

A NOTE ON THE ANTIBACTERIAL ACTION OF SOME HALOGEN SUBSTITUTED CHALKONES

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Results of bacteriological tests with some halogen substituted chalkones corroborates previous reports that the bacteriostatic action of $\alpha\beta$ -unsaturated ketones increases appreciably with the introduction of hydroxyl and halogen substituents.

It has been shown by Geiger and Con (1945) that $\alpha\beta$ -unsaturated ketones exhibit bacteriostatic activity against Gram-positive organisms. Similar observations were made by Kamoda and Ito (1954) on their bactericidal action. More recently Schraufstatter and Deutsch (1948) demonstrated an increase in the bacteriostatic action of $\alpha\beta$ -unsaturated ketones with the introduction of hydroxyl and halogen substituents. Thus 2,2',3,3',5-tribromochalkone has been shown to be active against *Staphylococcus aureus* at a dilution of 1 in 640,000. Based on these findings a number of halogen substituted chalkones were synthesised to study their antibacterial action. The syntheses of some of these, and their characterisation by the preparation of their derivatives have been described (Gudi,

TABLE I
REACTION OF VARIOUS GROUPS OF SAMPLES WITH PEROXIDE-SULPHURIC TEST

Name of the compound 500 mg./100 g. acetone	Diameter of zone of inhibition in mm.	
	<i>Staph. aureus</i>	<i>E. coli</i>
2-Bromo-4-methyl-2'-hydroxychalkone	17.0	Nil
2-Bromo-4-methyl-2'-hydroxy- $\alpha\beta$ -dibromochalkone	17.0	16.0
2-Bromo-4-methyl-2'-hydroxy-4'-methoxychalkone	17.0	16.0
2,5'-Dibromo-2'-hydroxy-4'-methoxychalkone	21.0	24.0
2-Bromo-2'-hydroxy-4'-methoxychalkone	17.0	17.0
2-Bromo-4-methyl-2'-hydroxy-5'-methylchalkone	16.5	16.5
2-Bromo-4-methyl-2'-hydroxy-5'-chlorochalkone	Nil	Nil
4-Bromo-2-methyl-2'-hydroxy-5'-chlorochalkone	17.0	20.0
4-Bromo-2,5'-dimethyl-2'-hydroxychalkone	17.5	20.0
4-Hydroxy-4'-nitro-diphenylsulphone	17.0	18.0

Hiremath, Badiger and Rajagopal, 1961; Kadiwall, Hirayakkannawar, Badiger and Rajagopal, 1961). The present paper records the results of bacteriological tests made with some of these chalkones.

Evaluation of Bacteriostatic Activity by a Paper Disc Method

The tests were made following the procedure of Gould and Bowie (1952) employing the two organisms *S. aureus* and *Escherichia coli* kindly made available by the Haffkine Institute, Bombay.

The paper discs, prepared from Whatman filter paper No. 1, each measured 14 mm. in diameter. They were sterilised in a petri dish in an air oven at 120° for 1 hr. Hot agar was poured in 5½ in. petri dishes to about 7-8 mm. depth and allowed to cool to room temperature. The

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agar plates were inoculated uniformly from a culture of the organism grown for 18 hr. in nutrient broth, by flooding the surfaces and then removing the excess by a sterile capillary pipette. The open plates were then allowed to dry in an inverted position in an incubator for 30 min. The sterilised paper discs were then placed on the culture medium with sterile forceps and a drop of a solution of each compound, previously prepared by dissolving it in acetone, was placed on the paper disc. A control disc using acetone only was also used. This showed no zone of inhibition with either organism. The plates were incubated overnight at 37°. The activity was measured by the diameter of the areas of inhibition, and included that of the disc in addition to the surrounding zone.

The chalkones listed in Table I compare in their antibacterial properties with 4-hydroxy-4-nitrodiphenylsulphone.

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