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Design and synthesis of novel schiff's bases having N-(4H-1, 2,4-triazole-4-yl)benzamido moiety as antimicrobial and anti-inflammatory agents

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ABSTRACT

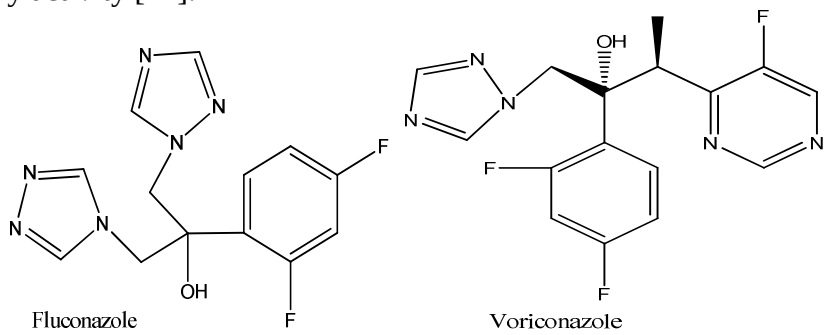
The azoles pharmacophore is still considered a viable lead structure for the synthesis of more efficacious and broad spectrum antimicrobial agents. Potential antibacterial, antifungal and anti-inflammatory activities are encountered with Schiff's bases of triazole. Therefore, this study presents the synthesis, characterization and evaluation of antimicrobial & anti-inflammatory activity a new series of Schiff's bases of trizoles that are structurally related to the famous active azoles pharmacophore. A detailed discussion of the structural elucidation of the newly synthesized compounds was confirmed by elemental analysis, melting point, Thin Layer Chromatography, FT-IR, NMR and Mass spectra. Antimicrobial evaluation revealed that compounds were able to display variable growth inhibitory effects on the tested Gram- positive and Gram-negative bacteria with special efficacy against the Gram-negative strains. Some compounds showed reasonable anti-inflammatory activity.

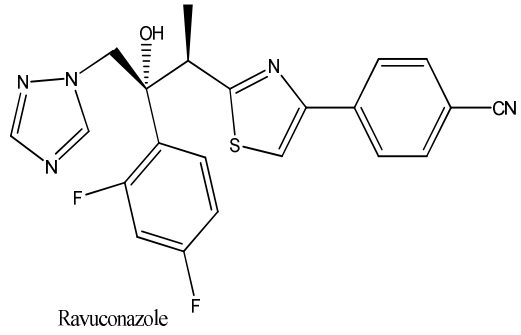
Keywords: 4-amino Triazole, Schiff's bases, Aromatic aldehyde, Antibacterial activity, Antifungal activity, antiinflammatory activity.

INTRODUCTION

In the medicinal chemistry, azole are widely used and studied class of antimicrobial and anti-inflammatory agents due to their safety profile and high therapeutic index. Among these, conazoles are a major class of azole-based antifungal drugs such as Itraconazole, Fluconazole, Voriconazole, Ravuconazole *etc.* [1, 2] (Chart 1). Several studies shows that the primary target of azoles as a antimicrobial is the heme protein, which cocatalyzes cytochrome P-450-dependent 14α-demethylation of lanosterol. Inhibition of 14 - demethylase leads to depletion of ergosterol and accumulation of sterol precursors, including 14 - methylated sterols (lanosterol, 4,14-dimethylzymosterol, and 24-ethylenedihydro lanosterol), resulting in the formation of a plasma membrane with altered structure and function [3]. Triazole derivatives have shown to possess biological activities such as antibacterial [4], antifungal [5], Antiviral [6], antitubercular [7],

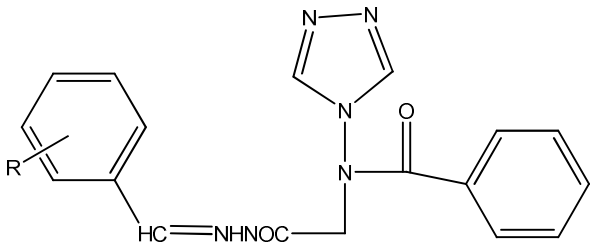
analgesic and anti-inflammatory [8], antitumor [9] and anticonvulsant [10]. Compounds containing an azomethine group (-CH=N-), known as Schiff's bases are formed by the condensation of a primary amine with a carbonyl compound. Schiff's bases of aliphatic aldehydes are relatively unstable and are readily polymerizable while those of aromatic aldehydes, having an effective conjugation system, are more stable. Schiff's bases derived from triazole were reported to possess antimicrobial [11, 12] anti anxiety, anti depressant [13] plant growth regulatory activity [14].





