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Synthesis, Anti-Inflammatory and Anti-Oxidant Studies of Some Novel Derivatives of *N'*-[(2*E*)-3-Phenylprop-2-En-1-Yl]-2-(Quinolin-8-Yloxy) Acetohydrazide

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Abstract: In the present investigation 2-(quinolin-8-yloxy)acetohydrazide (2) on acetylation with glacial acetic acid to yield *N'*-acetyl-2-(quinolin-8-yloxy)acetohydrazide (3) then further compounds condense with various aromatic aldehydes to the corresponding chalcones(4a-j). The newly synthesized characterized by IR, ^{1}H NMR and Mass spectral data. All novel compounds were evaluated for their anti-inflammatory and anti-oxidant activities. Biological data indicates that some of the derivatives are potent anti-inflammatory agents and anti-oxidant activity.

Key words: 8-hydroxyquinoline · Chalcone · Anti-inflammatory activity · Anti-oxidant activity

INTRODUCTION

α, β-Unsaturated ketones, especially 1,3-diarylprop-2-en-1-ones, commonly known as chalcones, have received considerable attention in medicinal chemistry [1]. A series of chalcones analogues were synthetized by Claisen-Schmidt condensation of acetophenone with appropriate benzaldehydes. Chalcones are natural or synthetic compounds belonging to the flavonoid family [2], since chalcones are open-chain analogs in contrast to the other family members and they are important compounds not only because of their biological properties but also because they serve as important intermediates for the synthesis of a large number of heterocyclic systems. Moreover, chalcones have been extensively studied [3] for their broad spectrum of biological activities, including antitumor [4] anticancer [5,6], anti-inflammatory [7,8], antileishmanial [9], antitubercular [10], antifungal [11], and antioxidant[12] activities.

With the above observation in the present work we report synthesis and reactions of *N'*-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide. The structures were confirmed by IR, ^{1}H NMR and Mass spectral data.

Experimental

General: Melting points were determined with open capillary and are uncorrected. I.R spectra were recorded on a Shimadzu FTIR model 8010 spectrophotometer, ^{1}H NMR spectra were recorded in $CDCl_3$ on a Bruker supercon FT-NMR instrument using TMS as internal standard. Mass spectra were recorded on Schimadzu LCMS 2010 A Mass spectrometer.

Ethyl (quinolin-8-yloxy) acetate: (1)[13]: An equimolar mixture of 8-hydroxy quinoline ethyl chloroacetate and anhydrous potassium carbonate (0.02mol) in dry acetone (60 ml) was refluxed on a water bath for 24 hrs. The inorganic solid was filtered and the excess solvent was removed on a rota vapour. The reddish brown product was obtained, filtered, dried and recrystalized from ethanol. yield 85%, m.p. 78-80°. IR (KBR) λ max: 3553, 3048, 1747, 1578, 1507, 1472, 1372, 1285, 1165, 1093, 973, 817, 741 cm^{-1}. H^1 NMR ($CDCl_3$, 400 MH_z): δ 8.94-7.18 (m, 6H, Phenyl), 4.95 (s, 2H,-OCH_2), 4.21 (m, 2H, CH_2 of ethyl), 1.20 (m, 3H, CH_3 of ethyl)

2-(quinolin-8-yloxy) acetohydrazide (2)[13]: To a suspension of (1) (0.01 mol) in absolute ethanol (200 ml), hydrazine hydrate (99%, 0.015 mol) was added and the reaction mixture was refluxed for 15hr.

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The solution was concentrated and allowed to cool overnight. The resulting solid obtained was filtered, washed with cold ethanol, dried and recrystalized from ethanol. The compound was separated as brown crystals. yield 74%, m. p. 110-112° C. IR (KBR) λ max: 3326, 3257, 1662, 1610, 1504, 1474, 1382, 1257, 1118, 1079, 819, 751 cm^{-1}. H^1 NMR ($CDCl_3$, 400 MH_z): δ 8.96 (s, 1H, NH), 8. 80-7. 12 (m, 6H, Ar), 4.90 (s, 2H,-OCH_2), 3.10 (br, s, 2H, NH_2)

