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ANTI-DIABETIC SCREENING OF NEWER QUINAZOLINE DERIVATIVES SYNTHESIZED BY GREEN SYNTHESIS

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ABSTRACT

Designing a highly effective class of innovative anti-diabetic agents possess a significant challenge in the field of pharmaceutical research and development. This research focuses on discovering a newer series of quinazoline derivatives. The synthetic process involves a couple of steps to prepare the quinazoline compound by reacting an amphoteric aromatic acid like anthranilic acid the desired chlorine compound benzoyl chloride in presence of highly flammable, weakly alkaline, heterocyclic organic compound pyridine, resulting in the formation of 2-phenyl-benzoxazine-4-one which is an intermediate compound which is further allowed to react with the hydrazine hydrate along with the pyridine and upon reflux for 3 hours will yield the desired quinazoline compound 3-amino-2-phenyl-quinazoline-4-one. Thin layer chromatography, IR spectroscopy, ^{1}H NMR, ^{13}C NMR confirmed the structure of the derivatives. Furthermore, these compounds are screened for their antimicrobial activity and anti-diabetic activity. The synthesized compounds such as Q1, Q2, QD1 have good anti-bacterial activity. Whereas Q5, and QD2 produced good anti-fungal activity and QD1 showed greater anti-diabetic activity than Q1.

Keywords: Quinazoline derivatives, green synthesis, antimicrobial, spectroscopy, anti-diabetic activity

INTRODUCTION:

Quinazoline derivatives are an important group of heterocyclic compounds that have a naphthalene ring with one or more carbon atoms substituted by nitrogen. Quinazoline is formed by combining benzene and pyrimidine rings, which is why it is sometimes called benzopyrimidine. It is closely related to quinoline, naphthalene,

and benzothiophene. The demand for greener methods prompts the employment of a variety of ecologically friendly reaction conditions, including the reusable solid acids to replace polluting inorganic acids catalyst like sulfuric or hydrochloric acids and room temperature avoidance in media healing. They have different biological activities like anti-neoplastic **[1-2]**, anti-tubercular **[3]**, anti-anxiety **[4]**, anti-inflammatory **[5]**, anti-amoebic **[6]**, anti-depressant **[7]**, anti-fungal **[8]**, anti-bacterial **[9]**, anti-protozoal **[10]**, anti-diabetic **[11]**, analgesic **[12]**, and used in other neurodegenerative disorders **[13-15]**.

MATERIALS AND METHODS:

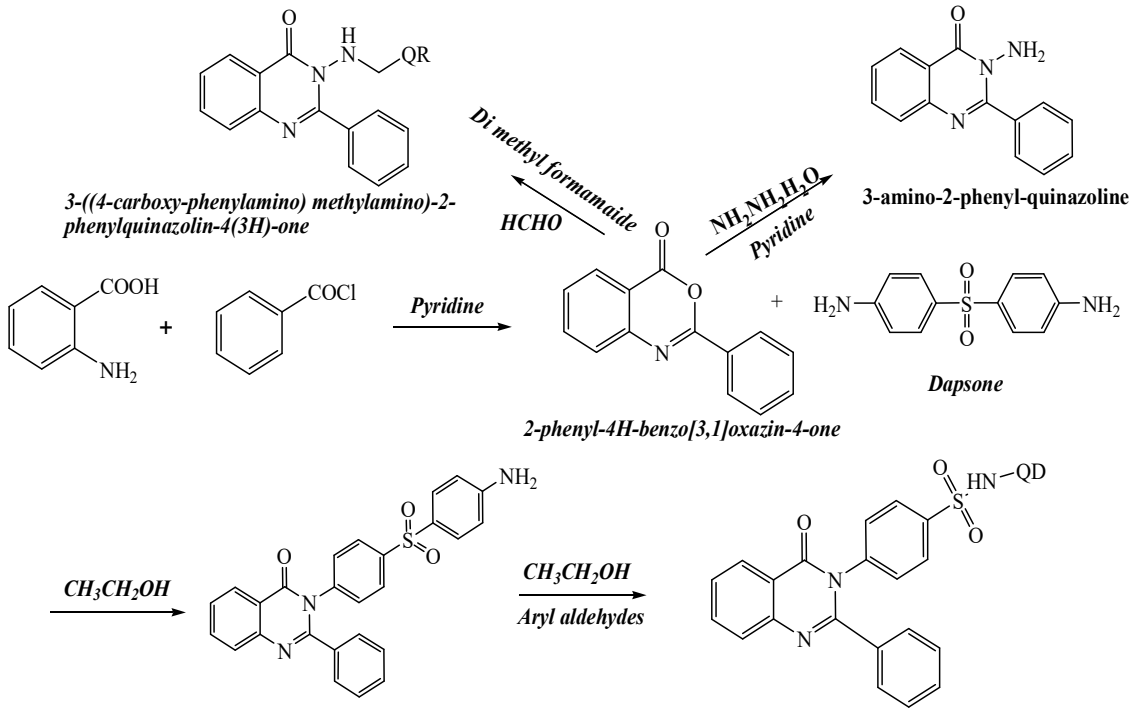
This experiment employed synthetic-grade chemicals and solvents that were acquired from National Scientific Products and Delta Scientific Company. The reaction progress was monitored via melting point and TLC. Melting point was carried out on Lab India melting point apparatus. Infrared (IR) spectra were obtained using a Bruker IR Affinity FTIR spectrophotometer employing the KBr pellet method. Proton Nuclear Magnetic Resonance (^{1}H NMR), Carbon Nuclear Magnetic Resonance (^{13}C NMR) spectra were acquired on Bruker 500 MHz NMR Spectrometer (NIPER Hyderabad) employing appropriate deuterated solvents and reported in parts per million. The experimental protocol was priorly approved by the Institutional animal ethics committee of Chalapathi Institute of Pharmaceutical Sciences (Approval No.09/IAEC/CLPT/2023-24; dated 27/03/2024).

