/z 243 (M^+), 245 $(M+2)^+$.

2-(4-Benzyloxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1e). This compound was obtained as a white solid. ^{1}H nmr: 2.69 (s, 3H, 8-CH_3), 5.14 (s, 2H, -OCH_2), 6.89 (d, 1H, 6-H, J=6.9Hz), 7.09 (d, 2H, phenyl protons, J=8.6Hz), 7.26 (br s, 1H, 7-H), 7.34 (m, 1H, Ar-H),7.40 (dd, 2H, phenyl protons, J=7.4, 7.6Hz), 7.46 (d, 2H, Ar-H, J=7.4Hz), 8.24 (d, 2H, phenyl protons, J=8.6Hz), 8.43 (d, 1H, 5-H, J=6.8Hz) ms: m/z 315 (M^+).

2-Phenyl-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1f). This compound was obtained as a white solid. ^{1}H nmr: 2.70 (s, 3H, 8-CH_3), 6.90 (t, 1H, 6-H, J=6.9Hz), 7.27 (br s, 1H, 7-H), 7.51 (m, 3H, phenyl protons), 8.30 (m, 2H, phenyl protons), 8.45 (d, 1H, 5-H, J=6.9Hz). ms: m/z 209 (M^+).

2-(4-Dimethylaminophenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]-pyridine (1g). This compound was obtained as a yellow solid. ^{1}H nmr: 2.69 (s, 3H, 8-CH_3), 3.05 (s, 6H, -$N(CH_3)_2$), 6.81 (d, 2H, phenyl protons, J=8.8Hz), 6.85 (t, 1H, 6-H, J=6.9Hz), 7.23 (d, 1H, 7-H, J=6.9Hz), 8.17 (d, 2H, phenyl protons, J=8.8Hz), 8.43 (d, 1H, 5-H, J=6.9Hz). ms: m/z 252 (M^+).

2-(3,4-Dimethoxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]-pyridine (1h). This compound was obtained as a white solid. ^{1}H nmr: 2.69 (s, 3H, 8-CH_3), 3.95 (s, 3H, 4-OCH_3), 4.03 (s, 3H, 3-OCH_3), 6.87 (t, 1H, 6-H, J=6.9Hz), 6.97 (d, 1H, phenyl proton, J=8.4Hz), 7.24 (d, 1H, 7-H, J=6.9Hz),7.83 (d, 1H, phenyl proton, J=1.8Hz), 7.90 (dd, 1H, phenyl proton, J=1.8, 8.4Hz), 8.43 (d, 1H, 5-H, J=6.9Hz). ms: m/z 269 (M^+).

2-(3,4-Methylenedioxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1i). This compound was obtained as a white solid. ^{1}H nmr: 2.67 (s, 3H, 8-CH_3), 6.03 (s, 2H, -CH_2-), 6.88 (t, 1H, 6-H, J=6.9Hz), 6.92 (d, 1H, phenyl proton, J=8.1Hz), 7.25 (m, 1H, 7-H), 7.76 (d, 1H, phenyl proton, J=1.6Hz), 7.86 (dd, 1H, phenyl proton, J=1.6, 8.1Hz), 8.42 (d, 1H, 5-H, J= 6.9Hz). ms: m/z 253 (M^+).

2-(3,4,5-Trimethoxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]-pyridine (1j). This compound was obtained as a white solid. ^{1}H nmr: 2.72 (s, 3H, 8-CH_3), 3.92 (s, 3H, 4-OCH_3), 4.01 (s, 6H, 3-OCH_3 and 5-OCH_3), 6.88 (t, 1H, 6-H, J=6.9Hz), 7.26 (d, 1H, 7-H, J=6.9Hz), 7.85 (s, 2H, phenyl protons), 8.20 (d, 1H, 5-H, J=6.9Hz). ms: m/z 299 (M^+).

2-(2-Methoxyphenyl)-8-methyl-1,2,4-triazol[1,5-*a*]pyridine (1k). This compound was obtained as a white solid. ^{1}H nmr: 2.69 (s, 3H, 8-CH_3), 3.96 (s, 3H, 2-OCH_3), 6.88 (t, 1H, 6-H, J=6.6Hz), 7.07 (m, 2H, phenyl protons), 7.26 (d, 1H, 7-H, J=6.6Hz), 7.43 (t, 1H, Ar-H, J= 7.2Hz), 8.07 (dd, 1H, phenyl ptoton, J=1.2, 7.2Hz), 8.50 (d, 1H, 5-H, J= 6.6Hz). ms: m/z 239 (M^+).