***N*'-acetyl-2-(quinolin-8-yloxy) acetohydrazide (3)[14]:** 2-(quinolin-8-yloxy) acetohydrazide (0.1 mol) (2) was suspended in glacial acetic acid (15 ml) and reflux for 6hrs. After completion of the reaction mixture was allowed to stay at room temperature for 30min and the pale green solid that separated was collected, washed with cold water. The product was recrystallized by using hot ethanol. The compound was separated as white crystals. Yield: 74% m. p.: 110-112° C. IR (KBR) λ max: 3326, 3257, 1662, 1610, 1504, 1474, 1382, 1257, 1118, 1079, 819, 751 $cm^{-1}$$H^1$ NMR ($CDCl_3$, 400 MH_z): δ 8.96 (s, 1H, NH), 8. 80-7. 12 (m, 6H, Ar), 4.90 (s, 2H,-OCH_2), 3.10 (br, s, 2H, NH_2).

(2E)-3-phenyl-N'-[(quinolin-8-yloxy) acetyl] acrylohydrazide (4)[15]: An equimolar mixture of *N*'-acetyl-2-(quinolin-8-yloxy)acetohydrazide (3) and aromatic aldehyde (0.01 mol) were dissolved in minimum amount of alcohol. Sodium hydroxide solution (0.02mol) was added slowly and the mixture stirred for 2hr until the entire mixture becomes very cloud. Then the mixture was poured slowly into 400 ml of water with constant stirring and kept in refrigerator for 24 hours. The precipitate obtained was filtered, washed and recrystallized from ethanol.

4a:(2E)-3-(4-chlorophenyl)-N'-[(quinolin-8-yloxy)acetyl] crylohydrazide: green crystals, yield 72%, m.p.160-164 (solvent of recrystallization). (IR ν, cm^{-1}): 3568 (NH), 2342, 1718 (C=O), 1637 (CH=CH). ^{1}H NMR (DMSO D_6 400 MHz, δ ppm): 8.10 (s, 1H, =CH-Ar),7.9-6.9 (m, 12H Ar), 6.80 (d,1H,-COCH=), 5.3 (s, 2H, O-CH_2), 3.8 (s, 2H, NH). MS m/z: M+: 381. Anal. Calcd for $C_{20}H_{16}N_3O_3Cl$: C(62.91%) H(4.22%) N(11.01%) Found: C(62.95%) H(4.24%) N(11. 04%).

4b: (2E)-3-(4-nitrophenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: yellow crystals, yield 66%, m.p.170-172 (solvent of recrystallization). (IR ν, cm^{-1}): 3397 (C-NO_2), 3568(NH), 3011, 2849, 1708 (C=O), 1654 (CH=CH).^{1}H NMR (DMSO D_6 400 MHz, δ ppm): 8.21 (s, 1H, =CH-Ar),8.0-6.8 (m, 12H Ar), 6.6 (d,1H,-COCH=), 5.42 (s, 2H, O-CH_2), 3.85-3.95 (s, 2H, NH). MS m/z: M+: 392. Anal. Calcd for $C_{20}H_{16}N_4O_5$: C(61.22%) H(4.11%) N(14.28%) Found: C(61.24%) H(4.16%) N(14.24%).

4c:(2E)-3-(3-hydroxy-4-methoxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylo hydrazide: white crystals, yield 78%, m.p. 182-184 (solvent of recrystallization). (IR ν, cm^{-1}): 3590(OH), 3369(NH), 2923 (CH), 2361, 1638 (C=O), 1087(OCH_3), 721.^{1}H NMR (DMSO D_6 400 MHz, δ ppm): 8.21 (s, 1H, =CH-Ar),7.5-6.8 (m, 10H Ar), 6.75 (d,1H,-COCH=), 5.8 (s, 1H,-OH) 5.42 (s, 2H, O-CH_2), 3.85-3.95 (s, 2H, NH), 2.9 (s, 3H, OCH_3). MS m/z: M+: 393. Anal. Calcd for $C_{21}H_{19}N_3O_5$: C(64.12%) H(4.87%) N(10.68%) Found: C(64.15%) H(4.84%) N(10.72%.

