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Synthesis, Characterization and Biological activity of some novel chalcone compounds and their Cobalt Nickel complexes having benzyloxydibromo resacetophenone moiety

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ABSTRACT

*1-(3,5-dibromo-2,4-dihydroxyphenyl)ethanone (HDBA) and chalcones were prepared by the coupling of benzyle bromide and 3,5-dibromo resacetophenone then condensation with aromatic aldehyde(**3a-j**) then covert them to its metal complexes. The newly synthesized compounds were evaluated for their characterization, their physical properties and their biological activity.*

Keywords: -dibromo-benzyloxy-resacetophenone, ketone aldehyde condensation, chalcones, phenone derivates antimicrobial activity,chalcone metal complexes, cobalt complexes, nickel complexes.

INTRODUCTION

Chalcones are an important class of compounds which are good intermediates for the synthesis of various heterocyclic compounds like flavones, flavanones, flavanols, aurones, isoxazolines, anthocynins, pyrazolines,pyrimidines, quinoxalines, benzalcoumaranones.

The biological and industrial applications of chalcones are also found significant.Due to the presence of chromophor –CO-CH=CH- and other auxochromes,chalcones are colour compounds. These compounds exhibit high reactivity due to α:β-unsaturated un saturation present in the compounds. Chalcone is also known as 1,3-disubstituted-2-propene-1-ones. Kostanekci and Tambor[1] gave them the name “Chalcones.”

Chalcones are characterized by their possession of a structure in which two aromatic ring I and II are linked by an aliphatic three-carbon chain.

The chalcones have been found to be useful in providing structure of natural products like cynamaclurin[2], sakuranetin[3], ploretin[4], hemlocktanin[5], homoriodictyo[6],etc.

Keeping in view of biological importance of this group and their close relationship to flavones, flavanones, flavanols and dihidroflavonals, chalcones have been investigated since long time. It has been of great interest in their study as intermediates for substances of therapeutic importance[**7]**. Schraufstatter and Deutsch[**8]** and Calcinari[**9]** reported antibacterial properties of some chalcones, and have concluded that the bacteriostatic activity is due to their unsaturation.

Antimicrobial activity

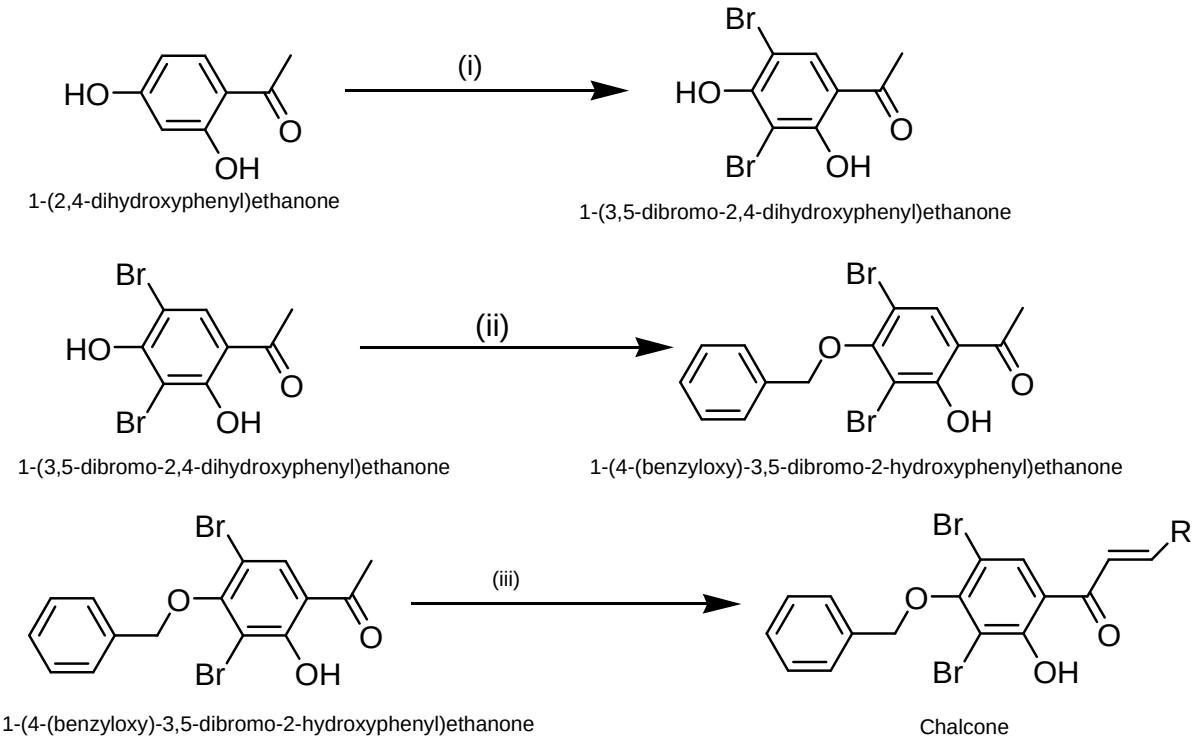
During the present century, chalcones and their derivatives are found to be much in use. Thus, some chalcones exhibited therapeutic properties eg. antiulcer activity, hypotensive activity etc. Antibiotic activity[10-11] have been shown by some chalcones due to presence of an enone function. It has been observed that the bacteriostatic or bactericidal properties get increased with the introduction of substituents like a nitro, bromo group at the α–position or a bromo or hydroxyl group at the β- position[10]. Some substituted chalcones and their derivatives possess biological properties eg. the growth of microbes12, tuberclebecilli[13-14], malarial parasites[15], intestinal worms[16] etc. They also inhibit growth of several enzymes[17] and fungi[18-19]. Hypotensive property is associated with some chalcones[20]. Few substituted chalcones were tested for ability to protect adrenaline from destruction[21].

