ABSTRACT

The use of antibiotics in the treatment of various infections for human has increased during recent past years. Also the metal complexes of antibiotics have shown much broader spectrum against microbes. This novel research work contains the experimental procedure for synthesizing the metal complexes of MAEM which is a common intermediate for a large group of antibiotic i.e. Cephalosporins. Those metal complexes were characterized on the bases of their structural and thermal analysis. This Research work also describes the importance of different functional groups in the drug formation and explored chemical behaviour of MAEM. The ligand-metal molar mass ratio was taken as $1:1/4^{th}$ respectively. The solvent selected was methanol. Reaction was designed for refluxing alongwith stirring for two hours, then filtration of reaction mixture and the slow evaporation of the filtrate yield appropriate crystal for analysis. The resulted compound that is the nickel complex of MAEM was observed to have needle like yellow crystals. The X-ray Single Crystal Structure Analysis confirmed its structure with Molecular Mass 606.41, Volume 2496.5 $Å^3$ & Monoclinic with $\beta = 98.639$, $a = 17.8387$ Å, $b = 7.8701$ Å, $c = 17.9861$ Å. The thermal analysis confirmed the pure single compound as there is no indifferent peaks. A smooth drop in the mass of the sample with the increase in temperature suggested due to combustion & degradation. This work is the baseline and very fertile for chemists and biochemist to extend and explore its bioactivity for future.