Comparative Study of antibacterial activity of some complexes of Ni(II) and Pd(II) with 1 – substituted phenyltetrazoline – 5 – thione with and without triphenylphosphine

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ABSTRACT: Some complexes of Ni(II) and Pd(II) with 1 – substituted phenyltetrazoline – 5 – thione with and without triphenylphosphine are taken to know its antibacterial activity have been tested against bacteria E.coli and S.aureus. Key Words: Ni(II), Pd(II), 1-substituted phenyltetrazoline – thione, 1-O-PT5TH 1-ortho-phenyltetrazoline-5-thione, triphenylphosphine, MIC (Maximum Inhibition Constant), SM (Streptomycin – Standard drug against bacteria)

I. INTRODUCTION
Bacteria Ecoli and S.aureus are treated against the Ni(II) complexes¹ and Pd(II) complexes having 1-phenyltetrazoline-5-thione as a ligand with and without triphenylphosphine. Complexes of Ni(II) and Pd(II) show strong inhibition against bacteria which were being supported by MIC values²-⁴. They show different types of elevated shapes against different bacteria used.

II. EXPERIMENTAL
Following Ni(II) and Pd(II) complexes with and without triphenylphosphine with 1-substituted phenyltetrazoline -5-thione at meta-positions are being used as antibacterial agents² against bacteria E.coli and S.aureus are formed. 1. [Ni(1-O-CH(CH₃)₂PT5TH)Cl₂] .4H₂O 2. [Ni(1-O-CH(CH₃)₂ PT5TH) (PPh₃)₂ Cl₂] .C₂H₅OH 3. [Pd(1-O-(OCH₃) - PT5TH)Cl₂] .H₂O 4. [Pd(1-O -(OCH₃) - PT5TH)₂(PPh₃) Cl₂ ]

Above mentioned Ni(II) and Pd(II) complexes having ligand 1-phenyltetrazoline-5-thione with and without triphenylphosphine at ortho-positions each of volume 20μL in different discs against bacteria were tested.

III. RESULTS AND DISCUSSION
Complexes of Ni(II) and Pd(II) with 1-substituted phenyltetrazoline-5-thione with and without triphenylphosphine at ortho-positions were screened against E.coli and S.aureus. E.coli and S.aureus species are studied at 100ppm and 200ppm respectively for about 96hrs. After inoculation for 96hrs, the inhibition zone formed around each filter paper were measured at room temperature. Table -1 shows the aforesaid result.

<table>
<thead>
<tr>
<th>Complexes</th>
<th>E.coli 100ppm</th>
<th>E.coli 200ppm</th>
<th>S.aureus 200ppm</th>
<th>S.aureus 100ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [Pd(1-O-(OCH₃) - PT5TH)Cl₂] .H₂O</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>2. [Pd(1-O -(OCH₃) - PT5TH)(PPh₃) Cl₂]</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>3. [Ni(1-O-CH(CH₃)₂ PT5TH)Cl₂]</td>
<td>-</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
</tbody>
</table>
4. \[\text{[Ni}(1-\text{O}\text{-CH(CH}_3)_2\text{ PT5TH) (PPh}_3\text{)}\text{Cl}_2]_2\text{C}_2\text{H}_5\text{OH}\] + + + + + +

SM = Streptomycin (Standard Drug); Inhibition diameter in in mm; (-) Not effected or nil; (+++) 5-12mm ;(++++) 20-24mm ;(+++) 24-30mm.

**IV. CONCLUSION**

Complexes of Ni(II)andPd(II) show antibacterial activities\textsuperscript{10} which increases with increase in concentration. At higher concentration , complexes ofNi(II)andPd(II) are very much active against bacteria and they are closer to activity of the standard drug Streptomycin\textsuperscript{11-13} . Against the E.coli and S.aureusNi(II)and Pd(II) complexes withtriphenylphosphine are much more active than the complex of Pd(II) and Ni(II) withouttriphenylphosphine.

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