4d:(2E)-3-[4,4-(dimethylamino)phenyl]-N'-[(quinolin-8-yloxy)acetyl]acrylo hydrazide: brown crystals, yield 80%, m.p. 220-224 (solvent of recrystallization). (IR ν, cm^{-1}): 3569 (NH), 2366, 1719(C=O), 1638 (CH=CH) 1561, 1518, 1475, 1109.^{1}H NMR (DMSO D_6 400 MHz, δ ppm): 8.9 (m,6H, $N(CH_3)$), 8.11 (s, 1H, =CH-Ar),7.5-6.8 (m, 12H Ar), 6.75 (d,1H,-COCH=), 5.42 (s, 2H, O-CH_2), 3.85-3.95 (s, 2H, NH). MS m/z: M+: 390. Anal. Calcd for $C_{22}H_{22}N_4O_3$: C(67.68%) H(5.68%) N(14.35%) Found: C(67.70%) H(5.65%) N(14.42%).

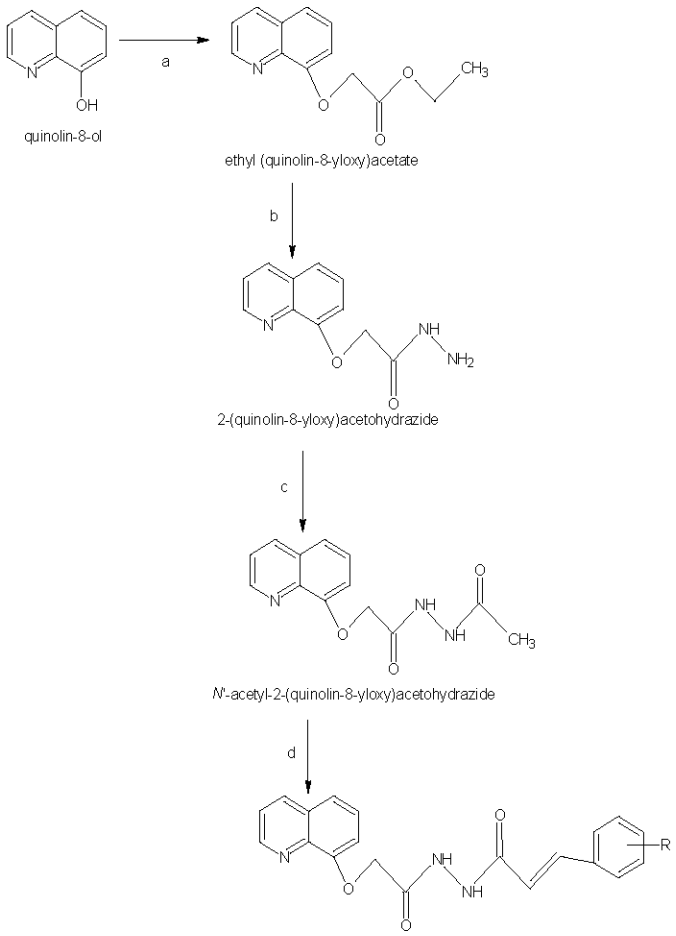
4e:(2E)-3-(2-hydroxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: Pale green crystals, yield 62% m.p.176-78 (solvent of recrystallization). (IR ν, cm^{-1}): 3752(NH),2363, 1742 (C=O), 1655 (CH=CH), 1090 (OCH_3), 670.^{1}H NMR (DMSO D_6 400 MHz, δ ppm): 8.21 (s, 1H, =CH-Ar),7.5-6.8 (m, 12H Ar), 6.69 (d,1H,-COCH=), 5.8 (s, 1H,-OH) 5.42 (s, 2H, O-CH_2), 3.85-3.95 (s, 2H, NH). MS m/z: M+: 363. Anal. Calcd for $C_{20}H_{17}N_3O_4$: C(66.11%) H(4.72%) N(11.56%) Found: C(66.15%) H(4.76%) N(17.62%).

