INTRODUCTION

It was observed from the literature that most of the compounds having thiazolidine nucleus possess pharmacological action. For instance they are sedative antitubercular, antiflammatory of anaesthetics etc. 4-thiazolidinone are endowed a very of biological activities\textsuperscript{1-5}.

Thiazolidinones are also used as sedatives\textsuperscript{6-7} local anaesthetics\textsuperscript{8-9}, hypnotics\textsuperscript{10,12} analgesic\textsuperscript{11} or antitubercular and antispasmodic\textsuperscript{14} or anticonvulsants\textsuperscript{13}. Thiazolidinones are employed in the synthesis or mercycamine dyes which are used in photographic film industry.

In the present study, we report 2-thiophenyl-3-substituted phenyl-4-oxothiazolidine and its antimicrobial activity\textsuperscript{15}. 4-oxothiazolidine has antibacterial activity and acts as an antimicrobial and antitubercular agent\textsuperscript{18}.

EXPERIMENTAL

Preparation of 2-(4'-N, N-dimethyl aminophenyl)-3-(substituted phenyl)-4-oxo-thiazolidine (M\textsubscript{1})

A mixture of N-(4-chlorophenyl)-4-N,N-dimethyl amino) phenyl amozmethine (0.01M, 2.58 gm) and thioglycolic acid (0.01M, 1ml) was dissolved in 20 ml benzene. The mixture was refluxed for 2 hours, on water bath and allowed to stand at room temperature over night. The whole mass was treated with saturated sodium bicarbonate solution. Resulting and was crystallised from ethanol to give compound (M\textsubscript{1}), m.pt. 122°C, yield 72%.

Properties of compounds M\textsubscript{1}

- It is mid buff crystalline solid compound, m.pt. 122°C.
- From analytical data, molecular formula was found C\textsubscript{17}H\textsubscript{17}N\textsubscript{2}OSCl. The molecular weight being 332.5.
- UV-VIS uv-vis spectrum was recorded in methanol lmax value is 237 nm. It is due to n-π* transition
- I-R: The I.R. spectrum was recorded in Nujol
  1] C-H stretching in CH\textsubscript{2}) 2983 cm\textsuperscript{-1}
  2] Aromatic - C-H str 3030 cm\textsuperscript{-1}
  3] C=C str 1525 cm\textsuperscript{-1}
  4] Thizolidine moiety
  1) C=O str 1675 cm\textsuperscript{-1}
  2) C-N str 1163 cm\textsuperscript{-1}
  3) C-S-C str 732 cm\textsuperscript{-1}
  4) C-Cl str 742 cm\textsuperscript{-1}
- PMR. - The P.M.R. spectrum was recorded in CDCl\textsubscript{3}
  3.03 δ(S 6 H, N-(CH\textsubscript{3})\textsubscript{2})
  3.6 δ(S 2, S - CH\textsubscript{2}-C=O)

ABSTRACT

In the present study, we report 2-thiophenyl-3-substituted phenyl-4-oxothiazolidine and its antimicrobial activity. 4-oxothiazolidine has antibacterial activity and acts as an antimicrobial and antitubercular agent.

Key words: Antimicrobial activity, compounds, thiazolidinones.
Table 2: Synthesis, m.pt. Yield and colour of 2-(4'-N,N-dimethylanilino phenyl)-3-(substituted phenyl)-4-oxo-thiazolidine