Step 01: Synthesis of 2-Phenyl- [3,1]-benzoxazine-4-one:0.1 mol of Anthranilic acid was dissolved in 30 ml of dry pyridine by gentle shaking in a breaker. To this solution mixture add 0.2 mol benzoyl chloride dissolved in dry pyridine (30 ml) by constant stirring. This addition process is done about a half an hour. After adding the resultant solution, the mixture was subjected to vigorous stirring for one hour mechanically. It is left aside for an hour at room temperature and the solution mixture is treated with 10 % sodium bicarbonate. Addition of sodium bicarbonate is continued till the effervescence due to the evolution of carbon dioxide ceased. The separated solid is allowed to settle down at the bottom of the beaker and subjected for vacuum filtration to separate out the solid from the solution mixture. It is washed repeatedly with the cold water until there is no smell of pyridine and unreacted benzoyl chloride. The solid product was dried overnight and recrystallized from dilute ethanol to get pure sample2-Phenyl-4H-benzo[3,1]xazine-4-one as white crystalline powder.

Yield 80.25%. MP; 196-198 °C. IR (KBr, V_{max}, Cm^{-1}): 3044 (C–H), 1760 (C=O), 1605 (C=N), 1466 (C=C), 1312 (C–N). ^{1}H NMR: CH (1-benzene): 7.26; CH (benzylidenimin): 7.29-8.11; (C=O)-O):

0.21,0.34,0.87. ^{13}C NMR: CH (1-benzene): 122.2-135.3, C (1-benzene): 116.4, 129.9, 154.1, C (1-imine)- 156.1,C(1-amide)- 159.5, 1-C=N: 2.7,0.5,0.1,2.3, 1-C(=O)-O: 0.1, 5.2, 1.6, 2.1.

SCHEME: Synthesis of newer quinazoline derivatives



Step 02: Synthesis of 3-amino-2-phenyl-quinazoline-4(3*H*)-one: 0.01 mol of 2-phenyl- [3,1]-benzoxazine-4-one and 0.01 mol hydrazine hydrate added in 50 ml of dry pyridine and refluxed for 3 hours. Later the reaction mixture was poured into the ice-cold water containing few drops of hydrochloric acid, keep that beaker aside for a period to settle down the solid and the separation of the solid is done by using vacuum filter and washed with water repeatedly. It was dried and recrystallized from ethanol.

Yield 50.78%; MP; 204 – 206 °C. IR (KBr, V_{max}, Cm^{-1}): 3314 (s), 1596 (b) (NH_2), 3061 (C-H), 1654 (C=O), 1596 (C=N), 1438 (C=C), 1312 (C–N). ^{1}H NMR: - CH (1-Benzene): 7.26; CH (benzylidenimin): 7.29-8.11; (C=O)-O): 0.18-0.69; NH_2 (amine): 2. ^{13}C NMR: CH (1-benzene): 122.4-133.5C (1-benzene): 120.9, 128.7, 151.3, C (1-imine): 164, C (1-amide): 160, 1-C(=N)-N: 4.4, 2.6,0.1,1.4, 1-C(=O)-N: 0.1, 3.4, 1.2, 5.0.

