Dialkyldithiophosphate Derivatives of Some Macrocyclic Complexes of Sr(II) And Ba(II) Having N_4S_4 Potential Donors in 22-28 Membered rings

C. P. Bhasin[*], C. G. Prajapati and M. B. Patel

*Department of Chemistry, Hemchandracharya North Gujarat University, Patan-384265, (Gujarat) **INDIA**

Email: mehul201084patel@gmail.com, cpbhasin@ yahoo.com

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ABSTRACT

Dialkyldithiophosphate derivatives of macrocyclic complexes of Sr(II) and Ba(II), having N_4S_4 potential donors, of the general formula, $[M(L)\{S_2P(OR)_2\}_2]$ where M= Sr(II) and Ba(II), L=macrocyclic ligands L^1, L^2, L^3, L^4 and L^5; R= C_2H_5-, $C_3H_7^n$ or $C_3H_7^i$ have been synthesized from the reaction of $[M(L)X_2]$(where M = Sr(II) and Ba(II), X= Cl⁻, NO_3^- or CH3CHOO⁻) with sodium dialkyldithiophosphate in 1:2 molar ratios in THF. These complexes have been characterized by elemental analysis, molar conductance, molecular weight determinations, IR, ^1H, ^{13}C & ^{31}P NMR. Molecular weight determinations of these complexes indicate their monomeric nature. Octahedral structures have been proposed on the basis of IR,^1H, ^{13}C & ^{31}P NMR, in which four nitrogen atoms of the macrocyclic ring coordinate to the central metal (M = Sr(II) and Ba(II)), ion square-planar geometry and each dithiophosphate moiety occupies the axial positions binding the central metal (M= Sr(II) and Ba(II),) ion in a unidentate manner. The antimicrobial activities of these derivatives have been studied by screening them Aspergillus flavus, Fusarium oxysporum, Alternaria alternata and bacteria like Salmonella typhi and Bacillus subtili. Dialkyldithiophosphate derivatives were found to be more fungitoxic and antibacterial than their corresponding macrocyclic complexes.

Keywords: Macrocyclic complexes, *bis*-(2-aminophenyl)disulphide, Sr(II) and Ba(II).

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