In heterocyclic derivatives of chalcones, isoxazolines have shown good antimicrobial, antitubercular[22], antiviral[23] and antifungal activities[24]. Pyrazolines are important nitrogen containing heterocycles possessing diverse biological activity[25-27]. Some pyrazoline derivatives have shown considerable promise as chemotherapeutic agents.

Doshiet al[28] reported some cyanopyridines as a potential antitubercular agents. Pyrimidine derivatives occupy a unique position as leiodynamic agents. Both are essential components of nucleic acid and also as therapeutic agents[29-30]. Some chalcone derivatives have been reported as anti inflammatory or antiallergic agents[31]. Furthermore, they found that chalcones with a 3,4-dihydroxy cinnamoyl structure strongly inhibited lipid peroxidation in cat liver microsomes[32]. The 3,4-dihydroxy chalcones are rapidly and extensively metabolized the systematic administration. These finding suggest that the chalcones may be promising non-toxic topical anti-inflammatory agents.

MATERIALS AND METHODS

Fig-1



Scheme 1 Reagents and conditions: **i)**Bromination, S/Ethanol; **ii)** K2CO3 & benzylebromide/S: Ethanole; **iii)** Aldehyde & 50-60% NaOH in S/Ethanole; **(a)** R =Benzaldehyde; **(b)** R =4-Bromobenzaldehyde; **(c)** R =4-Chlorobenzaldehyde; **(d)** R =Anisaldehyde; **(e)** R =3-Chlorobenzaldehyde; **(f)** R =2-Clorobenzaldehyde; **(g)** R =4-(N N-dimethylamino)benzaldehyde; **(h)** R =3-Bromobenzaldehyde;**(i)**R =2-Hydroxy benzaldehyde**; (j)**R = 3-hydroxy benzaldehyde**;**

Melting points were determined in open capillary tubes and are uncorrected. The IR spectra were recorded in KBr pellets on a Buker spectrometer and 1 H NMR spectra in CDCl3 on Hitachi R-1500, 60 MHz spectrometer using TMS as an internal standard. All chemicals used were of laboratory grade.

Preparation of 1-(3,5-dibromo-2,4-dihydroxyphenyl)ethanone (HDBA) and chalcone is as given in fig 1.

Synthesis of 1– (3,5-dibromo-2,4-dihydroxyphenyle) ethanone (HDE) (i)
Take 1–(2,4-dihydroxyphenyl)ethanone(0.10 mole) in ethanol(20%) Than make Br_2 solution in the chloroform. Cool the reaction mixture up to $<5^0$C than add drop wise previously prepared Br_2 solution with vigorous stirring. After completion of addition allow to stay the reaction mixture for 3 hour under stirring. After the completion of the reaction (By TLC), allow the reaction mass to concentrate (by evaporation), after some time the crystalline material of HDE observed. Cool the mass filter it and wash with cold solution of ethanol.

Synthesis of 1– (4-Benzyloxy-3,5-dibromo-2-hydroxyphenyle) ethanone (HDBA) (ii) :
1– (3,5-dibromo-2,4-dihydroxyphenyle) ethanone (HDE) (0.10 mole), Benzylebromide (0.12 mole) and Potassium carbonate (0.15 mole) were taken in 500ml of Acetone. The reaction mixture was stirred for 6-8 hours at reflux temperature. The reaction mass was cooled to 15 – 20^0C temperature and quenched with approx 700ml water. The resulting product 1– (4-Benzyloxy-3,5-dibromo-2-hydroxyphenyle) ethanone (HDBA) was filtered and washed with water. The obtained product was recrystallized in ethanol.

Preparation of chalcone (3a-j)
Chalcones can be prepared by the most convenient method available in literature involves the Claisen-Schmidt condensation of equimolar quantities of a substituted acetophenone with substituted benzaldehydes in the presence of aqueous alkali. In this reaction the concentration of alkali used is ranged between 10 to 60%. [17,18, 23,32,41]

Following the above procedure, the attempts have been made to prepare chalcones from HDBA using various aromatic aldehydes. On the basis of the results, it was found that chalcones could easily be prepared from HDBA using aromatic aldehydes at room temperature after several hours.