General procedures for the synthesis of 3-(substituted benzylidene amino)-2-phenyl quinazoline-4-(3*H*) one: Take equal moles (0.01 moles) of 3-amino-2-phenyl-quinazoline-4(3*H*)-one and aryl aldehyde or ketone in 20 ml ethanol in a Round bottom flask. To this add glacial acetic acid and

adjust pH to 4-4.5 and then reflux for 60 min. The reaction mixture was poured into ice water to allow the solid to settle. The solid is filtered by using a vacuum filter.

Synthesis of 3-[4-(4-aminobenzenesulfonyl) phenyl]-2-phenylquinazolin-4(3*H*)-one: (0.01 moles, 3.34 gm) of 2-phenyl- [3,1] benzoxazine-4-one is dissolved in 25 ml of ethanol in an RBF to this add 0.03 moles dapsone (7.44 gm) to it. The mixtures was refluxed for 4 hr. and after cooling pour the mixture in to ice-cold water and separate the solid by using vacuum filter. This solid is dried and recrystallized from ethanol.

Yield 72.67%, MP: 144 °C. IR (KBr, V_{max}, Cm^{-1}): 3052 aromatic, 2922 aliphatic (C-H), 1761 (C=O), 1594 (C=N), 1493 (C=C), 1443 (C–N), 1380 (O=S=O), 3349 (R-NH_2).

General procedure for Synthesis of 3-[4-(4-amino-substituted benzene sulfonyl) phenyl]-2-phenylquinazolin-4(3*H*)-one derivatives: A mixture of 3-[4-(4-aminobenzene sulfonyl) phenyl]-2-phenylquinazolin-4(3*H*)-one (4.55 g, 0.01 mol), 0.01 mol aryl aldehyde (Salicylaldehyde, Anisaldehyde) and 20ml ethanol was refluxed for 6 hr. The resultant mixture was poured into ice-water. The separated solid was filtered and washed with water. Recrystallization of the crude product from ethanol afforded colorless crystals of aryl aldehyde derivative of 3-[4-(4-aminobenzenesulfonyl) phenyl]-2-phenylquinazolin-4(3*H*)-one. Recrystallization of the crude product from ethanol to obtain colorless crystals of aryl aldehyde derivative of 3-[4-(4-aminobenzenesulfonyl) phenyl]-2-phenylquinazolin-4(3*H*)-one.

3-(4-((E)-4-(2-hydroxy benzylideneamino) phenylsulfonyl)phenyl)-2-phenylquinazolin-4(3*H*)-one (QD1):Yield: 63.98%. IR (KBr, V_{max}, Cm^{-1}): 3050, aromatic, 2924, aliphatic (C-H), 1679 (C=O), 1568 (C=N), 1312 (C-N), 1497 (C=C), 3443 (OH), 1279 (O=S=O). 1H NMR:CH (Benzene):7.26; CH (benzylidenimin): 7.29-8.11, 7.62; (-C=O-N) 0.18-0.69; -NC(=O): 0.02, 0.38; -O from (1-Benzene) 0.17-0.53; -S(=O)(=O): 0.64, 0.17. 13C NMR: 114.2-134.23 CH (Benzene), 139.15- Ar. C, 159.37- C=O.

3-(4-((E)-4-(4-methoxybenzylideneamino)phenylsulfonyl)phenyl)-2-phenylquinazolin-4(3*H*)-one (QD2):Yield: 69.45%. IR (KBr, V_{max}, Cm^{-1}): 3061, aromatic, 2982, aliphatic (C-H), 1685 (C=O), 1588 (C=N), 1401 (C-N), 1140 (O-CH_3), 1297 (O=S=O). ^{1}H NMR: - CH (Benzene) :7.26; (C=O)-N: 0.18, 0.25, 0.69; -NC(=O): 0.38, 0.02; -S(=O)(=O); 0.64, 0.17; -O-C(benzene) 0.11, 0.49; CH(benzylidenimin): 7.62, 7.29, 8.11; CH_3 (methyl): 0.86.^{13}C NMR: CH (1-benzene)-114.4-133.5, C (1-benzene): 120.9-163.0, C (1-imine)- 164, C (1-amide): 160.9, 1-C=N: 2.7,0.5,0.1,2.3, 1-C(=N)-N: 4.4, 2.6,0.1,1.4, -(O-C) :14.4, 1.0, 33.5, 7.7, CH (1-Imine)-160.1, 1-C(=O)-N : 0.1, 3.4, 1.2, 5.0, CH_3

(Aliphatic)- 55.9, 1-S(=O)(=O): 2.0, 1.0, 5.0, 10.0.

