

## Advances in Gold Nanoparticles (GNP) and Other Metal Nanoparticles (MNP) Based Combined as Novel Agents for Cancer Therapy Using X-Ray for Cancer Diagnosis

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**Received Date:** Aug 02, 2022 / **Accepted Date:** Oct 08, 2022 / **Published Date:** Oct 12, 2022

### Abstract

The utilization of gold nanoparticle (GNP) and other metal nanoparticle (MNP) radiosensitizers to further develop radiotherapy offers the (conceivable power or capacity inside/probability of) further developed treatment results. (from the outset/before different things occurred) implied for use with X-beam treatment, the chance of further developed hadron treatment is attractive because of the prevalent saving of solid tissue in hadron treatment contrasted with common X-beam treatment.

### Keywords

Hadrontherapy, Radiotherapy, Cancer, Treatment, Cure, Tumors, Oncology, Particle Therapy.

### Perspective

The utilization of gold nanoparticle (GNP) and other metal nanoparticle (MNP) radiosensitizers to further develop radiotherapy offers the (conceivable power or capacity inside/probability of) further developed treatment results. (from the outset/before different things occurred) implied for use with X-beam treatment, the chance of further developed hadron treatment is attractive because of the prevalent saving of solid tissue in hadron treatment contrasted with common X-beam treatment. While MNPs were not supposed to be powerful radiosensitizers for hadron treatment because of the restricted Z reliance of cooperation, late trial estimations have conflicted with/contended against this assumption. Key exploratory estimations and Monte Carlo trials (that show up or feel near the genuine article) of MNP radiosensitisation for hadron openness to radiation are audited in the ongoing work. Numerous trial estimations have found an enormous radiosensitisation impact because of MNPs for proton and carbon particle openness to radiation. Tests have additionally highlighted/showed that the radiosensitisation is to a great extent because of improved (causing responses from others or synthetics) oxygen (gathering of comparable living things) (ROS) creation. Trials (that show up or feel near the genuine article) have seen as a huge (connected with lines emerging from the focal point of a circle, similar to the spokes of a bike wheel) portion and ROS enhancement for the nanoscale around a solitary MNP. Nonetheless, the short scope of the portion improvement isn't enough for a huge macroscale portion improvement or improved (connected with the body capability of living things) impact in a cell model (pondering/when one contemplates) portion to the focal point (of a phone or molecule) from GNPs in the cytoplasm (a dissemination watched/continued in many trials) [1-30].

# Acknowledgment

This study was supported by the [Cancer](#) Research Institute (CRI) Project of Scientific Instrument and Equipment Development, the National Natural Science Foundation of the United States, the International Joint BioSpectroscopy Core Research Laboratory (BCRL) Program supported by the California South University (CSU), and the Key project supported by the American International Standards Institute (AISI), Irvine, California, USA.