In some cases it was needed to establish the procedure for preparing chalcones from HDBA using some aldehydes, different reaction conditions were applied. From the results, it was found that the chalcones could be prepared from HDBA using some aldehydes by refluxing the reaction mixture at 75 – 80^0C temperature for 3 hours.

1– (4-Benzyloxy-3,5-dibromo-2-hydroxyphenyle) ethanone (HDBA) (3**)**
m.p 158- 160°C; Mass; 400.06 ; IR(KBr cm-1): 2980(C-H str. vib.) 3067(-Aromatic C-H),1571, 1469,(C=C str.Vib.),879(-C – H o.m.m.p multi sub. benzene),1240, 1031(C-O-C str.vib), 3428(O-H str.vib), 1622(-C=O str.vib), 554(C-Br str.vib),; 1H NMR 7.30 – 7.8 (s,6H,of the Ar-H) ,12.8 (s,1H, Ar-OH), 5.02 (2H,s, -CH2-O-), 2.5 (3H,s, O=CCH3),; Yield 58%;

1-(2-hydroxy-3,5-dibromo-4-Benzyloxyphenyl)-3- phenylprop-2-en-1-one [3a]:
m.p 141-145°C; Mass; 488.17 ; IR(KBr cm-1): 2869(C-H str. vib.) 3053(-Aromatic C-H),1569, 1460,(C=C str.Vib.),871(-C – H o.m.m.p multi sub. benzene),1238, 1029(C-O-C str.vib), 3480(O-H str.vib), 1633(-C=O str.vib), 571(C-Br str.vib),; Yield 60.33%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(4-bromophenyl) prop-2-en-1-one [3b]:
m.p 179-181°C; Mass; 567.06 ; IR(KBr cm-1): 2848(C-H str. vib.) 3041(-Aromatic C-H),1574, 1432,(C=C str.Vib.),873(-C – H o.m.m.p multi sub. benzene),1240, 1021(C-O-C str.vib), 3464(O-H str.vib), 1626(-C=O str.vib), 613(C-Br str.vib),; Yield 59.13%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(4-chlorophenyl) prop-2-en-1-one [3c]:
m.p 167-169°C; Mass; 522.61 ; IR(KBr cm-1): 2833(C-H str. vib.) 3030(Aromatic C-H),1565, 1440,(C=C str.Vib.),854(-C – H o.m.m.p multi sub. benzene),1238, 1013(C-O-C str.vib), 3447(O-H str.vib), 1636(-C=O str.vib), 611(C-Br str.vib),; Yield 61.42%;

1-(2-hydroxy-3,5-dibromo -4-benzyloxyphenyl)-3-(4-methoxyphenyl) prop-2-en-1-one [3d]:
m.p 140-142°C; Mass; 518.19 ; IR(KBr cm-1): 2860(C-H str. vib.) 3045(Aromatic C-H),1559, 1462,(C=C str.Vib.),863(-C – H o.m.m.p multi sub. benzene),1259, 1023(C-O-C str.vib), 3455(O-H str.vib), 1641(-C=O str.vib), 621(C-Br str.vib),; Yield 61.81%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(3-chlorophenyl) prop-2-en-1-one [3e]:
m.p 153-155°C; Mass; 522.61 ; IR(KBr cm-1): 2841(C-H str. vib.) 3037(Aromatic C-H),1562, 1459,(C=C str.Vib.),851(-C – H o.m.m.p multi sub. benzene),1266, 1052(C-O-C str.vib), 3436(O-H str.vib), 1654(-C=O str.vib), 638(C-Br str.vib),; Yield 60.31%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(2-chlorophenyl) prop-2-en-1-one [3f]:
m.p 155-157°C; Mass; 522.61 ; IR(KBr cm-1): 2856(C-H str. vib.) 3044(Aromatic C-H),1554, 1460,(C=C str.Vib.),831(-C – H o.m.m.p multi sub. benzene),1250, 1051(C-O-C str.vib), 3440(O-H str.vib), 1678(-C=O str.vib), 654(C-Br str.vib),; Yield 62.27%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(4-(N N-dimethyl) phenyl) prop-2-en-1-one [3g]:
m.p 156-158°C; Mass;531.24 IR(KBr cm-1): 2861(C-H str. vib.) 3051(Aromatic C-H),1527, 1451,(C=C str.Vib.),840(-C – H o.m.m.p multi sub. benzene),1244, 1027(C-O-C str.vib), 3448(O-H str.vib), 1670(-C=O str.vib), 650(C-Br str.vib),; Yield 60.15%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(3-bromophenyl) prop-2-en-1-one [3h]:
m.p 157-159°C; Mass;567.06 IR(KBr cm^{-1}): 2847(C-H str. vib.) 3033(Aromatic C-H),1523, 1430,(C=C str.Vib.),842(-C – H o.m.m.p multi sub. benzene),1250, 1015(C-O-C str.vib), 3437(O-H str.vib), 1664(-C=O str.vib), 672(C-Br str.vib),; Yield 52.81%;