(Chart 1)

Thus, in continuation to our lasting interest toward chemistry and pharmacological properties of 1, 2,4-triazoles, in present study, we have designed and synthesized a series of schiff's bases of 1,2,4-triazole derivatives having different functionality and determined their antimicrobial and anti-inflammatory activity by right hind paw edema method in rats.The structure of synthesized compound were assigned on the basis of elemental analysis and spectral analysis. the reaction sequence leading to formation of the desired Schiff's bases of triazole are outlined in scheme 1.



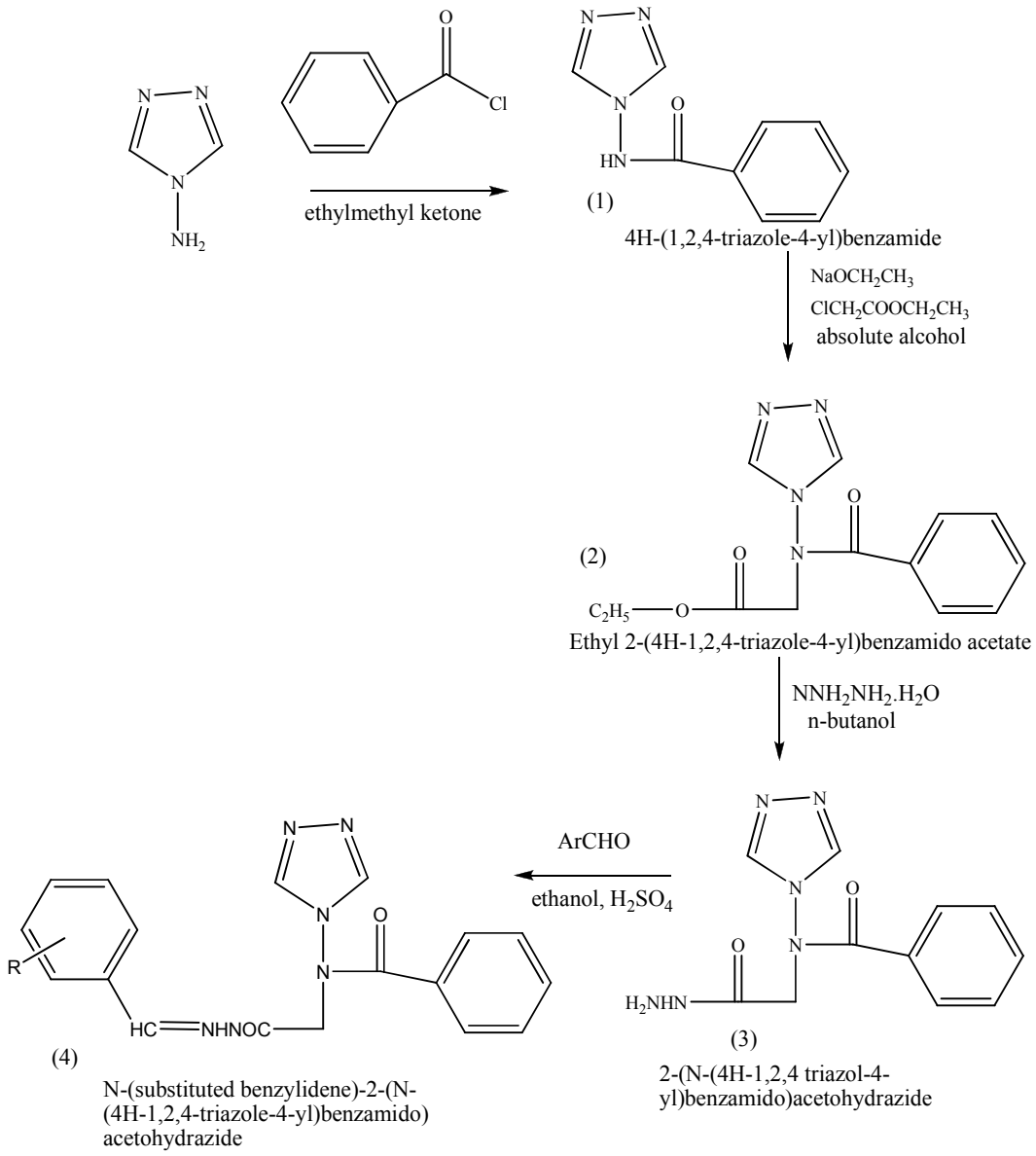
MATERIALS AND METHODS

General

All the reagents and solvents used were of laboratory grade Melting point were determined in open capillaries and are uncorrected. The IR spectra were recorded on a Dike miracle FT-IR spectrophotometer from Alkem pharmaceutical Baddi. The ^{1}HNMR were recorded on a Bruker Avance II 400 MHz spectrometer using DMSO-d6 as a solvent and a tetra methyl silane (TMS) as an internal standard and expressed in δ ppm, The mass spectra were recorded by

micromass Q-T of micro from Panjab University (Chandigarh). Putiry of synthesized compounds were checked by TLC using silica gel G and the spot was exposed in an iodine chamber. The compounds were also subjected to C, H and N analysis (Carlo-Erba) at CDRI Lucknow.

Scheme-i: synthesis of novel schiff's bases bearing N-(4H-1, 2,4-triazole-4-yl)benzamido(4a-4j)



Synthesis and Characterization of Compounds

4-Amino triazole (0.01mole) was dissolved in ethyl methyl ketone. Benzoyl chloride (0.01mole) and 10% NaOH solution was added dropwise with constant stirring for 2 hrs on ice bath.The reaction mixture was poured in ice cold water.The product was filtered, dried and recrystallized from ethanol to give compound **(1).** The obtained dried compound (0.01 mole) dissolve in absolute ethanol, sodium ethoxide (0.01mole) and ethylchloroacetate (0.01mole) was added dropwise and refluxed for 30 hrs. The resulting mixture was poured in cold water. The crude product was filtered, dried and recyrstallized from ethanol to furnish compound **(2).** Then Ethyl 2-(4H-1, 2, 4-triazole-4-yl) benzamido acetate (0.01mole) was dissolve in n-butanol (25) ml and refluxed with hydrazine hydrate (0.01 mole) for 18 hrs. After cooling at room temperature, a