<table>
<thead>
<tr>
<th>Compound</th>
<th>Name of Compounds</th>
<th>M.pt</th>
<th>% yield</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>M₁</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-chloro phenyl)-4-oxo-thiazolidine</td>
<td>122°C</td>
<td>72</td>
<td>Mid Buff</td>
</tr>
<tr>
<td>M₂</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-methoxy phenyl)-4-oxo-thiazolidine</td>
<td>115°C</td>
<td>78</td>
<td>Valcano</td>
</tr>
<tr>
<td>M₃</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-nitro phenyl)-4-oxo-thiazolidine</td>
<td>142°C</td>
<td>73</td>
<td>Copper leaf</td>
</tr>
<tr>
<td>M₄</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-methyl phenyl)-4-oxo-thiazolidine</td>
<td>92°C</td>
<td>79</td>
<td>Sunrise</td>
</tr>
<tr>
<td>M₅</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-methyl phenyl)-4-oxo-thiazolidine</td>
<td>126°C</td>
<td>72</td>
<td>Nut Brown</td>
</tr>
<tr>
<td>M₆</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-methyl phenyl)-4-oxo-thiazolidine</td>
<td>106°C</td>
<td>70</td>
<td>Brown</td>
</tr>
<tr>
<td>M₇</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-nitro phenyl)-4-oxo-thiazolidine</td>
<td>97°C</td>
<td>68</td>
<td>Golden yellow</td>
</tr>
<tr>
<td>M₈</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-methyl phenyl)-4-oxo-thiazolidine</td>
<td>126°C</td>
<td>72</td>
<td>Nut Brown</td>
</tr>
<tr>
<td>M₉</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(4'-methyl phenyl)-4-oxo-thiazolidine</td>
<td>106°C</td>
<td>70</td>
<td>Brown</td>
</tr>
<tr>
<td>M₁₀</td>
<td>2-(4'-N,N-dimethyl amino phenyl) -3-(2'-Carboxyphenyl)-4-oxo-thiazolidine</td>
<td>118°C</td>
<td>69</td>
<td>Dusty pink</td>
</tr>
</tbody>
</table>

Table 2 : Antimicrobial activity of synthesized compounds (M₁-M₁₀) by Cup-plate Method

<table>
<thead>
<tr>
<th>Compound</th>
<th>Bacillus magatherium</th>
<th>Bacillus subtilis</th>
<th>Proteus vulgaris</th>
<th>Escherichia coli</th>
</tr>
</thead>
<tbody>
<tr>
<td>M₁</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>+++</td>
</tr>
<tr>
<td>M₂</td>
<td>++++</td>
<td>++</td>
<td>-</td>
<td>++</td>
</tr>
<tr>
<td>M₃</td>
<td>++</td>
<td>-</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>M₄</td>
<td>+</td>
<td>+++</td>
<td>-</td>
<td>+++</td>
</tr>
<tr>
<td>M₅</td>
<td>++</td>
<td>-</td>
<td>+++</td>
<td>-</td>
</tr>
<tr>
<td>M₆</td>
<td>-</td>
<td>+++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>M₇</td>
<td>+</td>
<td>-</td>
<td>++</td>
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</tr>
<tr>
<td>M₈</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>M₉</td>
<td>-</td>
<td>+++</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>M₁₀</td>
<td>++++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
</tbody>
</table>

Control-DMF
(++++) Highly active (21-30 mm)
(+++) Moderately active (17-20 mm)
(+) Weakly active (12-16 mm)
(-) Inactive (Less than 12 mm)
6.1 δ (S 1J. C-H or thiozolidine)  
6.69-7.75 (m 8H, Ar - H)

From these spectral and chemical data the compound is 2-(4’N,N-dimethyl amino-phenyl)-3-(4“-Chlorophenyl)-4-oxothiazolidine

**Antimicrobial actitivies**

All the synthesized compounds were studied for their antibacterial activity using cup-plate diffusion method. The bacterial organism used included both gram+ve and gram -ve strain such as *E. coli, B. subtilis, P. vulgaris* and *B. megatherium*.

Sensitivity plates were studied with their bacterial inoculum of 1×10⁶ CIU/ml and each other were diameter (100 mm) was loaded with 0.1 of that compound solution (1000 µg/ml) in DMF so that concentration was 100 µg/ml. The zones of inhibition were studied after incubation for 24 hours using vernier calliper.

Inhibition zone record of the compounds, clearly indicated that compound No. M₄, M₉, M₁₀ were found to be highly active against *E. coli*. Compound M₅ and M₁₀ were found highly against *P. vulgaris*, M₁, M₇, M₈ and M₁₀ are found to be highly active against *B. subtilis*.

And majority of the compound were found to moderately active and rest of the compounds are found to be resistant against the organism given in the table 2.

![Chemical structure](image)

**REFERENCES**


