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Research Article

ANTI-MICROBIAL EVALUATION OF *P*-METHOXY BENZYL AMINE DERIVATIVES OF CHROMENE

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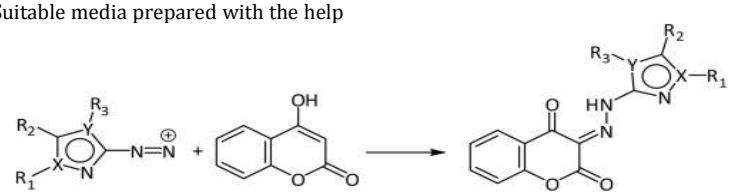
ABSTRACT

Benzopyran, the privileged medicinal pharmacophore, which present as an important structural component in natural compounds and creatd great attention because of their pharmcological effct. The derivatives of chomene moiety can be able of reacting with avariety of cellular level which leads to their wide ranging pharmaco- activities such as, anti hepatotoxic, anti inflammatory, diuretic, antispasmolytic, estrogenic, antiviral - helminthic, hypothermal, vasodilatory, anti-HIV, antitubercular, herbicidal, anticonvulsant and analgesic activity.

KEY WORDS: *Chromene, Hermicidal, Anibacterial, AntiHIV.*

INTRODUCTION

Medicinal chemistry is the branch of science, which has remarkable value for synthesis of novel drugs with intence therapeutic activity. It concerns with discovery, development, identification and interpretation of mode of action of biologically active compounds at molecular level. These developments have provided new challenges and opportunities for drug research in general and drug design in particular. The major objectives of the medicinal chemists are transformation of patho biochemical and physiological data into a`chemical language' with the aim of designing molecules interacting specifically with the derailed or degenerating processes in the diseased organisms.An anti microbal activity was carrid out at Nehru college of pharmacy, Pampady. Kerala, Department of micro biology lab. Suitable media prepared with the help of Dr. Sudahar D. Details about media, preparation described in methodology part. A Unique Highly Oxygenated Pyrano [4, 3-c] [2] benzopyran-1,6-dione Derivative with Antioxidant and Cytotoxic Activities from the Fungus [1]. 7-trihydroxy-4H-1-benzopyran-4-one) glycosides and sulfates: chemical synthesis, complexation, and antioxidant properties [2]. Synthesis and evaluation of in vitro antitubercular activity and antimicrobial activity of some novel 4H-chromeno[2,3-d]pyrimidine via 2-amino-4-phenyl-4H-chromene [3]. Aryloxyacetic Acid Diuretics with Uricosuric Activity. II. Substituted [(4-Oxo-4H-1-benzopyran-7-yl)oxy]acetic acids and the Related Compounds [4, 5]. An efficient synthesis of tetrahydrobenzo[b]pyran derivatives using sulfonic acid functionalized silica as an efficient catalyst [6] mention below reaction.



Tonabersat (SB-220453) a novel benzopyran with anticonvulsant properties attenuates trigeminal nerve-induced neurovascular reflexes [7]. Synthesis and anticonvulsant activity of 4-oxo and 4-thioxo-8-bromobenzopyran derivatives [8-9]. Identification of (−)-cis-6-acetyl-4S-(3-chloro-4-fluoro-benzoylamino)-3,4-dihydro-2,2-di methyl-2H-benzo [b] pyran-3S-ol as a potential antimigraine agent [10]

MATERIALS AND METHOIDS

Synthesis of P-Methoxy Bexzyl Amine derivatives of Chromene:

To a 50 ml of RBF 250mg (1.066 mmol) of compound 7 was taken in 30ml of ethanol. After that 0.271ml (2.136 mmol, 2 equivalents) of 4-methoxy-benzylamine was added, reaction was refluxed at 80^{0}C for 4hours. After completion of reaction the solvent was evaporated.M+1 Peak: 329.