white solid appeared the crude product was filtered, dried and recrystallized with absolute ethanol.

Procedure (4a-4j)
Compound (3) 0.01 mole was refluxed with different aromatic aldehyde (0.01mole) in ethanol (30 ml) in the presences of few drops of conc H_2SO_4 acid for 14 hrs. The separated solid then was poured into ice cold water. Then the separated precipitate was filtered and recrystallised from ethanol to give derivative (4a-4j).

2-(N- (4H-1, 2,4-triazole-4-yl)benzamido)-N-benzylidene acetohydrazide (4a)
Compound (3) 0.01 mole was refluxed with benzaldehyde (0.01mole) in ethanol (30 ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water . The separated yellow precipitate was filtered and recrystallised from ethanol to get as a solid product.The completion of the reaction was monitored by TLC. Percentage Yield-60%, M.P. 170^0C, Rf-0.65, IR cm-1: 1716 (C=O), 3000- 3100 (alkyl group), 1638 (CONH), 1548 (N=CH) ^{1}HNMR δ 8.0-8.2 (s, 1H, CH triazole), 3.59 (s, 2H, CH2), 7.9 (s, 1H, CONH), 8.1(s, 1H, N=CH), 7.22-7.84 (m, 5H, Ar-H), MS (m/e) 348.13$(M)^+$, 349.13$(M+1)^+$

N'-(4-methyl benzylidene)-2-(N-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide (4b)
Compound (3) 0.01 mole was refluxed with tolualdehyde (0.01mole) in ethanol (30ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water. The separated lemon color solid was filtered and recrystallised from ethanol to get desired product as solid. The completion of the reaction was monitored by TLC Percentage Yield-65%, M.P. 120^0C, Rf-0.46, IR cm-1: 1716 (C=O), 3000- 3100 (alkyl group), 1652 (CONH), 1554 (N=CH), δ ^{1}HNMR δ 7.8-8.0 (s, 1H, CH triazole), 3.67 (s, 2H, CH2) , 7.5 (s, 1H, CONH), 8.1(s, 1H, N=CH), 7.22-7.54 (m, 5H, Ar-H), 2.31 (s, 1H, CH3), MS (m/e) 362.14 $(M)^+$, 363.15 $(M+1)^+$