## References

1. Heidari A, Brown C. Study of Composition and Morphology of Cadmium Oxide (CdO) [Nanoparticles](#) for Eliminating [Cancer](#) Cells. *J Nanomed Res.* 2015; 2(5)20:2015.
2. Heidari A, Brown C. Study of Surface Morphological, Phytochemical and Structural Characteristics of Rhodium (III) Oxide (Rh<sub>2</sub>O<sub>3</sub>) Nanoparticles. *Int J Pharmacol Phytoche Ethnomed.* 2015;1(1):15-19.
3. Heidari A. An Experimental Biospectroscopic Study on Seminal Plasma in Determination of Semen Quality for Evaluation of Male Infertility. *Int J Adv Technol.* 2016;7: e007.
4. Heidari A. Extraction and Preconcentration of N-Tolyl-Sulfonyl-Phosphoramid-Saeure-Dichlorid as an Anti-Cancer Drug from Plants: A Pharmacognosy Study. *J Pharmacogn Nat Prod.* 2016;2: e103.
5. Heidari A. A Thermodynamic Study on Hydration and Dehydration of [DNA](#) and RNA-Amphiphile Complexes. *J Bioeng Biomed Sci.* 2016;S:006.
6. Heidari A. Computational Studies on Molecular Structures and Carbonyl and Ketene Groups' Effects of Singlet and Triplet Energies of Azidoketene O=C=CH–NNN and Isocyanatoketene O=C=CH–N=C=O. *J Appl Computat Math.*2016;5:e142.
7. Heidari A. Study of Irradiations to Enhance the Induces the Dissociation of Hydrogen Bonds between Peptide Chains and Transition from Helix Structure to Random Coil Structure Using ATR–FTIR, Raman and <sup>1</sup>HNMR Spectroscopies. *J Biomol Res Ther.* 2016;5:e146.
8. Heidari A. Future Prospects of Point Fluorescence Spectroscopy, Fluorescence Imaging and Fluorescence Endoscopy in [Photodynamic Therapy](#) (PDT) for [Cancer](#) Cells. *J Bioanal Biomed.* 2016;8: e135.
9. Heidari A. A Bio-Spectroscopic Study of [DNA](#) Density and Color Role as Determining [Factor](#) for Absorbed Irradiation in [Cancer](#) Cells. *Adv [Cancer](#) Prev.* 2016;1: e102.
10. Heidari A Manufacturing Process of Solar [Cells](#) Using Cadmium Oxide (CdO) and Rhodium (III) Oxide (Rh<sub>2</sub>O<sub>3</sub>) Nanoparticles. *J Biotechnol Biomater.*2016;6: e125.
11. Heidari A. A Novel Experimental and Computational Approach to Photobiosimulation of Telomeric DNA/RNA: A Biospectroscopic and Photobiological Study. *J Res Development* 2016;4:144.
12. Heidari A. Biochemical and Pharmacodynamical Study of Microporous Molecularly Imprinted Polymer Selective for Vancomycin, Teicoplanin, Oritavancin, Telavancin and Dalbavancin Binding. *Biochem Physiol.* 2016;5:e146.
13. Heidari A. Anti-Cancer Effect of UV Irradiation at Presence of Cadmium Oxide (CdO) [Nanoparticles](#) on [DNA](#) of [Cancer](#) Cells: A [Photodynamic Therapy](#) Study. *Arch [Cancer](#) Res.* 2016;4:1.
14. Heidari A. Biospectroscopic Study on Multi–Component Reactions (MCRs) in Two A–Type and B–Type Conformations of [Nucleic Acids](#) to Determine Ligand Binding Modes, Binding Constant and Stability of [Nucleic Acids](#) in Cadmium Oxide (CdO) Nanoparticles–Nucleic Acids Complexes as Anti–Cancer Drugs. *Arch [Cancer](#) Res.* 2016;4:2.
15. Heidari A. Simulation of Temperature Distribution of DNA/RNA of Human [Cancer Cells](#) Using Time–Dependent Bio–Heat Equation and Nd: YAG Lasers. *Arch [Cancer](#) Res.* 2016;4:2.
16. Heidari A. Quantitative Structure–Activity [Relationship](#) (QSAR) Approximation for Cadmium Oxide (CdO) and Rhodium (III) Oxide (Rh<sub>2</sub>O<sub>3</sub>) [Nanoparticles](#) as Anti-Cancer [Drugs](#) for the Catalytic Formation of Proviral [DNA](#) from Viral [RNA](#) Using Multiple Linear and Non-Linear Correlation Approach. *Ann Clin Lab Res.* 2016;4:1.
17. Heidari A. Biomedical Study of [Cancer Cells](#) [DNA](#) Therapy Using Laser Irradiations at Presence of Intelligent Nanoparticles. *J Biomedical Sci.* 2016;5:2.