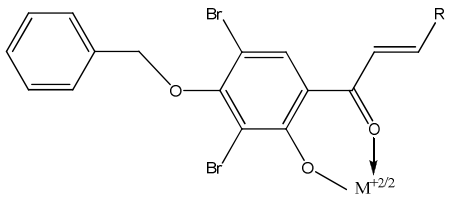
1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(2-hydroxyphenyl) prop-2-en-1-one [3i]:
m.p 161-163°C; Mass;504.17 IR(KBr cm-1): 2861(C-H str. vib.) 3039(Aromatic C-H),1510, 1463,(C=C str.Vib.),830(-C – H o.m.m.p multi sub. benzene),1264, 1040(C-O-C str.vib), 3421(O-H str.vib), 1634(-C=O str.vib), 671(C-Br str.vib),; Yield 58.00%;

1-(2-hydroxy-3,5-dibromo-4-benzyloxyphenyl)-3-(3-hydroxyphenyl) prop-2-en-1-one [3j]:
m.p 164-166°C; Mass;504.17 IR(KBr cm-1): 2864(C-H str. vib.) 3044(Aromatic C-H),1523, 1453,(C=C str.Vib.),833(-C – H o.m.m.p multi sub. benzene),1246, 1046(C-O-C str.vib), 3439(O-H str.vib), 1642(-C=O str.vib), 669(C-Br str.vib),; Yield 55.12%;

PREPARATION OF METAL(Co & Ni) COMPLEXES: (3,3a-3j)
Nickel chloride solution (10.0ml., 0.1M) diluted to 50 ml. and excess of ammonium hydroxide and ammonium acetate (30g in 10ml of water) excess of ammonium hydroxide with excess to get the pH between 11.0-12.0 than ethanolic solution of ligand(0.1M) added dropwise with constant stirring. It was refluxed with excess of alcoholic solution of ligand (0.1 M) on a water bath for half an hour when brownish yellow precipitates of nickel complex were obtained. The precipitates were filtered, washed with distilled water and than ethanol, dried at 100^{o} C. The complex was crystallized from ethanol.

Cobalt chloride solution (10.0ml., 0.1M) diluted to 50 ml. and excess of ammonium hydroxide was added to get the pH between 10.0-11.0. than ethanolic solution of ligand(o.1M) added dropwise with constant stirring. It was refluxed with excess of alcoholic solution of ligand(0.1M) on a water bath for 2-3 hours when ash gray precipitates of cobalt complex were obtained. The precipitates were filtered, washed with distilled water and then ethanol, dried at 100^{o}C. The complex was crystallized from ethanol.

Bis[1– (4–Benzyloxy-3,5-dibromo-2-Hydroxy phenyl) ethanone]metal (II): (3M)
Conductivity**;** 8.4(3Co), 8.5(3Ni)
IR(KBr cm^{-1})**;**
3Co ; C-H (Ph-CH2-) Str.(2865);C-H (-CH3 Assy.) Str.(2951); C-H(sym.) bend.(1371); C-O-C (Ether)(1237); C-O Str.(1030); Aromatic (str.& bend.)(3062,1509,870); C-Br Str.(549); Metal-ligand(M-O)(590-500).
3Ni ; C-H (Ph-CH2-) Str.(2870); C-H (-CH3 Assy.) Str.(2944); C-H(sym.) bend.(1377); C-O-C (Ether)(1238); C-O Str.(1026); Aromatic (str.& bend.)(3069,1518,865); C-Br Str.(543); Metal-ligand(M-O)(590-500).



Where, M= Metal Co or Ni
R= (M3a) R =phenyl; **(M3b)** R =4-Bromophenyle; **(M3c)** R =4-Chlorophenyle; **(M3d)** R=4-methoxyphenyl; **(M3e)** R =3-Chlorophenyl; **(M3f)** R =2-Clorophenyl; **(M3g)** R =4-(N N-dimethylamino)phenyl; **(M3h)** R =3-Bromophenyl;**(M3i)**R =2-Hydroxyphenyl**; (M3j)**R=3-hydroxyphenyl**;**

Fig.-2 Structure of metal complexes.

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-phenylprop-2-en-1-one]metal (II): (M3a)
Conductivity; 9.2(Co3a), 8.9(Ni3a)
IR(KBr cm^{-1})**;**
Co3a ; C-H (Ph-CH2-) Str.(2870); C=C (Chalcone) Str.(981); C-H (Assy.) bend.(1458); C-H(sym.) bend.(1379); C-O-C (Ether)(1019); C-O Str.(1242); Aromatic (str.& bend.)(3052,1647,861); C-Br Str.(574); Metal-ligand(M-O)(540-650).
Ni3a ; C-H (Ph-CH2-) Str.(2878); C=C (Chalcone) Str.(976); C-H (Assy.) bend.(1461); C-H(sym.) bend.(1378); C-O-C (Ether)(1021);C-O Str.(1248); Aromatic (str.& bend.)(3057,1651,863); C-Br Str.(580); Metal-ligand(M-O)(540-650).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(4-bromophenyl)prop-2-en-1-one]metal (II): (M3b)
Conductivity; 9.0(Co3b), 8.4(Ni3b)
IR(KBr cm^{-1})**;**
Co3b ; C-H (Ph-CH2-) Str.(2840); C=C (Chalcone) Str.(973); C-H (Assy.) bend.(1428); C-H(sym.) bend.(1365); C-O-C (Ether)(1021); C-O Str.(1236); Aromatic (str.& bend.)(3032,1609,870); C-Br Str.(601); Metal-ligand(M-O)(540-650).

