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NOTE

Studies on the Antibacterial Activity of 3,5-Diaryl Pyrazolines and 3,5-Diaryl Pyrazoles

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Some new 3,5-diaryl pyrazolines and 3,5-diaryl pyrazoles have been synthesized by a novel method. Structures of these compounds have already been characterised by spectral analysis. Listed compounds were tested for their antibacterial activity and are found to have remarkable activity.

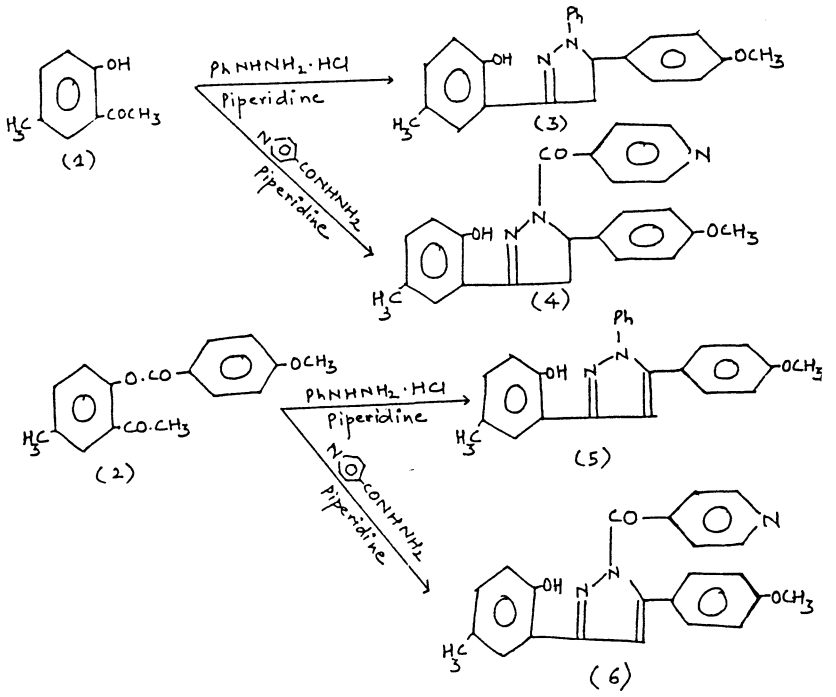
A survey of literature reveals that 3,5-diaryl pyrazolines and 3,5-diaryl pyrazoles possess multidimensional applications. Pyrazolines have been found to be effective insecticides[1] and antiinflammatory, bactericidal, pharmaceutical and fungicidal agents.[2, 3] Pyrazoles possess diverse biological activities.[4] It has been reported that pyrazoles possess pharmacological activities, anticancer activities[5], herbicidal activities[6], fungicidal activities,[7], antibacterial activities[8] and are also found to be antidiabetic,[9] pesticide[10] and hypolipemic agents.[11]

The present work deals with the study of antibacterial activity of pyrazolines and pyrazoles. These compounds were tested against *S. aureus*, *P. mirabilis*, *S. typhi*, *P. aeruginosa* and *B. subtilis*. Some of them were found to be highly active against microbes.

Melting points are uncorrected. The structures of the compounds were established on the basis of their elemental analysis and spectral data. Preparation and characterization of: (i) 3,5-diaryl-1-phenyl pyrazoline (3), (ii) 3,5-diaryl-1-pyridoyl pyrazoline (4), (iii) 3,5-diaryl-1-phenyl pyrazole (5) and (iv) 3,5-diaryl-1-pyridoyl pyrazole (6) are already reported in previous papers.[12] (Scheme-I).

Antibacterial activity

All the compounds synthesized were screened for their antibacterial activity using bacteria *Staphylococcus aureus*, *Proteus merabilis*, *Salmonella typhi*, *Pseudomonas aeruginosa* and *Bacillus subtilis* by paper disc method[13] at a concentration of 50 μg using DMF/DMSO as a solvent. After 24 h of inhibition at 37°C, the zones of inhibition are measured in mm and are recorded in Table-1.



Scheme-I

TABLE-1
ANTIBACTERIAL ACTIVITY OF COMPOUNDS NOs. 3, 4, 5 AND 6

Compound No.	Zone of inhibition in mm				
	S. aureus	*P. mirabilis*	*S. typhi*	*P. aeruginosa*	*B. subtilis*
3.	5 mm	—	10 mm	—	15 mm
4.	5 mm	—	10 mm	—	15 mm
5.	5 mm	—	10 mm	—	10 mm
6.	5 mm	—	10 mm	—	10 mm

— inactive

In case of antibacterial activity, from Table-1 it has been observed that the compounds were inactive against *P. mirabilis* and *P. aeruginosa*. Compounds showed moderate activity against *S. aureus* and storing activity against *S. typhi* and *B. subtilis*.

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