4f:(2E)-3-(3,4,5-trimethoxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: White crystals, yield 75%, m.p. 135-137(solvent of recrystallization). (IR ν, cm^{-1}): 3568 (NH), 2342, 1718 (C=O), 1637 (CH=CH).^{1}H NMR (DMSO D_6 400 MHz, δ ppm): 9.89 (s, 1H, =CH-Ar),8.89-7-13 (m, 12H Ar), 6.99 (d,1H,-COCH=), 4.7 (s, 2H, O-CH_2), 3.87-3.86 (s, 2H, NH), 2.08-3.74 (s, 9H,-OCH_3). MS m/z: M+: 437. Anal. Calcd for $C_{23}H_{23}N_3O_6$: C(63.15%) H(5.30%) N(9.61%) Found: C(63.18%) H(5.36%) N(9.65%).

4g:(2E)-3-(3-methoxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: Pale red crystals, yield 66% m.p. 124-127(solvent of recrystallization). (IR ν, cm^{-1}): 3397 (C-NO_2), 3568(NH), 1708 (C=O), 1654 (CH=CH),739.^{1}H NMR (DMSO D_6, 400 MHz, δ ppm): 8.87 (s, 1H, =CH-Ar),8.29-6.61 (m, 12H Ar), 6.18 (d,1H,-COCH=), 5.18 (s, 2H, O-CH_2), 3.35 (s, 2H, NH), 2.5 (s, 3H, OCH_3).MS m/z: M+: 377. Anal. Calcd for $C_{21}H_{19}N_3O_4$: C(66.83%) H(5.07%) N(11.13%) Found: C(66.86%) H(5.08%) N(11.16%).

4h:(2E)-3-(4-methoxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: Yellow crystals, yield 78% m.p. 155-158 (solvent of recrystallization). (IR ν, cm^{-1}): 3590(OH), 3369(NH), 2923 (CH), 2361, 1638 (C=O),1087(OCH_3),721.^{1}H NMR (DMSO D_6, 400 MHz, δ ppm): 9.88 (s, 1H, =CH-Ar),8.53-6.73 (m, 10H Ar), 6.69 (d,1H,-COCH=), 5.13 (s, 2H, O-CH_2), 3.65 (s, 2H, NH), 2.51 (s, 3H, OCH_3).MS m/z: M+: 377. Anal. Calcd for $C_{21}H_{19}N_3O_4$: C(66.83%) H(5.07%) N(11.13%) Found: C(66.86%) H(5.09%) N(11.15%).

4i:(2E)-3-(4-ethoxy-3-hydroxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: brown crystals, yield 80% m.p. 171-175(solvent of recrystallization). (IR ν, cm^{-1}): 3659(NH), 3410(OH), 2366, 1719(C=O), 1638 (CH=CH). ^{1}H NMR (DMSO D_6, 400 MHz, δ ppm): 9.76 (s, 1H, =CH-Ar),8.88-6.9 (m, 12H Ar), 6.61 (d,1H,-COCH=), 4.83 (s, 1H,-OH), 4.71 (s, 2H, O-CH_2), 3.38 (s, 2H, NH)2.86 (s, 2H,-CH_2), 2.09 (s, 3H,-CH_3). MS m/z: M+: 407. Anal. Calcd for $C_{22}H_{21}N_3O_5$: C(64.86%) H(5.20%) N(10.31%) Found: C(64.88%) H(5.24%) N(10.33%).



Scheme

Where R: 4-Cl, 4-NO_2, 3-OH-4-OCH_3, N(CH_3)$_2$, 2-OH, 3,4,5-(OCH_3), 3-OCH_3, 4-OCH_3, 3-OH-4-OC_2H_5, 4-OH
Reagents and conditions a. dry acetone, K_2CO_3 reflux 24 h; b. NH_2NH_2, abs. EtOH, reflux 15 h; c. glacial acetic acid, reflux 5h d. Ar-CHO, ethanol, 10%NaOH stir 1 h.