Ni3b ; C-H (Ph-CH2-) Str.(2838); C=C (Chalcone) Str.(979); C-H (Assy.) bend.(1431); C-H(sym.) bend.(1366); C-O-C (Ether)(1023); C-O Str.(1233); Aromatic (str.& bend.)(3038,1611,872); C-Br Str.(619); Metal-ligand(M-O)(540-650).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(4-chlorophenyl)prop-2-en-1-one]nickel (II): (M3c)
Conductivity; 8.9(Co3c), 8.0(Ni3c)
IR(KBr cm^{-1})**;**
Co3c ; C-H (Ph-CH2-) Str.(2830); C=C (Chalcone) Str.(960); C-H (Assy.) bend.(1435); C-H(sym.) bend.(1376); C-O-C (Ether)(1008); C-O Str.(1237); Aromatic (str.& bend.)(3032,1610,849); C-Br Str.(612); C-Cl Str.(768); Metal-ligand(M-O)(590-500).
Ni3c ; C-H (Ph-CH2-) Str.(2837); C=C (Chalcone) Str.(964); C-H (Assy.) bend.(1437); C-O-C (Ether)(1011); C-O Str.(1235); Aromatic (str.& bend.)(3031,1612,847); C-Br Str.(617); C-Cl Str.(763); Metal-ligand(M-O)(590-500); C-H(sym.) bend.(1379).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(4-methoxyphenyl)prop-2-en-1-one]metal (II): (M3d)
Conductivity; 9.3(Co3d), 9.1(Ni3d)
IR(KBr cm^{-1})**;**
Co3d ; C-H(-CH3) Str.(2963); C-H (Ph-CH2-) Str.(2865); C=C (Chalcone) Str.(949); C-H (Assy.) bend.(1460); C-H(sym.) bend.(1370); C-O-C (Ether)(1021); C-O Str.(1262); Aromatic (str.& bend.)(3034,1633,865); C-Br Str.(628); Metal-ligand(M-O)(590-500).
Ni3d ; C-H(-CH3) Str.(2960); C-H (Ph-CH2-) Str.(2859); C=C (Chalcone) Str.(943); C-H(sym.) bend.(1377); C-O-C (Ether)(1025); C-O Str.(1256); Aromatic (str.& bend.); (3031,1634,859); C-Br Str.(623); Metal-ligand(M-O)(590-500); C-H (Assy.) bend.(1455).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(3-chlorophenyl)prop-2-en-1-one]metal (II): (M3e)
Conductivity; 9.4(Co3e), 8.5(Ni3e)

IR(KBr cm^{-1})**;**
Co3e ; C-H (Ph-CH2-) Str.(2839); C=C (Chalcone) Str.(954); C-H (Assy.) bend.(1442); C-H(sym.)bend.(1385); C-O-C (Ether)(1043); C-O Str.(1261); Aromatic (str.& bend.)(3034); C-Br Str.(630); C-Cl Str.(777); Metal-ligand(M-O)(590-500).
Ni3e ; C-H (Ph-CH2-) Str.(2844); C-H (Assy.) bend.(1439); C-H(sym.) bend.(1382); C-O-C (Ether)(1040); C-O Str.(1258); Aromatic (str.& bend.)(3037); Br Str.(636); C-Cl Str.(771); Metal-ligand(M-O)(590-500); C=C (Chalcone) Str.(958).

