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# Biotranslational Medical and Biospectroscopic Studies of Cadmium Oxide (CdO) Nanoparticles-DNA/RNA Straight and Cycle Chain Complexes as Potent Anti-Viral, Anti-Tumor and Anti-Microbial Drugs: A Clinical Approach

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## Letter to Editor

The Cadmium Oxide (CdO) nanoparticles-DNA/RNA complexes have been extensively investigated as the synthesis model nano compounds to mimic coenzymes, Dioxygen carries and Oxygen activators [1-10]. It is been revealed that certain CdO nanoparticles- DNA/RNA complexes are potent anti-viral, anti-tumor and anti-microbial drugs [11-20]. CdO nanoparticles-DNA/RNA complexes are most widely known for their ability to catalyze a broad range of chemical reactions including the epoxidation olefins, the asymmetric ring-opening of epoxide and the oxidation of alcohols. The goal of this work was to synthesize complex of CdO nanoparticles-DNA/RNA complexes with a new synthesized nucleic acids ligands and the investigation of the structure and properties of complexes was also a goal of this letter. To synthesize the complexes, the methanolic solutions of the metals salt and ligands at the same molar proportions were mixed. From the information based on the UV-Vis, <sup>1</sup>HNMR, <sup>13</sup>CNMR, <sup>31</sup>PNMR, Attenuated Total Reflectance Fourier Transform Infrared (ATR-FTIR), FT-Raman and HR Mass spectroscopies, CHN conductometry and pH metric data of the complexes, ligands and metals salt has been suggested for CdO nanoparticles-DNA/RNA complexes.

On the other hand, CdO nanoparticles-DNA/RNA complexes are the cyclic planar nano compounds. They are prepared in different ways in a wide variety of nano materials. They have different applications in medicine, pharmacology, chemotherapy and pharmaceutical sciences. The most important application of these nano materials is to be nano anti-cancer drugs. CdO nanoparticles-DNA/RNA complexes are able to be coordinated to the metals from Phosphorus atoms. These complexes can make several of colors. In addition, these nano compounds can be used as a catalyst. For the best action, they immerse in a mesoporous and they can be used as a heterogeneous catalyst. Here, we would like to report the preparation of CdO nanoparticles-DNA/RNA complexes and different derivatives such as its acidic forms. At first, they were characterized by UV-Vis, <sup>1</sup>HNMR, <sup>13</sup>CNMR, <sup>31</sup>PNMR, ATR-FTIR, FT-Raman and HR Mass spectroscopies. Furthermore, these complexes immersed in the modified mesoporous and specified with UV-Vis, <sup>1</sup>HNMR, <sup>13</sup>CNMR, <sup>31</sup>PNMR, ATR-FTIR, FT-Raman and HR Mass spectroscopies. The prepared CdO

nanoparticles-DNA/RNA complexes will be sent to the special places in order to be applied as nano anti-cancer drugs.

CdO nanoparticles-DNA/RNA complexes occur in a variety of biological systems with widely differing functions. These complexes play important roles in Oxygen transport and storage, electron transport and in enzymatic functions. It seems certain that some of these functions depend on the addition or substitution of a DNA/RNA ligand in an axial position of the metal ion. Therefore, the DNA/RNA axial ligation reaction is one of the important processes from both analytically and bioinorganic points of view. The axial ligation process has been monitored by changes of DNA/RNA sort band. The equilibration parameters have been obtained from the concentrations profiles. Binding data are interpreted based on the basicity and steric influence of the entering DNA/RNA ligands. Our results show that straight chain from more stable CdO nanoparticles-DNA/RNA complexes than the corresponding cycle chain.

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