3-(2-chlorobenzylideneamino)-2-phenylquinazolin-4(3*H*)-one (Q1): Yield: 73.45%. IR (KBr, V_{max}, Cm^{-1}): 3058, aromatic, 2922, aliphatic (C-H), 1821 (C=O), 1659 (C=N), 1586 (C=C) 1442 (C-N), 1041 (C-C), 1163 (N-N), 756 (C-Cl). ^{1}H NMR: - CH (Benzene) :7.26; CH (benzylidenimin): 7.29-8.11; Cl (from 1-Benzene): 0.01-0.12; (C=O)-N: 0.18-0.69. ^{13}C NMR: CH(1-Benzene): 113-132.5; C(1-Benzene): 118-151.3; C(1-imine): 164; C(1-amide): 160.

3-(4-nitrobenzylideneamino)-2-phenylquinazolin-4(3*H*)-one (Q2): Yield: 65.65%. IR (KBr, V_{max}, Cm^{-1}): 3040, aromatic, 2988, aliphatic (C-H), 1680 (C=O), 1623 (C=N), 1195 (C-N), 1043 (C-C), 1345 (O=N=O). ^{1}H NMR: - CH (Benzene) :7.26; CH (benzylidenimin): 7.29-8.11; (C=O)-N: 0.18-0.69; 1-N(=O) =O from (1-benzene): 0.26, 0.93. ^{13}C NMR: CH(1-Benzene): 121.2-133.5; C(1-Benzene): 120.9- 151.3; C(1-imine): 164; C(1-amide): 160.0.

3-(3,4-dimethoxybenzylideneamino)-2-phenylquinazolin-4(3*H*)-one (Q3):Yield: 72.49%. IR (KBr, V_{max}, Cm^{-1}): 3056, aromatic, 3001, aliphatic (C-H), 1729 (C=O), 1664 (C=N), 1263 (C-N), 1027 (C-O), 1636 (C=C), 2053 aromatic, 3330 (N-H). ^{1}H NMR: - CH (Benzene) :7.26; CH (benzylidenimin): 7.29-8.11; (C=O)-N: 0.18-0.69; -O-C from 1-Benzene: 0.11-0.49; CH_3 (methyl): 0.86.^{13}C NMR: 163.57- C=O, 134.71- Ar. C, 127.41- CH (Benzene).

3-(3,4,5-trimethoxybenzylideneamino)-2-phenylquinazolin-4(3*H*)-one (Q4):Yield: 76.37%. IR (KBr, V_{max}, Cm^{-1}): 3063, aromatic, 2925, aliphatic (C-H), 1821 (C=O), 1659 (C=N), 1238 (C-N), 1001 (C-O), 1583 (C=C), 2850 (-O-CH_3). ^{1}H NMR: - CH (1-Benzene) :7.26; CH (benzylidenimin): 7.29-8.11; (C=O)-N: 0.18-0.69; -O-C from 1-benzene (0.11-0.49); CH_3 (methyl): 0.86. ^{13}C NMR: 163.09- C=O, 146.33- C=N, 139.23- Ar. C, 129.76- CH (Benzene).

3-(4-chlorobenzylideneamino)-2-phenylquinazolin-4(3*H*)-one (Q5): Yield: 68.76%. IR (KBr, V_{max}, Cm^{-1}): 3057, aromatic, 2928, aliphatic (C-H), 1803 (C=O), 1688 (C=N), 1593 (C=C), 1432 (N-N), 1311 (C-N), 1173 (C-C), 759 (C-Cl). ^{1}H NMR: - CH (Benzene) :7.26; CH (benzylidenimin): 7.29-8.11; Cl (from 1-Benzene): 0.01-0.12; (C=O)-N: 0.18-0.69. ^{13}C NMR: CH(1-Benzene): 113-132.5; C(1-Benzene): 118-151.3; C(1-imine): 164; C(1-amide): 160.

