Asian Journal of Chemistry Vol. 10, No. 4 (1998), 1021–1022

NOTE

Studies on the Antibacterial Activity of 3, 5-Diaryl Isoxazolines and 3,5-Diaryl Isoxazoles

MISS V.B. TAYDE* and V.S. JAMODE
Department of Chemistry
Amravati University, Amravati-444 604, India

Some 3,5-diaryl isoxazolines and 3,5-diaryl isoxazoles were synthesized by a novel method. These compounds have already been characterised by spectral data. They were screened for their antibacterial activity against gram-positive and gram-negative bacteria.

Literature reveals that a number of isoxazolines and isoxazoles have been reported to have good bacteriological activity. Isoxazolines have been reported to possess antimicrobial activity.[1] Isoxazoles are of vital importance as drugs. The antitubercular[2], antiviral[3] and antifungal activities[4] are well known in isoxazoles. Some antimycotic formulations[5] have also been prepared containing isoxazoles. They are also found to have antiviral properties against Herpes type 2 virus.[6]

The present work deals with the study of antibacterial activity of 3,5-diaryl isoxazolines and 3,5-diaryl isoxazoles. The compounds were screened for their antibacterial activity against *S. aureus*, *P. mirabilis*, *S. typhi*, *P. aeuruginosa* and *B. subtilis*. Most of the compounds showed significant antibacterial activity.

The following compounds were synthesized by reported methods[7] and the characterisation data has also been mentioned in previous paper.[7] (i) 3,5-Diaryl isoxazolines (3a–3j) (ii) 2. 3,5-Diaryl isoxazoles (4a–4j).

Antibacterial activity

The compounds synthesized were tested against pathogenic bacteria for their antibacterial activity by paper disc method.[8] The organisms tested were *Staphylococcus aureus*, *Proteus mirabilis*, *Salmonella typhi*, *Pseudomonas aeruginosa* and *B. subtilis*. The solution of the compound was prepared in DMF/DMSO as a solvent at a concentration of 50 μg. The culture medium used was nutrient agar medium. After 24 h of inhibition at 37°C, the zones of inhibition were measured in mm and are recorded as in Table-1.

In case of antibacterial activity, from Table-1, it is clearly observed that the antibacterial activity enhances due to presence of —OCH_3 group. Most of the compounds showed significant antibacterial activity. The inhibition was highest against *S. aureus* and *S. typhi*, moderate against *P. aeruginosa* and *B. subtilis* and inactive against *P. mirabilis*.

TABLE-1
ANTIBACTRIAL ACTIVITY OF COMPOUNDS (3a–3j) and (4a – 4j)

Compound No.	Antibacterial activity zone of inhibition in mm				
	S. aureus	*P. mirabilis*	*S. typhi*	*P. aeruginosa*	*B. subtilis*
3a	10	—	10	5	5
3b	15	—	10	10	10
3c	25	—	25	10	10
3d	30	—	15	20	10
3e	15	—	10	15	5
3f	20	—	15	15	10
3g	35	—	20	20	5
3h	35	—	20	15	10
3i	35	—	20	25	5
3j	35	—	35	20	15
4a	5	—	5	5	5
4b	10	—	10	10	10
4c	5	—	5	5	5
4d	10	—	10	5	10
4e	5	—	10	10	10
4f	10	—	10	10	10
4g	10	—	10	10	10
4h	10	—	10	10	10
4i	10	—	10	10	10
4j	10	—	10	10	10

For details of compounds see reference 7.

ACKNOWLEDGEMENT

The authors are thankful to Dr. Tambekar, Miss Pathak, Microbiology Department, Amravati University, Amravati for providing research facilities and for their kind co-operation.

REFERENCES

1. M.D. Ankhiwala and H.B. Naik, *J. Inst. Chem.* (*India*), **61**, 165 (1989).
2. C. Caradonna and M.L. Steir, *Farmaco Edn. Sci.*, **15**, 674 (1960).
3. N. Stelger, *Chem. Abstr.*, 45, 10259 (1951).
4. K.S.R. Krishnamohanrao and N.V. Subbarao, *Indian J. Chem.*, **6**, 66 (1968).
5. Shionogi and Co. Ltd., Jpn. Kokai Jp. (1983); *Chem. Abstr.*, **101**, 216431 (1984).
6. Sterling Drug Inc. Neth. Appl. N.L. 8102, 262 (ClCo7D 261/ 08) (1982); *Chem. Abstr.*, **989**, 107281 (1983).
7. V.B. Tayde and V.S. Jamode, *Asian J. Chem.*, **9**, 866 (1997).
8. C.H. Collins, Microbiological Methods, Butterworth, London (1967).

(*Received*: 9 March 1998; *Accepted*: 15 June 1998) AJC-1541