N'-(4-methoxy benzylidene)-2-(N-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide (4c)
Compound (3) 0.01mole was refluxed with anisaldehyde (0.01mole) in ethanol (30ml) for 8 hrs . Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water. The separated pale brown solid was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC Percentage Yield-70%, M.P. 220^0C, Rf-0.67, IR cm-1: 1700 (C=O), 2925-3194 (alkyl group), 1641 (CONH), 1545 (N=CH), 2840 (OCH_3) ^{1}HNMR δ 7.7-7.9 (s, 1H, CH triazole), 3.89 (s, 2H, CH2) , 7.6 (s, 1H, CONH), 7.8 (s, 1H, N=CH), 7.06-7.42 (m, 4H, Ar-H), 3.83 (s, 3H, OCH3), MS (m/e) 378.14 $(M)^+$, 379.14 $(M+1)^+$

N'-(3,4-dimethoxy benzylidene)-2-(N-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide (4d)
Compound (3) 0.01mole was refluxed with 3, 4-dimethoxybezaldehyde (0.01 mole) in ethanol (30 ml) for 8 hrs . Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The separated pale yellow precipitate was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC. Percentage Yield-64%, M.P. 153^0C, Rf-0.42, IR cm-1: 1716 (C=O), 3649- 3687 (alkyl group), 1662 (CONH), 1545 (N=CH), 2840 (OCH_3) ^{1}HNMR δ 7.9-8.1 (s, 1H, CH triazole), 3.75 (s, 2H, CH2) , 7.8 (s, 1H, CONH), 7.9 (s, 1H, N=CH), 6.4-7.2 (m, 5H, Ar-H), 3.52 (s, 6H, OCH3), MS (m/e) 408.15 $(M)^+$, 409.15$(M+1)^+$

N'-(2-chloro benzylidene)-2-(N-(4H-1, 2,4-triazole-4-yl) benzamido) acetohydrazide (4e)
Compound (3) 0.01 mole was refluxed with 2-chloro benzaldehyde (0.01mole) in ethanol (30 ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water. The separated yellow colored precipitate was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC. Percentage Yield-68%, M.P. 210^0C, Rf-0.92, IR cm-1: 1707 (C=O), 3000- 3100 (alkyl group), 1645 (CONH), 1551 (N=CH) ^{1}HNMR δ 7.8-8.1 (s, 1H, CH triazole), 3.78 (s, 2H, CH2) , 7.41 (s, 1H, CONH), 7.74 (s, 1H, N=CH), 7.5-7.7 (m, 4H, Ar-H), MS (m/e) 382.09 $(M)^+$, 384.09 $(M+1)^+$

N'-(4-chloro benzylidene)-2-(N-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide (4f)
Compound (3) 0.01 mole was refluxed with 4-chloro benzaldehyde (0.01mole) in ethanol (30 ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water. The separated yellow colored solid was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC. Percentage Yield-65%, M.P. 210^0C, Rf-0.82, IR cm-1: 1713 (C=O), 3100-3469 (alkyl group), 1647 (CONH), 1549 (N=CH) ^{1}HNMR δ 7.7-7.8 (s, 1H, CH triazole), 3.54 (s, 2H, CH2) , 7.6 (s, 1H, CONH), 8.4 (s, 1H, N=CH), 7.5-7.7 (m, 4H, Ar-H), MS (m/e) 382.09 $(M)^+$, 384.09 $(M+1)^+$

N'-(4-dimethylamino benzylidene)-2-(N-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide (4g)
Compound (3) 0.01 mole was refluxed with 4-dimethylamino benzaldehyde (0.01mole) in ethanol (30 ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The separated brick colored solid was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC. Percentage Yield-63%, M.P. 150^0C, Rf-0.69, IR cm-1: 1705 (C=O), 2848-3180 (alkyl group), 1661 (CONH), 1541 (N=CH), 3100-3500 N(CH3)2 ^{1}HNMR δ 7.6-7.9 (s, 1H, CH triazole), 3.6 (s, 2H, CH2) , 7.5 (s, 1H, CONH), 8.2 (s, 1H, N=CH), 6.3-7.1 (m, 4H, Ar-H), 2.92 (s, 3H, CH3), MS (m/e) 391.17 $(M)^+$, 392.18 $(M+1)^+$