3-(4-dimethylaminobenzylideneamino)-2-phenylquinazolin-4(3*H*)-one (Q6): Yield: 70.78%. IR (KBr, V_{max}, Cm^{-1}): 3084, aromatic, 2992, aliphatic (C-H), 1793 (C=O), 1674 (C=N), 1179 (C-N), 1131 (N-N), 1553 (C=C). ^{1}H NMR: -CH (Benzene) : 7.26; CH (benzylidenimin): 7.29-8.11;

(C=O)-N: 0.18-0.69; 1-N(C)-C from 1-Benzene: 0.02-0.29; CH_3 (methyl): 0.86.^{13}C NMR: CH (1-benzene)- 114.4-133.5, C (1-benzene): 120.9-151.3, C (1-imine)- 164, C (1-amide)- 160, 1-C=N : 2.7,0.5,0.1,2.3, 1-C(=N)-N : 4.4, 2.6,0.1,1.4, CH (1-Imine)- 143.0, 1-C(=O)-N : 0.1, 3.4, 1.2, 5.0, CH_3 (Aliphatic)- 40.3.

General procedures for Synthesis of 2-phenyl-3-(substituted methylamino)-(3*H*)-quinazoline-4-one: Add 1ml of formaldehyde and (0.26ml, 0.005 mol) aniline, sulfanilamide, diethyl amine drop by drop with stirring to form a slurry of 3-Amino-2-phenylquinazoline-4-one (0.81 g, 0.005 mol) in 15 ml dimethylformamide. The reaction mixture was refluxed for about 30 min. Allow it to cool and pour this reaction mixture into ice-cold water, the solid obtained was filtered, washed with water, dried overnight, and recrystallized from ethanol.

3-((phenylamino)methylamino)-2-phenylquinazolin-4(3*H*)-one (QR1):Yield: 71.98%. IR (KBr, V_{max}, Cm^{-1}):3024 aromatic, 2922 aliphatic **(**C-H), 1668 (C=O), 1602 (C=N), 1452 (C=C), 1343 (C–N), 3390 (Ar-NH). ^{1}H NMR: -CH (Benzene)**:** 7.26; (-C=O)-N: 0.18, 0.25, 0.69; CH_2 (methylene): 1.37; amine: 2.00, NH (aromatic): 4.00; CH (benzylidenimin): 7.62,7.29; 1-N-C: 0.22,0.68,0.83. ^{13}C NMR: CH (1-benzene)-127.4, 133.5, 122.4, 128.8, 126.1, 128.9, 130.2, 128.9, 126.1, 113.5, 129.6, 117.2, 129.6 (113.5-133.5), C (1-benzene)- 151.3, 120.9, 128.7, 147.6, CH_2, (aliphatic): 67.3, C (1-imine):161, 164. 1-C(=O)-N: 0.1, 3.4, 1.2, 5.0, 1-C(=N)-N : 4.4, 2.6,0.1,1.4, 1-N-C : 15, 16.2, 0.8, 11.6, 0.8.

3-((diethylamino)methylamino)-2-phenylquinazolin-4(3*H*)-one (QR2): Yield: 68.48%. IR (KBr, V_{max}, Cm^{-1}): 3056, aromatic, 2991, aliphatic (C-H), 1790 (C=O), 1665 (C=N), 1190 (C-N), 1238 (N-N), 1563 (C=C). ^{1}H NMR: - CH (Benzene) :7.26; CH (benzylidenimin): 7.29-8.11; (C=O)-N: 0.18-0.69; 1-N(C)-C from 1-Benzene: 0.02-0.29; CH_3 (methyl).^{13}C NMR: -CH (1-benzene)-(126.1-133.5), C (1-benzene)- 151.3, 120.9, 128.7, C (1-imine)- 164, C (1-amide)- 161, CH_2 (aliphatic)-69.3, 46.6, 13.11-C(=O)-N : 0.1,3.4,1.2,5.0, 1-C(=N) N- 0.1, 1.4,2.6.

