Antimicrobial activity of 1;1 Bis {2-hydroxy-3[1' H-5' Aryl pyrazolin-3'-yl methyl phenyl} methane

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(Received: April 28, 2010; Accepted: May 30, 2010)

ABSTRACT

By condensation of hydrazine hydrate with Bis-chalcones in pyridine medium titled Bis-Pyrazolines have been synthesised. Structure of these compounds have been characterised by spectral analysis. all compounds have been evaluated for their in vitro growth inhibitory activity against different microbes like Staphylococcus aureus, Escherichia coli, Proteus mirabilis and Salmonella typhi. The solutions were prepared in DMF solvents. The culture medium used was nutrient agar medium.

Key words: 1;1 Bis {2-hydroxy-3[1' H-5' Aryl pyrazolin-3'-yl methyl phenyl} methane; Antimicrobial activity

INTRODUCTION

Pyrazolines derivatives have shown considerable promise as a chemotherapeutic agents¹, due to this importance it is of current interest to synthesise some new pyrazolines. The reactive intermediate chalcones involve in their synthesis also exhibit various biological activity. Pyrazolines have been found to be effective insecticides²-⁴, fungicidal activity⁵-⁶, anti inflammatory⁷ and herbicidal activity.

Survey of literature reveals that pyrazolines found to show antimicrobial activity⁸-¹².

Some Bis-pyrazoline derivatives show antimicrobial activity¹³-¹⁵. In view of this it is appeared of interest to synthesise some new bis-pyrazolines and study their antimicrobial activity.

The structure of synthesized compounds was assigned on the basis of elemental analysis and spectral study¹⁶ (IR, NMR & UV). The compounds were evaluated for their microbial activity against gram+ve and gram-ve bacteria.

Compounds (I a-h).

Scheme 1.
EXPERIMENTAL

The titled compounds were screened in vitro for their antimicrobial activity against Staphylococcus aureus, Escherichia coli, Proteus mirabilis and Salmonella typhi. Using paper disc method at concentration of 50µg/ml using DMF as solvent. The culture medium used was nutrient agar medium. After 24±2 hours of incubation at 37±2°C, zones of inhibition were measured in mm and recorded in Table 2.

RESULTS AND DISCUSSION

From above table it was observed that compound I(a) was moderately active towards S. aureus and Pr. mirabilis and weakly active towards E. coli. Same compound was inactive towards S. typhi.

The compound I(b) was strongly active towards S. aureus and weakly active towards Pr. mirabilis and same compound was inactive towards E. coli and S. typhi.

The compound I(c) showed moderately active against E. coli and was inactive words S. aureus and Pr. mirabilis and weakly active S. typhi.

The compound I(d) was inactive against all micro-organisms.

The compound I(e) showed moderate activity against Pr. mirabilis but inactive against remaining S. aureus, E. coli and S. typhi.

The compound I(f) was strongly active against E. coli and weakly active against Pr. mirabilis and inactive towards S. aureus and S. typhi.

<table>
<thead>
<tr>
<th>Compds</th>
<th>R</th>
<th>R¹</th>
<th>m.p. (°C)</th>
<th>Yield (%)</th>
<th>M.F.</th>
<th>N (%)</th>
<th>Found</th>
<th>Calcd</th>
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<tr>
<td>Ia</td>
<td>H</td>
<td>H</td>
<td>250-253</td>
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<td>C₂₃H₂₂N₄O₂</td>
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<tr>
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<td>H</td>
<td>246-249</td>
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<td>Ie</td>
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<td>If</td>
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<td>173-176</td>
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<td>C₂₃H₂₆N₄O₂</td>
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<table>
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<tr>
<th>Compound</th>
<th>S. aureus</th>
<th>E. coli</th>
<th>Pr. mirabilis</th>
<th>S. typhi</th>
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<tr>
<td>Ia</td>
<td>++</td>
<td>+</td>
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<tr>
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</table>

-Inactive, + Weakly active, ++ Moderately active, +++Strongly active
The compound I(g) was strongly active towards *E. coli* and *Pr. mirabilis* but moderately active towards *S. aureus* and inactive against *S. typhi*.

The compound I(h) was weakly active towards *Pr. mirabilis* and *S. typhi* and same compound was inactive towards *S. aureus* and *E. coli*.

From above result it was observed that Bis pyrazolines (titled) were found more or less effective against, *Staphylococcus aureus, Escherichia coli, Proteus mirabilis* and *Salmonella typhi*. Hence those compounds can be easily used for treatment of diseases only when they do not have toxic and other side effects.

**ACKNOWLEDGEMENTS**

The authors are thankful to Dr. D.H. Tambekar, Head, Department of Microbiology, SGB Amravati University, Amravati, Miss Vishaka Pathak and Non teaching staff for providing necessary facility.

**REFERENCES**