2-(3-Methoxyphenyl)-8-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1l). This compound was obtained as a white solid. ^{1}H nmr: 2.70 (s, 3H, 8-CH_3), 3.93 (s, 3H, 3-OCH_3), 6.90 (t, 1H, 6-H, J=6.9Hz), 7.01 (dd, 1H, phenyl proton, J=2.4, 7.9Hz), 7.26 (dd, 1H, 7-H, J=0.6, J= 6.9Hz), 7.40 (t, 1H, phenyl proton, J=7.9Hz), 7.84 (s, 1H, Ar-H), 7.90 (d, 1H, phenyl proton, J=7.9Hz), 8.45 (d, 1H, 5-H, J=6.9Hz). ms: m/z 239 (M^+).

2-(2-Methoxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1m). This compound was obtained as a white solid. ^{1}H nmr: 2.49 (s, 3H, 7-CH_3), 3.92 (s, 3H, 2-OCH_3), 6.83 (dd, 1H, 6-H, J=1.4, 6.9Hz), 7.02 (dd, 1H, phenyl proton, J=2.2, 8.0Hz), 7.43 (t, 1H, phenyl proton, J=8.0Hz), 7.51 (s, 1H, 8-H), 7.81 (d, 1H, phenyl proton, J=2.2Hz), 7.87 (d, 1H, phenyl proton, J=8.0Hz), 8.45 (d, 1H, 5-H, J=6.9Hz). ms: m/z 239 (M^+).

2-(3-Methoxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1n). This compound was obtained as a white solid. ^{1}H nmr: 2.49 (s, 3H, 7-CH_3), 3.92 (s, 3H, 3-OCH_3), 6.83 (dd, 1H, 6-H, J=1.4, 6.9Hz), 7.02 (dd, 1H, phenyl proton, J=2.1, 8.1Hz), 7.40 (t, 1H, phenyl proton, J=8.1Hz), 7.51 (s, 1H, 8-H), 7.81 (d, 1H, phenyl proton, J=2.1Hz), 7.87 (d, 1H, phenyl proton, J=8.1Hz), 8.45 (d, 1H, 5-H, J=6.9Hz). ms: m/z 239 (M^+).

2-(4-Ethoxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1o). This compound was obtained as a white solid. ^{1}H nmr: 1.45 (t, 3H, -CH_3, J=6.9Hz), 2.48 (s, 3H,7-CH_3), 4.10 (q, 2H, -**CH_2**CH_3, J=6.9Hz), 6.79 (dd, 1H, 6-H, J=1.5, 6.9Hz), 6.99 (d, 2H, phenyl protons, J=8.7Hz), 7.47 (d, 1H, 8-H, J=0.7Hz), 8.18 (d, 2H, phenyl protons, J=8.7Hz), 8.43 (d, 1H, 5-H, J=6.9Hz). ms: m/z 253 (M^+).

2-(4-Butoxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1p). This compound was obtained as a white solid. ^{1}H nmr: 0.99 (t, 3H, -CH_2**CH_3**, J=7.4Hz), 1.52 (m, 2H, -**CH_2**CH_3), 1.81 (m, 2H, -**CH_2**CH_2CH_3), 2.49 (s, 3H, 7-CH_3), 4.03 (t, 2H, -OCH_2-, J=6.5Hz), 6.81 (dd, 1H, 6-H, J=1.1, 6.9Hz), 7.00 (d, 2H, phenyl protons, J=8.8Hz), 7.50 (s, 1H, 8-H), 8.19 (d, 2H, phenyl protons, J=8.8Hz), 8.43 (d, 1H, 5-H, J=6.9Hz). ms: m/z 281 (M^+).

