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Microwave Assisted Synthesis of Novel Fused Pyrazolines

KEYWORDS: chalcones, antimicrobial activity, green route of synthesis.

Ku. Shilpa J. Deshmukh
Ruperi" Gandhi Nagar Nr. Gupta Hospital Chikhali, Dist Buldana. Pin-443201 Maharastra

Dr. Y. K. Meshram
G. S. science ,Arts and Commerce college Khamgaon, Maharastra

ABSTRACT *we developed an efficient, eco-friendly and cost effective microwave assisted protocol for the synthesis of fused pyrazolines. By reaction of substituted chalones with hydrazine hydrate in acetic acid. A considerable enhancement in the reaction rate has been observed with better yields. The structure of synthesized pyrazolines was confirmed by 1HNMRand IR and spectral analysis. Lastly the antimicrobial activity of synthesized compounds was evaluated.*

Introduction-

Many heterocyclic compounds due to their specific activity are employed in the treatment of many infectious diseases. Pyrazolines are well known, and important nitrogen-containing 5-membered heterocyclic compounds and various methods have been worked out for their synthesis.[1] pyrazolines constitute an interesting class of heterocycles due to their synthetic versatility and effective biological activities such as anticancer[2], antioxidant[3], antibacterial[4], antifungal[5], antidepressant[6-8], antiinflammatory[9], anticonvulsant[10], antitumor[11], analgesic[12] properties.

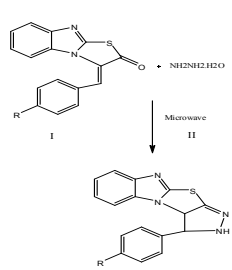
The pyrazoline function is quite stable fragement is bioactive moieties to synthesis new compounds possessing biological activities. High speed microwave assisted chemistry is being utilized in recent years. Successfully in various fields of synthetic organic chemistry. Literature reviews prove the synthetic utility of MORE chemistry in routine organic synthesis [13-15]. It can be termed as 'e-chemistry' economical and ecofriendly and is believed to be a step towards green chemistry. Under the framework of "green chemistry" we were, therefore, interested in developing a rapid, microwave assisted protocol for synthesis of fused pyrazolines.

Method and Material-

All the compounds are reported ones, the m.p. were determined in open capillaries and are uncorrected. The purity of the compounds was ascertained by TLC on silica gel plate. Characterization of the compounds were done by 1H-NMRand IR spectral studies.

General Procedure-

When equimolar mixture of 3(4-substituted benzylidene) benzo- thiazolo (3,2a) imidazol (2-(3H)one (I) (0,01) and hydrazine hydrate(II) (0.01) and glacial acetic acid were taken in conical flask.. then the reaction mixture was subjected to microwave irradiation for 3 to 5min at 180 watt. Then the solution was kept at room temp and poured on crushed ice. The final product was purified by ethanol



Physical data of synthesized compound are presented as- Table No.1

Compound	R	Reaction time(min)	Mol. formula	Yield	Mol.wt	Melt.pt.°c
A	CH3	3.5O	$C_{17}H_{14}N_4S$	68%	306	185-187°c
B	Cl	4.22	$C_{16}H_{11}ClN_4S$	58%	326	168-170°c
C	H	4.50	$C_{16}H_{12}N_4S$	63%	292	177-180°c

Spectral data of synthesized pyrazolines-

3-(p-tolyl)-3,3a-dihydro-2H-benzo[4,5]imidazo[2,1-b]pyrazolo [4,3-d] thiazole.-

1H NMR DMSO,ppm) 2.49(s,CH_3),7.10(s,N-NHhydrazid),7.40 (dd benzene),7.50-8.10

(dd,benzimidazole). IR(KBR pallets);,. 677,608 (C-S-C str. of thiazolyl),1224(C-N str.of pyrazoline), 1574(C=N str of pyrazoline),.,1502,1404(C=C str.and 3079 C-H str.of aromatic).