18. Heidari A. Measurement the Amount of Vitamin D2 (Ergocalciferol), Vitamin D3 (Cholecalciferol) and Absorbable Calcium ( $\text{Ca}^{2+}$ ), Iron (II) ( $\text{Fe}^{2+}$ ), Magnesium ( $\text{Mg}^{2+}$ ), Phosphate ( $\text{PO}_4^{4-}$ ) and Zinc ( $\text{Zn}^{2+}$ ) in Apricot Using High-Performance Liquid Chromatography (HPLC) and Spectroscopic Techniques. *J Biom Biostat.* 2016;7:292.
19. Heidari A. Spectroscopy and Quantum Mechanics of the Helium Dimer ( $\text{He}^{2+}$ ), Neon Dimer ( $\text{Ne}^{2+}$ ), Argon Dimer ( $\text{Ar}^{2+}$ ), Krypton Dimer ( $\text{Kr}^{2+}$ ), Xenon Dimer ( $\text{Xe}^{2+}$ ), Radon Dimer ( $\text{Rn}^{2+}$ ) and Ununoctium Dimer ( $\text{Uuo}^{2+}$ ) Molecular Cations. *Chem Sci J.* 2016;7: e112.
20. Heidari A. Human Toxicity Photodynamic Therapy Studies on DNA/RNA Complexes as a Promising New Sensitizer for the Treatment of Malignant Tumors Using Bio-Spectroscopic Techniques. *J Drug Metab Toxicol.* 2016;7: e129.
21. Heidari A. Novel and Stable Modifications of Intelligent Cadmium Oxide (CdO) Nanoparticles as Anti-Cancer Drug in Formation of Nucleic Acids Complexes for Human Cancer Cells' Treatment. *Biochem Pharmacol (Los Angel)* 2016;5: 207.
22. Heidari A. A Combined Computational and QM/MM Molecular Dynamics Study on Boron Nitride Nanotubes (BNNTs), Amorphous Boron Nitride Nanotubes (a-BNNTs) and Hexagonal Boron Nitride Nanotubes (h-BNNTs) as Hydrogen Storage. *Struct Chem Crystallogr Commun* 2016;2.
23. Heidari A. Pharmaceutical and Analytical Chemistry Study of Cadmium Oxide (CdO) Nanoparticles Synthesis Methods and Properties as Anti-Cancer Drug and Its Effect on Human Cancer Cells. *Pharm Anal Chem Open Access.* 2016;2:113.
24. Heidari A. A Chemotherapeutic and Biospectroscopic Investigation of the Interaction of Double-Standard DNA/RNA-Binding Molecules with Cadmium Oxide (CdO) and Rhodium (III) Oxide ( $\text{Rh}_2\text{O}_3$ ) Nanoparticles as Anti-Cancer Drugs for Cancer Cells' Treatment", *Chemo Open Access.* 2016;5: e129.
25. Heidari A. Pharmacokinetics and Experimental Therapeutic Study of DNA and Other Biomolecules Using Lasers: Advantages and Applications. *J Pharmacokinet Exp Ther.* 2016;1:e005.
26. Heidari A. Determination of Ratio and Stability Constant of DNA/RNA in Human Cancer Cells and Cadmium Oxide (CdO) Nanoparticles Complexes Using Analytical Electrochemical and Spectroscopic Techniques. *Insights Anal Electrochem* 2016;2:1.
27. Heidari A. Discriminate between Antibacterial and Non-Antibacterial Drugs Artificial Neural Networks of a Multilayer Perceptron (MLP) Type Using a Set of Topological Descriptors. *J Heavy Met Toxicity Dis.* 2016;1: 2.
28. Heidari A. Combined Theoretical and Computational Study of the Belousov-Zhabotinsky Chaotic Reaction and Curtius Rearrangement for Synthesis of Mechlorethamine, Cisplatin, Streptozotocin, Cyclophosphamide, Melphalan, Busulphan and BCNU as Anti-Cancer Drugs. *Insights Med Phys.* 2016;1:2.
29. Heidari A. A Translational Biomedical Approach to Structural Arrangement of Amino Acids' Complexes: A Combined Theoretical and Computational Study. *Transl Biomed.* 2016;7:2.
30. Heidari A. Ab Initio and Density Functional Theory (DFT) Studies of Dynamic NMR Shielding Tensors and Vibrational Frequencies of DNA/RNA and Cadmium Oxide (CdO) Nanoparticles Complexes in Human Cancer Cells. *J Nanomedicine Biotherapeutic Discov* 2016;6: e144.

**Citation:** Alireza Heidari. Advances in Gold Nanoparticles (GNP) and Other Metal Nanoparticles (MNP)-Based Combined as Novel Agents for Cancer Therapy Using X-Ray for Cancer Diagnosis. *Nanomed Nanosci Technol: Open Access* 2022;2(4):1-4.

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