Bis[1-(4-(benzyloxy)- 3,5-dibromo -2-hydroxyphenyl)-3-(2-chlorophenyl)prop-2-en-1-one]nickel (II): (M3f)
Conductivity; 9.4(Co3f), 8.9(Ni3f)
IR(KBr cm^{-1})**;**
Co3f ; C-H (Ph-CH2-) Str.(2852); C=C (Chalcone) Str.(960); C-H (Assy.) bend.(1461); C-H(sym.) bend.(1379); C-O-C (Ether)(1052); C-O Str.(1247); Aromatic (str.& bend.)(3040,1550,829); C-Br Str.(774); C-Cl Str.(659); Metal-ligand(M-O)(590-500).
Ni 3f; C-H (Ph-CH2-) Str.(2855); C=C (Chalcone) Str.(964); C-H (Assy.) bend.(1465); C-O-C (Ether)(1054); C-O Str.(1252); Aromatic (str.& bend.)(3038,1553,832); C-Br Str.(778); C-Cl Str.(652); Metal-ligand(M-O)(590-500); C-H(sym.) bend.(1372).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(4-(dimethylamino)phenyl)prop-2-en-1-one]metal (II): (M3g)
Conductivity;9.6(Co3g), 8.8(Ni3g)
IR(KBr cm^{-1})**;**
Co3g ; C-H (-CH3) Str. (2971); C-H (Ph-CH2-) Str.(2864); C=C (Chalcone) Str.(962); C-H (Assy.) bend.(1441); C-H(sym.) bend.(1383); C-O-C (Ether)(1018); C-O Str.(1233); Aromatic (str.& bend.)(3060); N-H Str.(1240); C-Br Str.(658); Metal-ligand(M-O)(590-500).
Ni3g; C-H (-CH3) Str.(2975); C-H (Ph-CH2-) Str.(2859); C=C (Chalcone) Str.(969); C-H (Assy.) bend.(1439); C-H(sym.) bend.(1387); C-O-C (Ether)(1016); C-O Str.(1238); Aromatic (str.& bend.)(3052); N-H Str.(1236); C-Br Str.(649); Metal-ligand(M-O)(590-500).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(3-bromophenyl)prop-2-en-1-one]metal (II): (M3h)
Conductivity; 8.8(Co3h), 8.6(Ni3h)
IR(KBr cm^{-1})**;**
Co3h ; C-H (Ph-CH2-) Str.(2852); C=C (Chalcone) Str.(980); C-H (Assy.) bend.(1476); C-H(sym.) bend.(1381); C-O-C (Ether)(1009); C-O Str.(1236); Aromatic (str.& bend.)(3034); C-Br Str.(670); Metal-ligand(M-O)(590-500).
Ni3h ; C=C (Chalcone) Str.(984); C-H (Assy.) bend.(1478); C-H(sym.) bend.(1379); C-O-C (Ether)(1011); C-O Str.(1239); Aromatic (str.& bend.)(3045); C-Br Str.(678); Metal-ligand(M-O)(590-500); C-H (Ph-CH2-) Str.(2847).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(2-hydroxyphenyl)prop-2-en-1-one]metal (II): (M3i)
Conductivity; 9.6(Co3i),8.1(Ni3i)
IR(KBr cm^{-1})**;**
Co3i ; OH (Phenolic) Str.(3419); C-H (Ph-CH2-) Str.(2867); C=C (Chalcone) Str.(962); C-H (Assy.) bend.(1442); C-H(sym.) bend.(1366); C-O-C (Ether)(1032); C-O Str.(1242)Aromatic (str.& bend.)(3040,1526,830); C-Br Str.(670); Metal-ligand(M-O)(590-500).
Ni3i ; OH (Phenolic) Str.(3423); C-H (Ph-CH2-) Str.(2859); C=C (Chalcone) Str.(964); C-H (Assy.) bend.(1439); C-H(sym.) bend.(1361); C-O-C (Ether)(1039); C-O Str.(1245); Aromatic (str.& bend.)(3038,1518,836); C-Br Str.(674); Metal-ligand(M-O)(590-500).

Bis[1-(4-(benzyloxy)-3,5-dibromo-2-hydroxyphenyl)-3-(3-hydroxyphenyl)prop-2-en-1-one]metal (II): (M3j)
Conductivity; 9.7(Co3j), 8.3(Ni3j)
IR(KBr cm^{-1})**;**
Co3j ; OH (Phenolic) Str.(3434); C-H (Ph-CH2-) Str.(2864); C=C (Chalcone) Str.(966); C-H (Assy.) bend.(1449); C-H(sym.) bend.(1366); C-O-C (Ether)(1029); C-O Str.(1250)
Aromatic (str.& bend.)(3040,1520,833); C-Br Str.(665); Metal-ligand(M-O)(590-500).
Ni3j ; OH (Phenolic) Str.(3438); C-H (Ph-CH2-) Str.(2867); C=C (Chalcone) Str.(961); C-H (Assy.) bend.(1451); C-H(sym.) bend.(1360); C-O-C (Ether)(1026); C-O Str.(1249); Aromatic (str.& bend.)(3038,1528,839); C-Br Str.(670); Metal-ligand(M-O)(590-500).

MICROBIOLOGICAL EVALUATION OF SYNTHESIZED COMPOUNDS:

Antibacterial activity:

The synthesized pure products were screened for their antibacterial activity by using cup-plate agar diffusion method. First nutrient agar broth prepared by the usual method than it was inoculated aseptically with 0.5 ml of 24 hrs old subculture of *Staphylococcus aureus*and *Escherichia coli* in separate flasks at 40-50^{0}C and mixed well by gentle shaking. About 25 ml of the contents of the flask were poured out and equally spread in Petridis (90 mm dia.) and allowed to set for two hrs. The cups (8 mm dia.) were formed by the help of borer in agar medium and filled with 0.1 ml (1 mg/ml) solution of sample in Acetone.

The plates were incubated at 30-35^{0}C for 24 hrs and the control was also maintained with 0.1 ml of acetone in similar manner and the zones of inhibition of the bacterial growth were measured in millimeter are given in table.

