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SYNTHESIS AND BIOLOGICAL STUDIES OF NEW BIS-CHALCONES

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Abstract: *A Series of new bis-Chalcones were prepared from Bisketone by base catalyzed condensation with substituted aromatic aldehyde in presence of alcohole. The structures of the products were confirmed by spectral methods. The products were assayed for their antibacterial activities against some selected organisms, some of products displayed promising activity. Bis-chalcones and their derivatives possesses antibacterial, anticancer and other activities. Due to these wide applications and our interest in aromatic compounds initiated us to prepare a new series of bis-chalcones and their antibacterial activities. We report herein the synthesis of a series of 1,1-{3-hydroxy-4-3(3'-4'-disubstituted phenyl) prop-2-ene- 1-one)- oxyphenyl)-methane (II $_{(a-d)}$) by the interaction of 1,1-bis{3-hydroxy-4-acetyl-oxypheny}-methane.(I) with substituted aromatic aldehyde. The reaction was carried out in ethanol for overnight.*

Keywords: *S Resacetophenone , Bis-Chalcones, antibacterial, aromatic aldehyde.*

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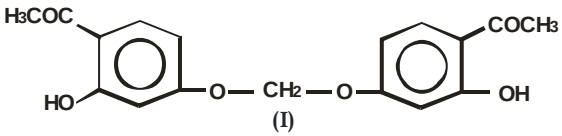
INTRODUCTION

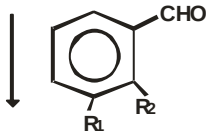
Antibacterial activity was tested by disk diffusion method with minor modifications. *Staphylococcus aureus* (Yellow Pigment), *Pseudomonas aeruginosg* (Green Pigment), *Klebsiella Pneumoniae* and *Escherichia coli* were subcultured in MHA medium and incubated for 24 hours at 37^0C and then the bacterial cells were suspended according to the Mcfarland protocol, saline solution to produce a suspension of about 10^{-5} CFU mL^{-1} 10□L of this suspension was mixed with 10mL of sterile antibiotic agar at 40^0C and poured onto an agar plate in a laminar flow cabinet. Five paper disks (6.0mm diameter) were fixed onto the nutrient agar plate. One mg of each test compound was dissolved in 100 □L DMSO to prepare stock solution. 50 □g/□L of each test compound were prepared. These compounds were poured over a disk plate on to it Chloramphenicol (30□g/disk) was used as a standard drug (positive control). A DMSO poured disk was used as negative control. The susceptibility of the bacteria to the test compounds was determined by the formation of an inhibitory zone after 24 hours of incubataria at 36^0C. All the pathogenic bacteria's were found resistant towards compound (b) while all other compounds showed moderate activity towards all pathogenic bacteria's.

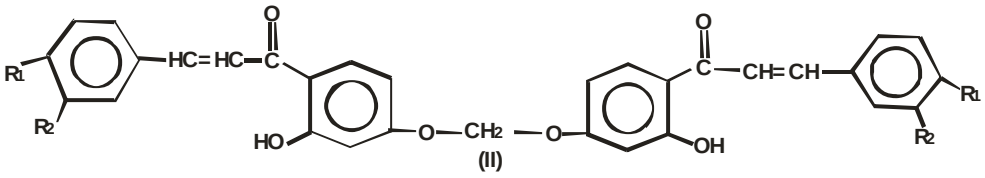
Scheme



(I)

1,1-bis (3-hydroxy-4-acetyl-oxyphenyl)-methane





(II)

1, 1 {Bis-(3-hydroxy-4-3(3'-4'-disubstitued phenyl) prop-2-ene-1-one)- oxyphenyl}- methane

a) R_1, R_2 - OH, H
b) R_1, R_2 - OCH_3, OCH_3
c) R_1, R_2 - $N-(CH_3)_2$, H
d) R_1, R_2 - NO_2,H

Table no 1. Prepared bis- chalcones and properties

Sr. No.	Synthesized Compounds	Yield (%)	MP
a)	1,1-{Bis-3[-hydroxy-4-3(4'-hydroxyphenyl)prop-2-ene-1-one]-oxyphenyl}-methane	55	**172^{0}C**
b)	1,1-{Bis-3[hydroxy-4-3(3'-4'-dimethoxyphenyl)prop-2-ene-1-one]-oxyphenyl}-methane	57	**168^{0}C.**
c)	1,1-{Bis-3[hydroxy-4-3(4'-dimethylaminophenyl)prop-2-ene-1-one]oxyphenyl}-methane	53	**165^{0}C**
d)	**1,1-{Bis-3-[hydroxy-4-3(4'-nitrophenyl)prop-2-ene-1-one] oxyphenyl}-methane**	**52**	**170^{0}C**

Experimental:

{1,1-bis (3-hydroxy-4-acetyl-oxyphenyl)-methane (I) : }

A mixture of 2,4 –dihydroxy acetophenone (Resacetophenone) (0.0025m) and di-iodomethane (0.005m) was poured in Acetone (160 ml) in presence of potassium carbonate. Then the mixture was refluxed over a boiling water bath for 5 hrs.

The reaction mixture was cooled and poured in to water, it was acidified with 50% AcOH, The whitish creamy coloured crude product obtained was crystallized from ethanol.

Preparation of bis-chalcone

{1,1{Bis-(3-hydroxy-4-3(3'-4'-disubstitued phenyl) prop-2-ene-1-one) oxyphenyl}- methane (II) :}

1,1-bis (3-hydroxy-4-acetyl-oxyphenyl)-methane (I) (0.1 mole) and substituted Aromatic Aldehyde (0.02 mole) were dissolved in 40 ml of ethanol.

The reaction mixtures was warmed up to 50^{0}C, KOH (0.4 mole) was added to reaction mixture with constant stirring. The reaction mixture was kept overnight. The crude product obtained was decomposed by 50% AcOH A yellow coloured crude product obtained was crystallized from dilute ethanol.

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