## CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>iii</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter-1</th>
<th>Introduction</th>
<th>1-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>General Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Furanones and Pyrrolones</td>
<td>4</td>
</tr>
<tr>
<td>1.2.1</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Synthetic methods</td>
<td>5</td>
</tr>
<tr>
<td>1.3</td>
<td>Chromenoquinolinones</td>
<td>11</td>
</tr>
<tr>
<td>1.3.1</td>
<td>Introduction</td>
<td>11</td>
</tr>
<tr>
<td>1.3.2</td>
<td>Synthetic methods</td>
<td>12</td>
</tr>
<tr>
<td>1.4</td>
<td>Dibenzopyranones</td>
<td>16</td>
</tr>
<tr>
<td>1.4.1</td>
<td>Introduction</td>
<td>16</td>
</tr>
<tr>
<td>1.4.2</td>
<td>Synthetic methods</td>
<td>18</td>
</tr>
<tr>
<td>1.5</td>
<td>Isoquinolinones</td>
<td>21</td>
</tr>
<tr>
<td>1.5.1</td>
<td>Introduction</td>
<td>21</td>
</tr>
<tr>
<td>1.5.2</td>
<td>Synthetic methods</td>
<td>22</td>
</tr>
<tr>
<td>1.6</td>
<td>4-Quinolinones</td>
<td>26</td>
</tr>
<tr>
<td>1.6.1</td>
<td>Introduction</td>
<td>26</td>
</tr>
<tr>
<td>1.6.2</td>
<td>Synthetic methods</td>
<td>27</td>
</tr>
<tr>
<td>1.7</td>
<td>Plan of Work</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter-2</th>
<th>Results and Discussion</th>
<th>32-56</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Synthesis of 3-Arylidene-5-(4-substitutedphenyl)furan-2(3H)-ones and 1-Benzyl-3-arylidene-5-(4-substitutedphenyl)-1H-pyrrol-2-(3H)-ones</td>
<td>32</td>
</tr>
</tbody>
</table>
2.1.1 Results and Discussion

2.1.2 Conclusion

2.2 Synthesis of 7-(Trifluoromethyl)-6H-chromeno[4,3-b]quinolin-6-ones

2.2.1 Results and Discussion

2.2.2 Conclusion

2.3 Synthesis of Thieno[2,3-c]chromen-4-ones and 7,8,9,10-Tetrahydrobenzothieno[3,2-c]chromen-6-ones via Suzuki-Miyaura cross-coupling reaction followed by lactonization

2.3.1 Results and Discussion

2.3.2 Conclusion

2.4 Synthesis of 5-Substituted thieno[2,3-c]pyridin-7(6H)-ones and 3-Substituted-5,6,7,8-tetrahydrobenzothieno[3,2-c]pyridin-1(2H)-ones based on Sonogashira cross-coupling-annulation procedure

2.4.1 Results and Discussion

2.4.2 Conclusion

2.5 Synthesis of 4,5-Disubstituted thieno[3,2-b]pyridin-7(4H)-ones via palladium catalyzed tandem amination reaction

2.5.1 Results and Discussion

2.5.2 Conclusion

2.6 Summary

Chapter-3 Experimental and Characterization

3.1 General: Equipment, chemicals and work technique

3.2 Procedures and Spectroscopic Data

3.2.1 Synthesis of 3-(Arylidene)-5-(4-substituted phenyl)furan-2(3H)-ones

3.2.2 Synthesis of 1-Benzyl-3-benzylidene-5(4-substitutedphenyl)-1H-pyrrol-2- (3H)-ones

3.2.3 Synthesis of 7-(Trifluoromethyl)-6H-chromeno [4,3-b]quinolin-6-ones
3.2.4 Synthesis of Thieno[2,3-c]chromen-4-ones and 7,8,9,10-Tetrahydro benzothieno[3,2-c]chromen-6-ones

3.2.5 Synthesis of 5-Substituted thieno[2,3-c]pyridin-7(6H)-ones and 3-Substituted-5,6,7,8-tetrahydrobenzothieno[3,2-c]pyridin-1(2H)-ones

3.2.6 Synthesis of 4,5-Disubstituted-thieno[3,2-b]pyridin-7(4H)-ones

Chapter-4 Biological screening and Crystal data 166-178

4.1 Biological screening 166

4.1.1 Antioxidant activity (DPPH radical scavenging assay) 166

4.1.2 Cytotoxicity (Brine shrimp lethality bioassay) 167

4.1.3 Urease inhibition studies 168

4.2 Data for X-Ray Crystal structures 170

References 179-197