Antifungal activity:

A niger was employed for testing antifungal activity by cup-plate agar diffusion method. The culture was maintained on Sub rouse dextrose agar slants. Sterilized Sub rouse dextrose agar medium was inoculated with 72 hrs old 0.5 ml suspension of fungal spores in a separate flask. About 25 ml of the inoculated medium was evenly spread in a sterilized Petridis and allowed to set for 2 hrs. The cups (8 mm dia.) were punched in Petridis and loaded with 0.1 ml (2 mg/ml) of solution of sample in Acetone. The plates were incubated at 20 – 25^{0}C for 72 hrs. After the completion of incubation period, the inhibition zones in the form of diameter in mm were measured. Along the test solution in each Petridis one cup was filled up with solvent which acts as control. The zones of inhibition are given in table.

Table-1

Comp.	E. coli	S. aureus	A. niger	Comp.	E. coli	S. aureus	A. niger	Comp.	E. coli	S. aureus	A. niger
3	11	10	9	Co3	16	11	9	Ni3	15	11	10
3a	13	9	8	Co3a	15	11	10	Ni3a	13	11	11
3b	14	11	7	Co3b	11	12	12	Ni3b	10	12	12
3c	12	12	10	Co3c	11	11	12	Ni3c	9	10	11
3d	16	12	9	Co3d	12	11	11	Ni3d	17	10	11
3e	14	14	9	Co3e	19	11	11	Ni3e	18	10	10
3f	12	11	8	Co3f	15	13	10	Ni3f	16	10	10
3g	11	15	7	Co3g	14	10	10	Ni3g	15	10	9
3h	15	16	7	Co3h	16	12	10	Ni3h	17	11	9
3i	13	14	10	Co3i	17	11	9	Ni3i	16	11	9
3j	12	14	10	Co3j	15	13	9	Ni3j	14	12	8
Ofloxacin	40	40	0	Ofloxacin	40	40		Ofloxacin	40	40	
fluconazole			34	fluconazole			34	fluconazole			34

RESULTS AND DISCUSSION

In the present work, some novel chalcones of 1– (2-hydroxy–3,5-dibromo-4–benzyloxyphenyl) ethanone (HDBA) from 10 aldehydes have been prepared. During the preparation work, it was found that most of the chalcones using aromatic aldehydes could be easily prepared by most convenient claisen-schmidt condensation method. The chalcones could be easily prepared at room temperature after 72 hours. It was found that the chalcones derived from aromatic aldehydes were stable and can be easily converted to its derivates. During the preparation of chalcones using some aromatic aldehydes, it was found that chalcones could not be prepared by claisen-schmidt condensation. To establish a new synthetic process for chalcones, different reaction conditions were applied. From the results, it was found that the chalcones could be prepared from HDBA using some aldehyde by refluxing the reaction mixture at 75–80^{o}C temperature for 3 hours. Thus, a new developed synthetic process has been applied to prepare chalcones from HDBA in the present work.

To check the applicability of the prepared compounds, There is scope of research that the prepaired chalcone could be analyzed for their anti microbial action. . The antibacterial activity of each compound can be compared with

standard drug viz. Ofloxacin and antifungal activity can be compared with standard drug viz. Fluconazole. We were found that the synthesized compounds have poor antimicrobial and antifungal activity as compare to present drug.