4j:(2E)-3-(4-hydroxyphenyl)-N'-[(quinolin-8-yloxy)acetyl]acrylohydrazide: brown crystals, yield 62% m.p. 142-145(solvent of recrystallization). (IR ν, cm^{-1}): 3542 (NH), 3452 (OH), 2363, 1718 (C=O), 1655 (CH=CH), 1090 (OCH_3), 670. ^1H NMR (DMSO D_6, 400 MHz, δ ppm): 8.87 (s, 1H, =CH-Ar),7.55-6.97 (m, 12H Ar), 5.51 (d,1H,-COCH=), 5.10 (s, 1H,-OH) 4.61 (s, 2H, O-CH_2), 3.43 (s, 2H, NH). MS m/z: M+: 363. Anal. Calcd for $C_{20}H_{17}N_3O_4$:C(66.11%) H(4.72%) N(11.56%) Found: C(66.16%) H(4.75%) N(11.58%).

Anti-Inflammatory Activity (*In vitro Model*)[16]: Many *in vitro* assays, each based on a specific biochemical or cellular mechanism have been developed for the initial screening of the anti-inflammatory compounds.

A number of anti-inflammatory drugs are known to inhibit the denaturation of proteins as an *in vitro* screening model for anti-inflammatory compounds.

The synthesized compounds are screened for anti-inflammatory activity by using inhibition of albumin denaturation technique, which was studied according to Muzushima and Kabayashi with slight modification.

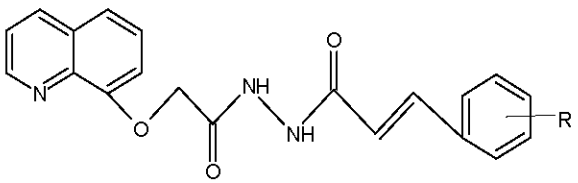
The standard drug and test compounds were dissolved in minimum amount of dimethyl formamide (DMF) and diluted with phosphate buffer (0.2 M, pH 7.4). Final concentration of DMF in all solutions was less than 2.0%. Test solution (1 ml) containing different conc. of drugs was mixed with 1 ml of 1% mM albumin solution in phosphate buffer and incubated at 27° ± 1°C in BOD incubator for 15 min. Denaturation was induced by keeping the reaction mixture at 60° ± 1°C water bath for 10 min. After cooling the turbidity was measured at 660 nm (UV-Visible Spectrophotometer SL-159, Elico India Ltd.). Percentage of inhibition of denaturation was calculated from control where no drug was added. Each experiment was done in triplicate and average was taken. The ibuprofen was used as standard drug. Results are tabulated in Table 1.

Antioxidant Activity by Various *in vitro* Models [17]

Scavenging of Hydrogen Peroxide: A solution of hydrogen peroxide (20 mM) was prepared in Phosphate buffer saline (PBS) (pH 7.4). Various concentrations of the extract or standard in methanol (1 ml) were added to 2 ml of hydrogen peroxide solution in PBS. After 10 min, the absorbance was measured at 230 nm. Results for anti-oxidant activity by Hydrogen peroxide (*in vitro* model) are given in table 2.

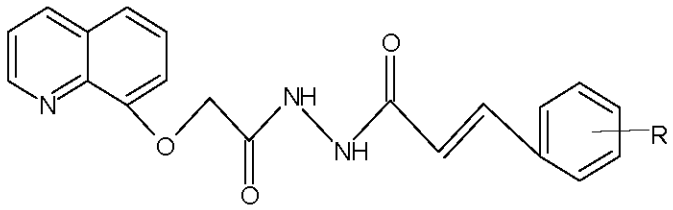
Nitric Oxide Radical Inhibition Assay: The reaction mixture (6 ml) containing sodium nitro-prusside (10 mM, 4 ml), PBS (1 ml) and the extract or standard solution (1ml) was incubated at 25°C for 150 min. After incubation, 0.5 ml of the reaction mixture was removed, 1 ml of sulphanilic acid reagent (0.33% in 20% glacial acetic acid) was mixed and allowed to stand for 5 min for completion of the

Table 1: ANTI-INFLAMMATORY ACTIVITY (*in vitro model*) shown by *N'*-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide



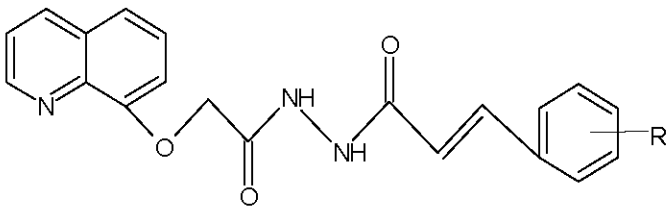
Sl. No.	Compound code	Absorbance value (Mean ± SE)	Inhibition of denaturation (in%)
1	Control	0.0165±0.000245	--
2	Standard (Ibuprofen)	0.0306±0.000294	85.45%
3	IC-1	0.0284±0.000216	72.12%
4	IC-2	0.0191±0.000327	17.58 %
5	IC-3	0.0187±0.000245	35.15 %
6	IC-4	0.0194±0.000356	67.27 %
7	IC-5	0.0223±0.000408	55.15 %
8	IC-6	0.0276±0.000356	11.51%
9	IC-7	0.0256±0.00051	11.59 %
10	IC-8	0.0184±0.000294	61.21 %
11	IC-9	0.0266±0.000572	26.67 %
12	IC-10	0.0209±0.0001633	70.28 %

Table 2: Antioxidant activity data shown by *N*-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide from Scavenging of Hydrogen Peroxide



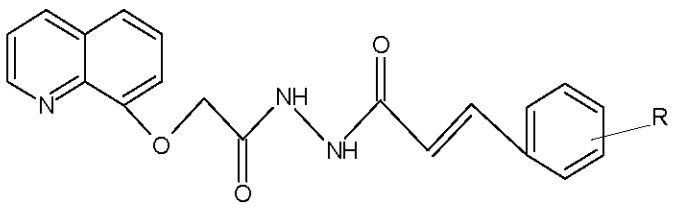
		Mean				
Sr.No.	Compound code	100µg	50µg	25µg	12.5µg	IC50
1	Control	0.9516±0.0437				
2	STD	0.0623±0.002	0.39±0.005	0.6974±0.00813	0.8701±0.004	38 µg
3	IC1	0.2712±0.0012	0.3818±0.0012	0.7318±0.0299	0.9118±0.0012	42 µg
4	IC2	0.279±0.001	0.389±0.00153	0.7378±0.001	0.9148±0.002	44 µg
5	IC3	0.285±0.004	0.374±0.004	0.7395±0.0005	0.9089±0.002	46 µg
6	IC4	0.2917±0.001	0.3643±0.004	0.741±0.005	0.9089±0.001	68 µg
7	IC5	0.282±0.002	0.394±0.004	0.7475±0.0025	0.933±0.003	46 µg
8	IC6	0.2856±0.003	0.4113±0.003	0.7515±0.0015	0.9616±0.0016	56 µg
9	IC7	0.3117±0.003	0.4467±0.0023	0.7389±0.0011	0.9413±0.003	68 µg
10	IC8	0.2957±0.004	0.4593±0.001	0.7818±0.005	0.9615±0.003	75 µg
11	IC9	0.3513±0.004	0.4817±0.004	0.7503±0.005	0.9013±0.001	53 µg
12	IC10	0.3218±0.003	0.4589±0.004	0.7331±0.003	0.9118±0.001	40 µg

Table 3: Antioxidant activity data shown by *N*-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide from Nitric Oxide Radical Inhibition Assay method



		Mean				
Sr.No.	Compound code	62.5µg	31.25µg	16µg	8µg	IC50
1	Control	1.6176±0.02445				
2	STD	0.7255±0.000816	0.7611±0.000816	0.9368±0.000816	1.3481±0.000816	12 µg
3	IC1	0.8165±0.001225	0.8773±0.000572	1.0767±0.001061	1.3908±0.00098	18 µg
4	IC2	0.8065±0.000816	0.8873±0.000408	1.084±0.001633	1.398±0.000816	17 µg
5	IC3	0.7908±0.000653	0.903±0.002449	1.088±0.001633	1.407±0.002449	16.5µg
6	IC4	0.7988±0.00098	0.913±0.002449	1.0935±0.002858	1.4103±0.001388	10 µg
7	IC5	0.8488±0.00098	0.9741±0.003348	1.115±0.004082	1.3945±0.003674	14 µg
8	IC6	0.9418±0.000653	1.0314±0.00049	1.1387±0.001878	1.3691±0.000735	24 µg
9	IC7	0.8714±0.001306	0.9377±0.001878	0.969±0.003266	1.4087±0.002449	22 µg
10	IC8	0.9515±0.002041	1.0526±0.00196	1.1816±0.00196	1.3646±0.000327	21 µg
11	IC9	0.9691±0.000735	1.0122±0.001633	1.0425±0.002041	1.3417±0.001061	27 µg
12	IC10	0.9146±0.00196	1.0131±0.002449	1.1591±0.003266	1.4343±0.002449	23 µg