N'-(4-hydroxy benzylidene)-2-(N-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide (4h)
Compound (3) 0.01 mole was refluxed with 4-hydroxy benzaldehyde (0.01mole) in ethanol (30 ml) for 8 hrs. Few drops of conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water . The dark yellow colored separated precipitate was filtered and recrystallised from ethanol to get desired product.The completion of the reaction was monitored by TLC. Percentage Yield-52%, M.P. 90^0C, Rf-0.72, IR cm-1: 1704 (C=O), 2896-3284 (alkyl group), 1652 (CONH), 1554 (N=CH),3590 (ArOH) ^{1}HNMR δ 7.7-7.8 (s, 1H, CH triazole), 3.8 (s, 2H, CH2) , 7.4 (s, 1H, CONH), 8.1(s, 1H, N=CH), 5.35-7.32 (m, 5H, Ar-OH), MS (m/e) 364.12 $(M)^+$, 365.13 $(M+1)^+$

N'-(3-nitro benzylidene)-2-(N-(4H-1, 2, 4-triazole-4-yl) benzamido) acetohydrazide (4i)
Compound (3) 0.01 mole was refluxed with 3-nitro benzaldehyde (0.01) mole in ethanol (30ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water. The separated yellow coloured precipitate was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC. Percentage Yield-58%, M.P. 122^0C, Rf-0.66, IR cm-1:1720 (C=O), 3482 (alkyl), 1666 (CONH), 1559 (N=CH), 1345,1520 (NO2),^{1}HNMR δ 7.6-8.0 (s, 1H, CH triazole), 3.34 (s, 2H, CH2) , 7.6 (s, 1H, CONH), 8.2 (s, 1H, N=CH), 7.34-7.41 (m, 4H, Ar-H), MS (m/e) 393.11$(M)^+$, 394.12 $(M+1)^+$

N'-(4-nitro benzylidene)-2-(N-(4H-1, 2, 4-triazole-4-yl) benzamido) acetohydrazide (4j)
Compound (3) 0.01mole was refluxed with 4-nitro benzaldehyde (0.01mole) in ethanol (30ml) for 8 hrs. Few drops of Conc H_2SO_4 acid was added in the reaction mixture. The content then was poured into ice cold water. The separated pale yellow coloured pricipitate was filtered and recrystallised from ethanol to get desired product. The completion of the reaction was monitored by TLC. Percentage Yield-68%, M.P. 204^0C, Rf-0.68, IR cm-1:1708 (C=O), 3284 (alkyl), 1669 (CONH), 1556 (N=CH), 1338,1515 (NO2), 3284 (alkyl) ^{1}HNMR δ 7.6-7.8 (s, 1H, CH triazole), 3.63 (s, 2H, CH2) , 7.6 (s, 1H, CONH), 7.9 (s, 1H, N=CH), 7.9-8.1 (m, 4H, Ar-H), MS (m/e) 393.12 $(M)^+$, 394.12 $(M+1)^+$

Table No.1 : Physical and analytical data of compounds

S.N.	Molecular formula	Molecular weight	% Analysis Found (calcd)		
			C%	H%	N%
4a	$C_{18}H_{16}N_6O_2$	348.35	60.06(58.01)	3.92(3.72)	23.01(21.09)
4b	$C_{19}H_{18}N_6O_2$	362.38	61.92(61.52)	3.82(3.72)	21.29(21.12)
4c	$C_{19}H_{18}N_6O_3$	378.38	56.78(56.72)	3.92(3.52)	18.58(17.98)
4d	$C_{20}H_{20}N_6O_4$	408.41	58.31(57.78)	3.79(3.72)	20.84(20.80)
4e	$C_{18}H_{15}N_6O_2Cl$	382.80	54.53(54.50)	2.63(2.58)	17.17(17.11)
4f	$C_{18}H_{15}N_6O_2Cl$	382.80	54.37(54.32)	2.39(2.34)	20.25(20.02)
4g	$C_{20}H_{21}N_7O_2$	391.42	55.32(55.28)	3.39(3.32)	21.06(20.08)
4h	$C_{18}H_{16}N_6O_3$	364.35	52.49(52.41)	2.92(2.72)	17.24(17.18)
4i	$C_{18}H_{15}N_7O_4$	393.35	51.39(49.82)	2.92(1.82)	18.95(17.93)
4j	$C_{18}H_{15}N_7O_4$	393.35	49.96(49.01)	2.92(2.62)	21.32(20.96)

Table No. 2 : Antibacterial activity of N-(substituted benzylidene)-2-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide derivative against gram (+ ve bacteria). Zone of inhibition is expressed in mm.