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REFERENCES

[1] Kostaneki S. V. and Tambor.; *Chem. Ber*. (**1899**),32,1921.
[2]Milter P. and Soha; *J. Ind. Chem.Soc*. **(1934)**, 11**,**257.
[3] Blicke F. F. and Kawall C. E.; *J.Am. Chem. Soc*. (**1942)**, 54,428.
[4] Shinoda J., Sato J. and Kawago.; *J. Pharm. Soc., Japan.* **(1904)**, 24, 1459.
[5] Russel A.; *J.Chem.Soc.* **(1934)**,1506.
[6] Kurth E. F.; *J. Am. Chem. Soc*. **(1946)**, 68, 697.
[7] Rohrmann E., jones R.G. and Sonale H. A.; *ibid.* **(1944)**, 66,1856.
[8] Schrautstalter E. and Deutsch S.; C.A. **(1904),** 44, 3568.
[9] Calcinari R.; *C.A.* **(1950),** 77, 48007.
[10]Schraufstatter E. and Duetsch S.; J. Naturforsch. **(1950)**, 4B, 190 .
[11]Kamoda M. and Ito N.; *J. Agr. Chem. Soc*., Japan, **(1954). (1955),** 28, 799, *C.A.* 49, 5573b.
[12]Gasha M., Tsiujj A., Sakurai y., Kurumi M., endo T., Sado t., Sato S. and Yamaguchi k.; Yakugaku Zasshi, **(1972),** 92,719*C. A.* **(1972).** 77,97221y
[13]Bayer F.; British Patent, **(1954)** ,7,08,013*C. A.* **(1973),** 79,18450n.
[14]Tomcufcik A. S., Wilkinson r. G. and Child R.G.; German Patent. **(1975)**,2,502,490,C. A. **(1975),** 83,179067k.
[15]Henry d. W.; U. S. Patent. **(1973)** ,3,726,920, *C. A.* **(1973),** 79,18450n.
[16]Takayanagi Y.; *Ann. Rep. Tohoku Coll. Pharm.* No. **(1954), 1**, 10, *C.A.* **(1956),**50,4389e.
[17]Stenlid G.; Physiol Plant., 21,882(1968), *C. A.* **(1968),** 69,84194b.
[18]Mc Gowan J. C., Brian P. W. and Hemming H. G.; *Ann. Applied Biol*. **(1948)**, 35,25, *C.A.* **(1949),** 43,9334b.
[19]Warm G. and Lachmann C.; *Arch. Pharm*. **(1974)**, 3,07,695, *C. A.* **(1974),** 81,169399v.
[20]Lafon L.; Ger. Often. 2,010,180 (1970), *C. A.* **(1970),** 73, 120342s.
[21]Rossi G. C. and Packman E. W.; *J. Am. Pharm. Assoc*. **(1958)**, 47, 640.
[22]Caradonna C.and Steir M.L.; *Farmaco Edn. Sci*. **(1960)**, 15,674.
[23]Stelger N; *C. A.* **(1951),** 45,10259.
[24]Krishnamohanrao K. S. R. and Subbarao N. V.; *Indian J. Chem*. **(1968)**,6,66.
[25]Sharma T. C., Bokadia M. M. and Reddy N. j.; *Indian J. Chem*. **(1980)**, 19B,228.
[26]Stamper N. and Avcock b. F.; *J. Ind. Chem. Soc*. **(1954)**, 76,2786.
[27]Singh C.P and Ojha A. C.; *Ind Chem. Soc*. **(1980)**, 7, 1172.
[28]Doshi R., Kagthara P. and Prakash H.; *Indian J. Chem*. **(199)**, 38-B, 348.
[29]Mochida Pharmaceuticals Co. Ltd., *Japan Ped.* **(1961),**81,127383. *C. A.* **(1982),** 96, 85572.
[30] Ingram V. V.; Biosynthesis of Macromolecules 2nd Edition (Benjamin Monlopark), **(1972),** 212.
[31]Nakadoda, Azu E., Yamamoto S., Kato R., Effect of Chalcone Derivative on Lipoxygenase and Cyclo-Oxygenage Activites of Mouse Epidermis Prostaglandins, **(1985),** 30(3),357.
[32]Casnuti G., dradi G., Messori E. and Sartori R.; *Tetrahedron*, **(1997),** 2061.
[33]Gaissman T. A. and Clinton R.O.; *J. Am. Chem. Soc*. **(1946)**, 68, 697.
[34]Fujise and Tatsuta H; *J. Chem. Soc*., Japan, **(1942),** 63, 932.
[35]Martin G. J., Beiler J. M. and Avakian S.; U.S. patent, 2, 769, 817 *C.A.* **(1957),** 51, 14815a.
[36]Tsukerman S.V., Chang K. S. and Lavrushin V. F.; zh. Obshch. Khim. **(1964)**, 34, 2881.
[37]Falcao da and Fonseca L.; Bolfac. Farm., Univ. Coimbra, Ed. Cient, **(1968),** 28,49, *C.A.* **(1970),** 72,121124.
[38]Loth h. and Worm G.; *arch. Pharm*. (weinheim)., 301, 897(1968), *C.A.* **70**, 68064z (**1969**).
[39]Biletch H. A. and Rajuas J. V.; *U. S. patent*, **4**, 361,827 (**1968**).
[40]Biletch H. A. and Rajuas J. V.; *C.A.* **68**,104756w (**1968**).
[41]Falcao da and Fonseca L.; Bolfac. Farm., Univ. Coimbra, Ed. Cient, **28**,49(**1968**), *C.A.* **72**,121124(**1970**).
[42]Chen F.C. and Chang P. W.; (Tai-Wan) k' Ohsuch, **24**, 105 (1970), *C.A.* **75**,19859g (**1971**).
[43]Lavrushin V. F. and Verkhod N. N.; Zh. *Organ. Khim*. **1(7)**, 1220 (1965), *C.A.* **63**, 13118b (1965).
[44]Borgellini G. and Martegini E.; Gazz. *Chim. Ital.*, **42**, 11,427 (**1968**).
[45]Dhar D. N. and Shing R.K.; *J. Ind. Chem. Soc*., **48**,83 (**1971**).

[46]Hayakawa G. and Inone T.; Japanese patent, 71,07,388 (**1971**), *C.A.* **74**,143332 (**1971**).
[47]Lespagnol a., Lesieur C., Bonte J.P., Blain V. and Labiau O.; *Chim. Ther*., **6**, 192(1971), *C.A.* **75**,98285t (**1971**).
[48]Pomeran seva L.L., smirnova G. A. and Oleiniki A. V.; Tr. Khim. *Khim. Tekhnol* (1), 14 (**1972**), *C.A.* **78**,159089w (**1973**).
[49]De Vincenzo R., Swamia G., Panici and Renelletti F.O.; *Anticancer Drag Res*.**10 (6)**,481(**1995**), *C.A.* **124**, 247r(**1996**).