Table 4: Antioxidant activity data shown by *N*'-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide from Lipid Peroxidation method



Sr.No.	Compound code	Mean 100µg	50µg	25µg	IC50
1	Control	0.6713±0.02434			
2	STD	0.0499±0.0014	0.2116±0.0008	0.3819±0.0011	35 µg
3	IC1	0.0883±0.0021	0.3109±0.0009	0.4911±0.0011	43 µg
4	IC2	0.0897±0.002	0.3213±0.003	0.4982±0.0012	55 µg
5	IC3	0.0947±0.002	0.3288±0.0012	0.5012±0.0012	49 µg
6	IC4	0.0997±0.0012	0.3317±0.0017	0.5083±0.0013	58 µg
7	IC5	0.0842±0.002	0.3404±0.002	0.4922±0.002	52 µg
8	IC6	0.0782±0.002	0.3514±0.0005	0.4813±0.001	62 µg
9	IC7	0.1019±0.0006	0.3283±0.0007	0.5169±0.0011	48 µg
10	IC8	0.1218±0.0012	0.3218±0.0012	0.5016±0.0009	60 µg
11	IC9	0.1631±0.0011	0.3718±0.0008	0.5413±0.0007	65 µg
12	IC10	0.1138±0.0018	0.3195±0.0015	0.5112±0.0008	45 µg

diazotization reaction, 1 ml of naphthyl ethylene diamine dihydrochloride was added and the mixture was allowed to stand for 30 min in diffused light. The absorbance was measured at 540 nm. [13] Results for anti-oxidant activity by nitric oxide (*in vitro* model) are given in table 3.

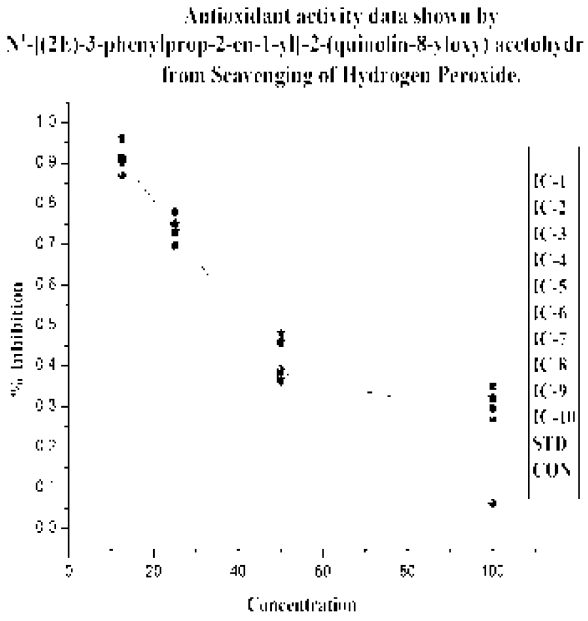
Lipid Peroxidation Inhibitory Activity: Egg yolk was separated and washed with acetone until the yellow color was removed. The creamy white powder obtained was egg lecithin. Lipid per-oxidation was induced by adding ferric chloride 10 µl (400 mM) and L-ascorbic acid 10 µl (400 mM) to a mixture containing egg lecithin (3 mg/ml) in phosphate buffer solution and different concentrations of the extracts (100µl). After incubation for 1hr at 37° C the reaction was stopped by adding 2ml of 0.25N hydrochloric acid containing 15% w/w trichloric acid and 0.375% w/v thiobarbituric acid, boiled for 15 min cooled, centrifuged and absorbance of the supernatant was measured at 532 nm. Results for Anti-oxidant activity by lipid peroxide (*in vitro* model) are given in table 4.