3-((4-sulfamylophenylamino)methylamino)-2-phenylquinazolin-4(3*H*)-one(QR3): Yield: 74.65%.IR (KBr, V_{max}, Cm^{-1}): 3392 (N-H), 2925, aromatic, 2864, aliphatic (C-H), 1827 (C=O), 1661 (C=N), 1386 (C-N), 1316 (O=S=O), 1149 (C-S), 1016 (C-C), 911 (S-H). 1H NMR: CH (Benzene):7.26; 1-C(=O)-N:0.18,0.25,0.69;CH_2(methylene): 1.37; NH (amine):2.00, NH (aromatic): 4.00; CH (benzylidenimin):7.62,7.29; -S(=O) (=O)-R: 0.28,0.67; 1-N-C: 0.22,0.83. ^{13}C NMR: CH(1-Benzene): 113-130; C(1-Benzene): 118-152; C(1-imine): 164; C(1-amide): 161.0; CH_2 (aliphatic): 67.3.

IN-VIVO ANTI-DIABETIC ACTIVITY:

Experimental animals: Normal healthy Wistar rats (200g) of either sex were used in the present study. The animals were allowed to acclimatize to laboratory conditions for 48hrs before the start of the experiment. The animals were divided into four groups of each containing five animals, maintained under their respective controlled temperature conditions for 30 days before the experiment of 12 hrs. light and dark cycles. The animals were fasted for 18hrs prior to the experiment allowing access of water only, deprived of food and water during the observation period.

Experimental design: Wistar rats were divided into 5groups of each group containing Six animals.

Group – I Control (0.9% Saline)

Group – II Inducing group (Streptazocin, 60mg/kg)

Group – III Standard (Glibenclamide, 10mg/kg)

Group – IV Test - I (10 mg/Kg)

Group – V Test - II (10 mg/Kg)

Experimental induction of diabetes: Diabetes was induced by single peritoneal injection of a freshly prepared solution of STZ at a dose of 60 mg/kg bodyweight. Diabetes was developed and stabilized in these STZ treated rats over a period of 7 days. Blood samples were collected from the tail vein and glucose levels were estimated at 0, 30, 60, 90 and 120 minutes after STZ administration. The rats with blood glucose levels above 250mg/dl were considered to be diabetic and used for the experiment.

Experimental procedure: All the animals in each group were fed with standard pellet and water. Each of the control and test groups consists of 5 animals. The treatments were continued daily for 7 days, blood sample was collected from the tail vein and blood glucose levels were estimated at 0, 30, 60, 90 and 120 minutes after STZ administration.

Table 1: Physical properties of the synthesized derivatives

Compound	Molecular formula	Molecular weight	% Yield	R_f value
QD1	$C_{33}H_{23}N_3O_4S$	557.63	63.98%	0.66
QD2	$C_{34}H_{25}N_3O_4S$	571.66	69.45%	0.59
Q1	$C_{21}H_{14}ClN_3O$	359.82	73.45%	0.67
Q2	$C_{21}H_{14}N_4O_3$	370.37	65.65%	0.65
Q3	$C_{22}H_{17}N_3O_2$	355.40	72.49%	0.56
Q4	$C_{24}H_{21}N_3O_4$	385.43	76.37%	0.74
Q5	$C_{21}H_{14}ClN_3O$	359.82	68.76%	0.59
Q6	$C_{23}H_{20}N_4O$	368.44	70.78%	0.72
QR1	$C_{21}H_{18}N_4O$	342.40	71.98%	0.68
QR2	$C_{19}H_{22}N_4O$	322.41	68.48%	0.65
QR3	$C_{21}H_{19}N_5O_3S$	421.48	74.65%	0.64

RESULTS AND DISCUSSION:

Initially the starting compound, 2-Phenyl-[3,1]-benzoxazine-4-one required for further synthesis was synthesized by reacting anthranilic acid with benzoyl chloride both dissolved in pyridine and pour

these solutions into a beaker and stir continuously for about half an hour and left aside for about an hour. The resultant mixture is treated with 10% sodium bicarbonate until the effervescence due carbon dioxide is ceased. This 2-Phenyl-[3,1]-benzoxazine-4-one along with 0.03moles dapsone were dissolving in ethanol and refluxed for 4hrs to obtain 3-[4-(4-aminobenzenesulfonyl)phenyl]-2-phenylquinazolin-4(3*H*)-one which is further utilized to synthesize derivatives by treating with aryl aldehydes such as salicylaldehyde and anisaldehyde.