2-(4-Benzyloxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1q). This compound was obtained as a white solid. ^{1}H nmr: 2.50 (s, 3H, 7-CH_3), 5.14 (s, 2H, -CH_2), 6.82 (dd, 1H, 6-H, J=1.3, 6.9Hz), 7.10 (d, 2H, phenyl protons, J=8.8Hz), 7.34-7.50 (m, 6H, 8-H and phenyl protons), , 8.21 (d, 2H, phenyl protons, J=8.8Hz), 8.44 (d, 1H, 5-H, J=6.9Hz). ms: m/z 315 (M^+).

2-(4-Dimethylaminophenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]-pyridine (1r). This compound was obtained as a yellow solid. ^{1}H nmr: 2.46 (s, 3H, 7-CH_3), 3.03 (s, 6H, -$N(CH_3)_2$), 6.74 (dd, 1H, 6-H, J=1.5, 6.9Hz), 6.80 (d, 2H, phenyl protons, J=8.9Hz), 7.44 (s, 1H, 8-H), 8.13 (d, 2H, phenyl protons, J=8.9Hz), 8.40 (d, 1H, 5-H, J=6.9Hz). ms: m/z 252 (M^+).

2-(3,4-Dimethoxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]-pyridine (1s). This compound was obtained as a white solid. ^{1}H nmr: 2.49 (s, 3H, 7-CH_3), 3.96 (s, 3H, 4-OCH_3), 4.02 (s, 3H, 3-OCH_3), 6.81 (dd, 1H, 6-H, J=1.6, 6.9Hz), 6.98 (d, 1H, phenyl proton, J=8.4Hz), 7.49 (s, 1H, 8-H), 7.79 (d, 1H, phenyl proton, J=1.9Hz), 7.88 (dd, 1H, phenyl proton, J=1.9, 8.4Hz), 8.44 (d, 1H, 5-H, J=6.9Hz). ms: m/z 269 (M^+).

2-(3,4-Methylenedioxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1t). This compound was obtained as a white solid. ^{1}H nmr: 2.49 (s, 3H, 7-CH_3), 6.04 (s, 2H, -OCH_2), 6.81 (dd, 1H, 6-H, J=1.6, 6.9Hz), 6.92 (d, 1H, phenyl proton, J=8.1Hz), 7.48 (s, 1H, 8-H), 7.73 (d, 1H, phenyl proton, J=1.6Hz), 7.82 (dd, 1H, phenyl proton, J=1.6, 8.1Hz), 8.43 (d, 1H, 5-H, J=6.9Hz). ms: m/z 253 (M^+).

2-(3,4,5-Trimethoxyphenyl)-7-methyl-1,2,4-triazolo[1,5-*a*]-pyridine (1u). This compound was obtained as a white solid. ^{1}H nmr: 2.50 (s, 3H, 7-CH_3), 3.88 (s, 3H, 4-OCH_3), 4.00 (s, 6H, 3 and 5-OCH_3), 6.84 (d, 1H, 6-H, J=6.8Hz), 7.53 (m, 3H, 8-H and phenyl protons), 8.45 (d, 1H, 5-H, J=6.8Hz). ms: m/z 299 (M^+).

2-Phenyl-7-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1v). This compound was obtained as a white solid. ^{1}H nmr: 2.49 (s, 3H, 7-CH_3), 6.83 (dd, 1H, 6-H, J=1.6Hz, J=6.9Hz), 7.48 (m, 4H, 8-H and phenyl protons), 8.27 (m, 2H, phenyl protons), 8.46 (d, 1H, 5-H, J= 6.9Hz). ms: m/z 209 (M^+).

2-(4-Benzyloxyphenyl)-5-methyl-1,2,4-triazolo[1,5-*a*]pyridine (1w). This compound was obtained as a white solid. ^{1}H nmr: 2.83 (s, 3H, 5-CH_3), 5.15 (s, 2H, -CH_2), 6.81 (d, 1H, 6-H, J=7.0Hz), 7.10 (d, 2H, phenyl protons, J=8.8Hz), 7.35 (t, 1H, 7-H, J=7.0Hz), 7.40-7.44 (m, 3H, phenyl protons), 7.47 (d, J=7.4Hz, 2H, phenyl protons), 7.62 (d, 1H, 8-H, J=7.0Hz), 8.27 (d, 2H, phenyl protons, J=8.8Hz). ms: m/z 315 (M^+).

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