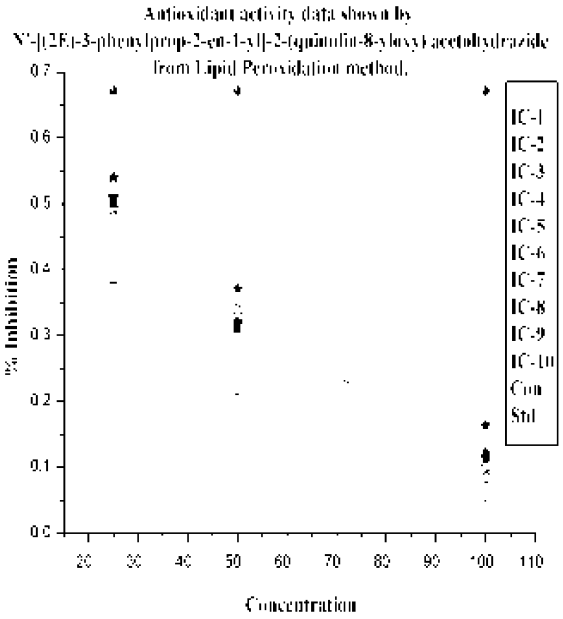
RESULTS AND DISCUSSION

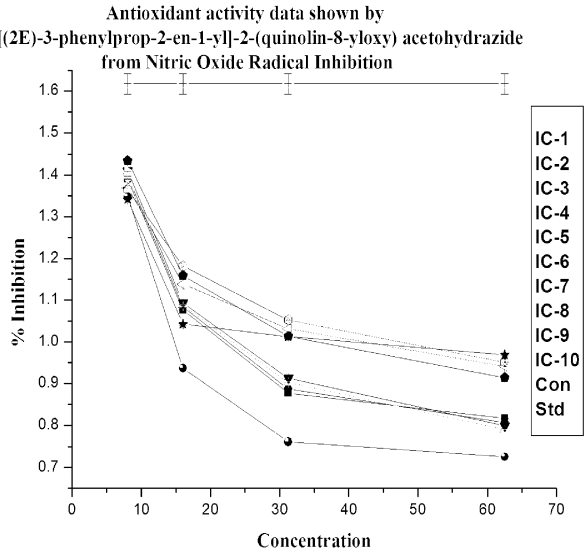
In the present work, 1-(quinolin-8yloxy) butan-2-one 1 can be synthesized by treating equimolar mixture of 8-hydroxy quinoline, ethylchloracetate and potassium carbonate. The 2-(quinolin-8-yloxy) acetohydrazide 2 can be synthesized by treating with hydrazine hydride in ethanol. These when react with glacial aceticacid to yield *N*'-acetyl-2-(quinolin-8-yloxy) acetohydrazide 3, which later react with various aromatic aldehydes in presence of sodiumhydroxide to yield to *N*'-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide.4. All the synthesized compounds have been screened for their in-vitro anti-inflammatory and antioxidant activity.

***In vitro* Anti-inflammatory:** *In vitro* Anti-inflammatory activity of *N*'-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide. The compounds IC-1 and IC-10 shown potent activity than other substituents.

***In vitro* Anti-oxidant activity:** *In vitro* Anti-oxidant activity of *N*'-[(2*E*)-3-phenylprop-2-en-1-yl]-2-(quinolin-8-yloxy) acetohydrazide by H_2O_2 Scavenging method, Nitric oxide acid method and Lipid peroxide method. *In vitro* Anti-oxidant activity by H_2O_2 scavenging method the compounds IC-1 and IC-10 shown potent activity, by Nitric oxide acid method, the compounds IC-4 and IC-5 shown potent activity and by Lipid peroxide method, the compounds IC-4 and IC-5 shown potent activity.







CONCLUSION

Compounds with electron withdrawing groups such as chloro and hydroxyl showed better In-vitro anti-inflammatory activity than the others not having such groups. Compounds having pharmacophores such as, methyl and dimethyl amino groups have exhibited potent antioxidant activity than the others. These results suggest that the chalcones derivatives have excellent scope for further development as commercial anti-inflammatory and antioxidant agents.

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