3-Amino-2-phenyl-quinazoline-4(3*H*)-one was synthesized in next step by treating 2-phenyl- [3,1]-benzoxazine-4-one and hydrazine hydrate by dissolving in pyridine refluxed for 3 hrs.For synthesis of quinazoline derivatives, 3-amino-2-phenyl-quinazoline-4-one was treated separately with formaldehyde, aniline, sulphanilamide, and diethyl amine and later cooled to obtain the 2-Phenyl-3-(substituted methylamino)-(3*H*)-quinazoline-4-one derivatives. For the synthesis of 3-(substituted benzylidene amino)-2-phenyl quinazoline-4-(3*H*) one derivative, 3-amino-2-phenyl-quinazoline-4(3*H*)-one which was synthesized earlier was treated with aryl aldehydes and ketones such as 2-chlorobenzaldehyde, 4-nitrobenzaldehyde, Verataldehyde, Trimethoxy benzaldehyde, 4-chlorobenzaldehyde, dimethyl aminobenzaldehyde to obtain final derivatives. Quinazoline derivatives were synthesized and analyzed for their antibacterial, antifungal and anti-diabetic activity. Melting points were recorded by an open capillary method using Thiele's tube. All reactions were monitored by thin layer chromatography on pre-coated silica gel and spots were visualized under UV light. The synthesized derivatives were confirmed by using infrared spectroscopy and ^{13}C NMR.

The synthesized derivatives were tested for anti-diabetic activity was also performed for evaluating anti-diabetic activity of the synthesized derivatives by comparing with standard drugs. Test concentration of 10 mg/kg was administered to the wistar rats, standard concentration of 10 mg/kg and negative control of concentration of 60 mg/kg. Hyperglycemia was induced before treating and blood is collected through tail vein to assess the anti-diabetic activity of the derivatives. The present study revealed that the streptozotocin induced group enhances the level of blood glucose greater than 250 mg/dl and when the treatment groups are given with standard and test compounds, the observations and various time intervals gradually showed a decline in the blood glucose level when compared with the control and negative treatment groups. The comparison between the two test treatment groups showed a greater anti-diabetic response in case of QD1 more than Q2.

Table 2: Data of Blood glucose level (mg/dl) among various time intervals

Group	Compound	Dose	Blood Glucose Levels(mg/dl)				
			0 min.	30 min.	60 min.	90 min.	120 min.
I	Control	0.9% Saline	101	98	102	106	104
II	Negative Control (Streptozotocin)	60mg/kg	319	324	336	328	326
III	Standard (Glibenclamide)	10mg/kg	243	212	184	158	134
IV	QD1	10mg/kg	284	261	220	186	143
V	Q1	10mg/kg	304	281	263	259	240

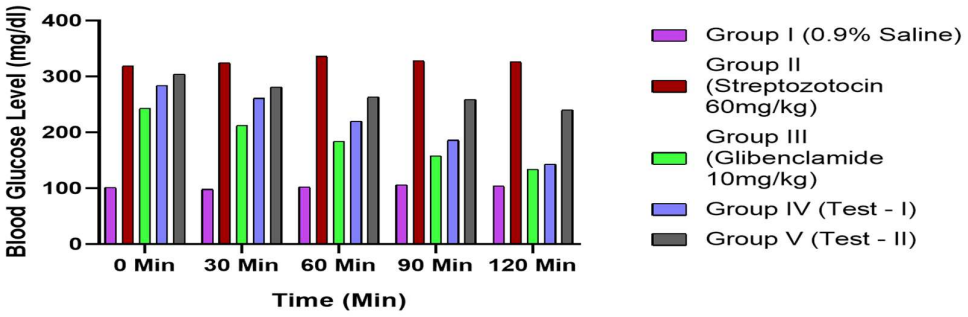


Figure 1: Comparison of various treatment groups on blood glucose level (mg/dl)

CONCLUSION:

A series of quinazoline and dapsone substituted derivatives were synthesized using green synthetic techniques such as parallel synthesizer. The synthesized derivatives of quinazoline gave good yield in comparison with other derivatives. Subsequent antibacterial testing was performed against gram-positive organism such as *Bacillus subtilis* and gram-negative organism such as *Pseudomonas aeruginosa, Escherichia coli* using the disc diffusion method. This revealed the significant activity of Q1, Q2 and QD1 against gram +Ve bacteria than gram -Ve bacteria. Q5 and QD2 showed effective Antifungal activity against *Candida albicans* and *Aspergillus niger*. The comparison between the two test treatment groups showed a greater anti-diabetic response in case of QD1 more than Q1.

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Conflict of interest: The authors declare that there is no conflict of interests regarding the publication of this article.

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