S.N.	Sp		Ba		Ml		Se		Cs	
	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml
4a	14	17	16	22	14	20	16	22	15	19
4b	15	20	17	23	16	22	19	24	14	20
4c	17	22	17	24	15	16	18	22	13	22
4d	15	21	18	25	18	23	19	23	15	21
4e	16	21	17	23	16	20	18	21	12	15
4f	19	23	20	25	17	19	19	23	13	20
4g	21	25	21	28	20	25	18	24	16	20
4h	20	24	21	27	20	24	20	23	17	20
4i	19	20	18	25	15	25	16	21	15	18
4j	18	25	19	24	16	26	18	22	16	22
standard	30	35	28	30	25	32	20	24	22	24

Streptococus pyrogen (Sp), *Bacillus aureus* (Ba), *Micrococus leuteus* (Ml), *Streptococus epidermis* (Se), *Clostridium sporogen* (Cs)

RESULTS AND DISCUSSION

Antimicrobial activity

The antimicrobial activity of the synthesized compound 4(a-j) were determined by agar diffusion technique [15]. The organism tested were *Streptococus pyrogen* (NCIM-2608), *Bacillus aureus* (NCIM-2797), *Micrococus leuteus* (NCIM-2704), *Streptococus epidermis* (NCIM-2493),*Clostridium sporogen* (NCIM-2559), *Klebsiella pneumonia* (NCIM-2957), *Salmonella typhimurium* (NCIM-2501), *Pseudomonas aeruginosa* (NCIM-2863), *Serratia marcesens* (NCIM-2078) and *Proteus vulgaris* (NCIM-2813) for antibacterial activity and *Gibberella*

fujikuroi (NCIM-655), *Rhizopus oligosporus* (NCIM-1215), *Neurospora crassa* (NCIM-908), *Aspergillus niger* (NCIM-618), *Candida albican* (NCIM-3557) for antifungal activity. The agar media were inoculated with test organism and a solution of test compound 50 µg/ml and 100 µg/ml in DMSO. DMSO 10 µg/ml was separately in cups (8 mm diameter) in the agar medium. Streptomycin (50 µg /ml), Ampicillin (50 µg /ml), and fluconazole (5 µg /ml) were used as a reference for antibacterial and antifungal activity respectively. The zone of inhibition was measured after 24 hrs incubation. The results of the microbial activity tests are summarized in table. Most of the synthesized compounds were found to possess varied antimicrobial activities.

Table No. 3 : Antibacterial activity of N-(substituted benzylidene)-2-(4H-1,2,4-triazole-4-yl)benzamido) acetohydrazide derivative against gram (- ve bacteria). Zone of inhibition is expressed in mm.

S.N.	Kp		St		Pa		Sm		Pv	
	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml
4a	16	23	15	18	16	25	15	18	15	18
4b	16	25	18	22	18	26	16	20	18	19
4c	18	26	20	23	20	27	18	18	16	18
4d	17	26	20	25	22	26	18	20	18	22
4e	20	20	16	23	16	25	15	17	16	19
4f	22	28	18	25	21	29	18	20	16	20
4g	25	29	20	23	21	25	19	18	15	22
4h	19	24	15	24	18	27	16	16	16	20
4i	19	20	16	21	18	23	20	16	18	16
4j	18	25	20	23	21	25	16	18	16	22
standard	27	28	26	30	28	24	21	25	18	24

Klebsiella pneumonia (Kp), *Salmonella typhimurium* (St), *Pseudomonas aeruginosa* (Pa), *Serratia marcesens* (Sm) and *Proteus vulgaris* (Pv)

Table No. 4: Antifungal activity of N-(substituted benzylidene)-2-(4H-1,2,4-triazole-4-yl) benzamido) acetohydrazide derivative against fungi. Zone of inhibition is expressed in mm.