Yield was 52%its, *Rf* value was 58, NMR data shows δ 7.20 (d, 1H, J= 8.4), δ6.66 (d,1H,J=2.1), δ6.62 (s, 1H), δ3.92(d, 1H, J=5.1), δ2.96 (s,1H,) δ 2.28 (s, 3H), δ 1.51 (s, 3H), δ 1.37 (s, 3H). Media preparations as follows Nutrient agar at concentration of 2%. (Bacteriological grade), Peptic digest of animal tissue: 5g/Ltr, Sodium chloride: 5g/Ltr, Beef extract: 1.5g/Ltr Yeast extract: 1.5g/Ltr, Agar: 50g/Ltr, Final PH (at 25^{0}c): 7.4. The ingredients dissolved in distilled water and heated maintain. PH to 7.2-7.6 using alkali diluted acid. 15-20ml of Nutrient Agar was then autoclaved at a pressure of 15psi (120 ^{0}c) for 20 minutes and the organisms used are *S.aureus* MTCC 405, *Pseudomonas aeroginosa*, were collected from Institute of Microbial Technology, Chandigarh. The strain was confirmed for their purity and identity by Gram's staining method and characteristic biochemical reactions. The selected strains were preserved by sub-culturing them periodically on other slants and storing them under frozen conditions. For the study fresh 24 hrs broth cultures were used after standardization of the

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culture. The entire work was done using horizontal laminar flow hood at Nehru college. So as to provide aseptic conditions in absence of bacterial growth. confirmed by aseptic working condition. The medium for the experiments were prepared fresh in Nutrient agar from preserved frozen slant culture. It was kept incubated at 37^0 c for one day. Drug used: t_1 (1000mcg/100ml), Standard used: Levofloxacin (5mcg/disc), Vehicle used: Ethanol. Two Nutrient agar plates were prepared aseptically to get a thickness of 5-6 mm. The plates were allowed to solidify and inverted to prevent the condensate falling on the agar surface. The plates were dried at 37^0 c before inoculation. The organisms were inoculated in the plates prepared by spread plate method. using a micropipette ,the culture place randomly on the agar plate and it is spread by using L-shaped glass rod where it is just touch the surface of the agar and rotating it to to and fro direction. The organism used was Gram positive S.*aureus* and Gram negative *Pseudomonas aeroginosa*.

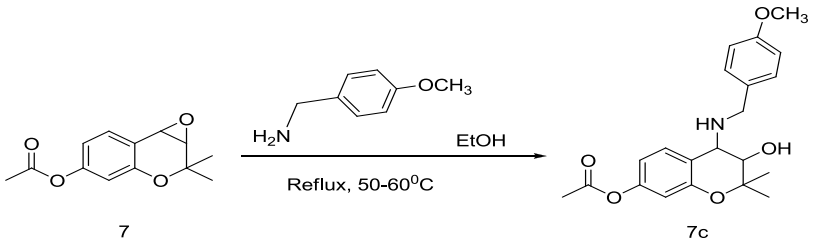

Fig. 1: Synthesis of P-Methoxy Bexzyl Amine derivatives of Chromene

The standard and test drugs were introduced in two agar plates by using cup plate method.

- By using the tips of borer, the four agar wells were made at each quadrant and central well for control.
- Add three different dilution of test drug which has been prepared from previously prepared stock solution of 1g test drug per 100mL ethanol.
- The different dilutions are prepared by taking 1ML stock solution and dilute with 4ML solvent (ethanol) similarly two more dilutions were prepared in the ratio 2:3 and 3:2.
- Also add the standard drug to one well, which has prepared in the ratio 1:4 and ethanol was added as control at the centre.
- By kept in the refrigerator for one hour to make uniform diffusion of drugs.
- Two plates prepared were then incubated for one day..
- The zone of inhibition around the drug and compared with of standard. The compound synthesized was tested for antibacterial activity against gram positive and gram negative bacteria.