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3-(p-chloro benzylidene)-3,3a-dihydro-2H-benzo[4,5] imidazo [2,1-b]pyrazolo [4,3-d] thiazole.-

1H NMR DMSO,ppm) 4.25(d,methine),7.10(s,N-NH hydrazid),7.30 (dd benzene),7.35-7.59 (dd,benzimidazole). IR(KBR pallets); 1570,(C=C str.and C-H str.3080 Aromatic), , 1232,(C-N str.and 1580C=N str.of pyrazoline), 665(C-S-C,str thiazolyl).

3-(p-hydro benzylidene) -3,3a-dihydro-2H-benzo [4,5]imidazo [2,1-b] pyrazolo [4,3-d] thiazole

1H NMR (DMSO,ppm) 3.30(s,methine),7.00(s, N-NH hydrazid),7.40 (dd benzene),7.40 (dd,benzimidazole) .IR (KBR pallets); 680,606(C-S-C, str.thiazolyl) , 1244, 1223(C-N str. and1571 C=N str. Of pyrazoline), 1506,1439 (C=C str. and 3079C-H str.of aromatic).

Antimicrobial Evolution-

The biological activities of synthesized compounds are summarized in table1. the antibacterial investigation was carried out against Escherichia coli, Pseudomonas aeruginosa and Klebsiella pneumoniae, and antiyeast activity against Candida albicans, Candida glabrata and Candida tropicalis strain by measuring the zone of inhibition.

The results are showed in Table No.2

Antibactrial and Antiyeast activity of test compounds			
Test Organism	Zone of inhibition (mm)compound		
	A	B	C
Bacteria			
Escherichia coli	10	12	_
Pseudomonasaeruginosa	10	13	8
Klebsiella pneumoniae	_	8	_
Pathogenic Yeast			
Candida albicans	ND	ND	ND
Candida glabrata	ND	ND	ND
Candida tropicalis	ND	ND	ND

Result, Discussion & Conclusion-

A new series of novel pyrazolines were synthesized by greener route with higher yield. Structure of these compounds have been confirmed by 1H-NMR and FTIR spectral data. Most of the synthesized pyrazolines shows good to moderate antimicrobial activity.

REFERENCE

1. Levai, A. Chem. Heterocyclic Compd. 1997, 33, 647-659 . 2. Nimavat K S, Popat K H and Joshi H S, Indian J Hetrocycl Chem., 2003, 12, 225-228. 3. Venkatesh P, Hari Prasath K, Sharfudeen S, Soumya V, Spandana V and Priyanka J, J Pharm Res., 2012, 5(5), 2875-2877. 4. Seham Y H, Molecules, 2013, 18(3), 2683-2711; DOI:10.3390/molecules18032683 5. Shailesh H S and Pankaj S P, Chem Sci Trans., 2012, 1(3), 632-637; DOI:10.7598/cst2012.274 6. Palaska E, Aytemir M, Uzbay T and Erol D, Eur J Med Chem., 2001, 36(6), 539-543; DOI:10.1016/S0223-5234(01)01243-0 7. Rajendra Prasad Y, Lakshmana Rao A, Prasoona L, Murali K and Ravi Kumar P, Bioorg Medl Chem Lett., 2005, 15(22), 5030-5034; DOI:10.1016/j.bmcl.2005.08.040 8. Palaska E, Erol D and Demirdamar R, Eur J Med Chem., 1996, 31(1), 43-47; DOI:10.1016/S0223-5234(96)80005-5 9. Ozdemir Z, Kandilici B H, Gumucel B, Calis U and Bilgin A A, Eur J Med Chem., 2007, 42(3), 373-379; DOI:10.1016/j.ejmech.2006.09.006 10. Ramesh B and Sumana T, J Chem., 2010, 7(2), 514-516; DOI:10.1155/2010/731675 11. Jainey P J and Bhat I K. J Young Pharm., 2012, 4(2), 82–87; DOI:10.4103/0975-1483.96621 12. Sridhar S and Rajendraprasad Y, J Chem., 2012, 9(4), 1810-1815; DOI:10.1155/2012/476989 13 Kidwal M, Dave B, Venkatramanan R, Indian J. Chem.2002;41(B):2414. 14 Gupta R,Gupta AK,Paul S, Kachroo P L, , Indian J. Chem 1995; 34(B):61. 15 Ingle R,Nikalje Anna Pratima, Ind. Jour. Of Heterocyl. Chem. 2007; 17; 49-50