S.N.	Gf		Ro		Nc		An		Ca	
	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml	50 µg/ml	100 µg/ml
4a	12	19	13	21	16	22	13	16	17	20
4b	15	20	16	22	18	23	14	18	18	22
4c	16	21	18	23	20	25	14	18	20	23
4d	16	20	17	23	20	26	17	22	21	25
4e	17	20	17	20	18	22	14	20	20	24
4f	16	23	19	23	21	23	15	21	18	20
4g	18	25	19	24	22	25	17	23	20	24
4h	17	24	20	25	20	23	19	22	21	25
4i	15	22	17	23	15	23	18	19	15	23
4j	16	24	18	24	16	25	17	20	16	24
standard	23	26	22	25	24	26	26	24	22	26

Gibberella fujikuroi (Gf), *Rhizopus oligosporus* (Ro), *Neurospora crassa* (Nc), *Aspergillus niger* (An), *Candida albican* (Ca)

Anti-Inflammatory activity

In the pharmacological study, we have investigated anti-inflammatory activity by right hind paw edema method. The permission number from animal ethical committee is 1255/11/05 at Swami Vivekananda College of Pharmacy, Ramnagar, Banur, Patiala to carry out the experiment. In order to screen the anti-inflammatory profile of the synthesized compounds, carrageenan-induced right hind paw edema model in albino rats 100-150g (body weight) was used. The animals were first administered at 80 mg/kg dose of the test drugs in screening tests. Carageenan

induced inflammation is a biphasic phenomenon. The first phase of edema is attributed to release of histamine and 5HT, plateau phase is maintained by kinin like substances and second accelerating phase of swelling is attributed to prostaglandin like substances. To determine the anti-inflammatory activity the animals were starved over night. To insure uniform hydration, the rats receive 5 ml of water by stomach tube (controls) and the test drug suspended in the same volume. Thirty minutes later, the rats were challenged by a subcutaneous injection of 0.05 ml of 1% solution of carrageenan into the plantar side of the right hind paw. Paw edema was measured at different time intervals (60, 120, 180 min) after administration of the test samples. Indomethacin (10 mg/kg) in 0.5% CMC was used as reference drug. [16, 17]

The percentage of inhibitory activity was calculated according to the following formula.

% inhibition = 1 - Vt / Vc X 100

Where, Vt =Edema volume of test, Vc = Edema volume of control.

Table: 5

Compound	Anti-inflammatory activity (50 mg/kg, oral dose) % inhibition ± S.E.M		
	60 min	120min	180 min
4a	18.67±0.02888^{ns}	23.74±0.05274^{ns}	33.5±0.0298^{ns}
4b	17.1±0.03025^{ns}	21.2±0.05793^{ns}	31.3±0.034^{ns}
4c	15.82±0.02574^{ns}	20.6±0.03319^{ns}	30.3±0.03406^{ns}
4d	29.75±0.03273^{ns}	35.44±0.04473^{ns}	45.2±0.0373^{ns}
4e	23.73±0.01788^{ns}	30.7±0.04338^{ns}	42.7±0.0202^{ns}
4f	43.98±0.02201*	53.16±0.01923*	66.7±0.0099*
4g	41.77±0.02395*	50.31±0.04363*	61.7±0.0217*
4h	30.37±0.03691^{ns}	36.7±0.03393^{ns}	48.4±0.0364*
4i	21.83±0.03012^{ns}	31.9±0.04485^{ns}	46.2±0.04637*
4j	41.45±0.03663*	49.68±0.03454	63.2±0.01001*
Indomethacin	44.3±0.02567**	52.53±0.02301**	64.2±0.0112**
Control	0.00	0.00	0.00

*Value are in mean±SEM, No. of animals in each group N=5, *Significantly different from control group (p*<0.05), **Significantly different from control Group (p**<0.05), ^{ns} non-significant different from control Group (p<0.05).*

CONCLUSION

A new series of Schiff's bases bearing N-(4H-1,2,4-triazole-4-yl)benzamido moiety were synthesized by the steps mentioned in experimental part. The structure of the synthesized compounds was confirmed by IR, 1HNMR, Mass spectra data and elemental analysis. All the compounds were evaluated for their antibacterial and antifungal activity. Compounds 4g, 4h have shown good antibacterial and antifungal activity against *Bacillus aureus* (Ba), *Klebsiella pneumonia* (Kp), *Pseudomonas aeruginosa* (Pa), *Gibberella fujikuroi* (Gf), *Neurospora crassa* (Nc) as comparable to standard. The result of anti-inflammatory shows that the derivative 4g and 4f having significant anti-inflammatory activity. And rest of the synthesized compounds promising good to moderate antimicrobial and anti-inflammatory activity.

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