Zone of inhibition of the compound against Gram negative *Pseudomonas aeroginosa.*

Drug used : Test sample (1000mcg/100ml) of different dilution in the ratio 1:4, 2:3 & 3:2

Standard : Levofloxacin (1mL/4ml)

Solvent : Ethanol

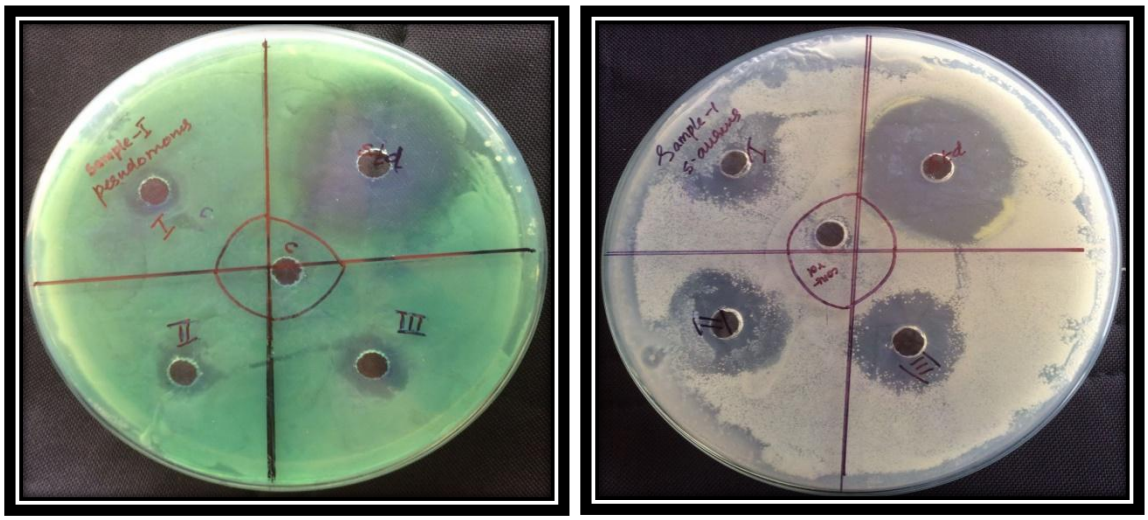

Fig. 2: Antimicrobial action

RESULT AND DISCUSSION

Table No. 1: Zone of inhibition of the compound against Gram negative *Pseudomonas aeroginosa*

Name of organism	Compounds	Dilutions (compound: Solvent)	Total Diametre (T) (cm)	Well Diametre (W)	Zone of Inhibition (T-D)*10 mm
Pseudomonas aeroginosa	Standrad	1:3	3.5	0.7	33
	Solvent	_	_	0.6	_
	Sample	1:3	1.4	0.6	8.2
		2:2	1.7	0.6	11.1
		3:4	2.1	0.6	13.1

Drug used: *Test sample (1000mcg/100ml) of different dilution in the ratio 1:4, 2:3 & 3:2;* ***Standard:*** *Levofloxacin (1mL/4ml), Solvent Ethanol.*

Table No. 2: Zone of inhibition of the compound against Gram positive *S.aureus*

Name of organism	Compounds	Dilutions (compound: Solvent)	Total Diametre (T) (cm)	Well Diametre (W)	Zone of Inhibition (T-D)*10 mm
S.aureus	Standrad	1:4	4.1	0.6	35
	Solvent	_	_	0.6	_
	Sample	1:3	2.2	0.6	15
		2:2	2.7	0.6	20
		3:1	3.0	0.6	23

CONCLUSION

The antibacterial activity of newly synthesized compound was evaluated by using both gram positive and gram negative organisms. *S.aureus, Pseudomonas aeroginosa*

Various dilution of 1000mcg/100ml has been for the test compound, results were compared with the standard Levofloxacin 1mL\4mL concentration and ethanol. The results were interpreted as the KB method the test organism Pseudomonas aeroginosa was found to be moderately sensitive at given concentration of test compound. And the organism *S.aureus* was found to be highly sensitive at given concentration of test compound.

Therefore the drug is more effective against Gram positive organism.

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