World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 6.129

HUMANITY PROTECTION THROUGH NEUTRALIZATION OF METALLIC RADIOISOTOPES, THE PART OF FALL OUT OF NUCLEAR EXPLOSIONS IN PEACE AND WAR WITH CHELATORS

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Article Received on 21/09/2020 **Article Revised on 11/10/2020** **Article Accepted on 31/10/2020**

ABSTRACT

Introduction: The anthropogenic nuclear activities and the stockpiling of fissile materials like U-235 and PU-239 have brought the world on the brink of Third World War, dooming the humanity to the point of its doomsday. The global political intransigence had let to no breakthrough on disarmament agreement. Scientist see only a silver lining in science doing on the alternative for the humanity protection against the somatic and genetic effects of metallic radioisotopes sourced from the fallout of the nuclear explosion. The study in reference on the concept of de- radioactivity- antonym of radioactivity- the spontaneous disintegration of unstable nucleus of metallic radioisotopes to a proton and an electron subject to the free state of metallic radioisotopes-appears to be the best option to neutralize the metallic radioisotopes. **Methods and Materials:** Four virgin soil samples collected at the Tara Hills near Uttaranchal College of Science and Technology, Dehradun-248001(Uttarakhand) India defined with GPS coordinates were tested with TM-91/TM-92. The virgin soil samples emitted radiations in the range of 0.34-0.37 uSv/h whereas the treated soil samples with the aqueous solution EDTA or DTPA displayed 30% reduction in the emission of radiation. **Results:** The de-radioactivation of metallic radioisotopes has been realized and achieved by intra-trapping, fixing, embedding by caging in the metallic radioisotopes into the geometrics of EDTA and DTPA chelators, and stabilizing them strongly by bonding them with the primary and secondary valences and bonds forming 5 or 6 membered rings- the signs of strong stability of radioisotopes- chelators chelates. ERPs thereon EDTA or DTPA geometrics provide excess electrons to the nucleus of unstable metallic radioisotopes which probably would stop the forward decay, stripping them of their free state- the basic condition of their decay in the forward direction. The chelators have been found as the non chelators of stable and non metallic radioisotopes like oxygen, hydrogen, helium, carbon, krypton, xenon, fluorine, sulfur and chlorine etc. The whole study has been based upon and built up on the data on stable Co – 59 and Sr -89 isotopes. **Conclusion:** The EDTA and DTPA chelators, defined with the positional alignment of in their intrageometrics forming 5 or 6 membered rings – the signs of strong chelation, with the metallic radioisotopes, are the excellent option to de-radioactivate to prevent and pre-empt somatic and genetic effects upon humanity, and neutralize in the event of nuclear explosion on earth in peace and war and protect humanity and animal kingdom in the event of Third World Nuclear War, the possibility of which cannot be ruled out in future due to the fluid and volatile political situation in the world.

KEYWORDS: Metallic Radioisotopes, Radioactive Soil, Neutron, Proton, Electron, Humanity and Fallout.

INTRODUCTION

The humanity self –defeating anthropogenic activities have been said to be responsible for nearing its extinction upon earth. The climate change, nuclear arsenal development and concepts of CRISPR/Cas-9 activities have been pointers to the humanity extinction. The hegemonic nature of humanity upon earth has resulted in high speed science doing in nuclear sciences in preference to education, medicine, health etc. Recently COVID-19 pandemic has exposed humanity to its faultlines, endangering humanity as a whole with no escape whatsoever today. It is all because the human hegemonic concept which has been said to be the root cause of ailing humanity. Any act against Nature would definitely extinction humanity upon earth. The statistics have shown that a good number of nations have joined Nuclear Club in the world namely USA, UK, France, Russia, North Korea, China, Israel, India ,Pakistan which have stockpilled deadly nuclear weapons such as atomic bomb, hydrogen bomb, cobalt bomb and neutron bomb.

The first two nuclear bombs are possessed by all but USA and Russia have developed cobalt and neutron bombs in addition to first two. The humanity had already tasted the genetic and somatic effects of the deadly baby atomic bombs dropped on Hiroshima and Nagasaki cities of Japan in 1942. The advanced nuclear bombs are today 1000 times highly deadly than the ones dropped upon two cities of Japan by USA. The world political position has become explosive today. The possibility of Third World War cannot be ruled out in the near future. The Nuclear Disarmament treaty could not be materialized finally in spite of the investment of the best efforts by the world leaders in the past. The nuclear science doing and the stockpiling of fissionable materials continue today. All the nuclear nations in reference have stockpilled nuclear weapons in the range of 150-300 each, except USA and Russia who claim to have 6000-7000 nuclear weapons each, including the cobalt and neutron bombs with the ability to wipe out whole humanity with 10 such bombs. The humanity shall get vegetated due to the genetic and somatic afflictions, and the earth shall become 100% inhospitable after nuclear explosions whether conducted in peace or war times because of the soil contamination with radioisotopes with half-lives as high as million years, which continue decaying to the daughter radioisotopes which are equally damaging. There is no chance of the deceleration of race among the nations on the development of nuclear weapons in future. Even the Rajasthan areas, where Pokhran test I &II were tested in the past, have become inhospitable for the Indians who fear today visiting the test sites. Today the whole world is in constant fear of getting extinguished if this nuclear arsenals are exchanged in the near future. The global political intransigence has also derailed nearly completely the progress on disarmament treaty. But the conscious of the scientists is not dead and has grown demanding on the resolution of the diffusion of genetic and somatic of radioisotopes in the event of Third World Nuclear War. Also the scientist in the authors is still alive which has also grown demanding to do science doing on the causes in reference. So this study.

In 1904,Marie Sklodowaska Curie[1] opened the atomic age and introduced the concept of radioactivity, defining it as the spontaneous disintegration of certain nuclei accompanied by the emission of alpha particles{helium nuclei}, beta particles{electron or positron} or Gama radiation{short wave length electromagnetic waves}. Since then, the subject of radioactivity and its allied areas have been scientifically explained by various scientists.[2-13] with explanations on radio-astronomy, radioactive dating, radio location, radiography, radio isotopes, radio isotopic imaging, radio-telescopy, radio therapy and nuclear medicines{s} with emphasis on organal functioning, exploration of deficiency of bio organics in human body and treatment of refractory diseases to name a few {Oxford Dictionary of Physics,[14]} The concept of radioactivity has been employed in the development of atomic bomb, hydrogen bomb, cobalt bomb and neutron bomb as included in Oxford Dictionary of Physics and explained by Irene Jobiot-curie,[15] Irvine David,[16] Sameul Glasstorl[17] and Jonathan Ray.[18]

In 2016, Sawhney[19] introduced the concept of de-radioactivity stating on the possibility of de-radioactivation of metallic radioisotopes, reducing their power of decay to near zero, which has been adjudged as new field to be explored positively to protect humanity on earth and negate the humanity extinction- the idea which has gained on worldwide currency. This study, being submitted, is concerned with the concept of humanity protection through the neutralization of metallic radioisotopes, the part of fallout of nuclear explosion in peace and war with the defined geometrically positioned and aligned donor and salt forming groups in some chelators like EDTA and DTPA.

MATERIALS AND METHODS

All the chemicals applied in this study were of analytical grade. The Co-59 and Sr-89 salts and the chelators: EDTA and DTPA were obtained from Sigma. The aqueous solutions of sodium salt of EDTA or DTPA were added slowly with constant stirring to the aqueous solution of Co-59 or Sr-89. The precipitates were filtered, washed with deionized water and dried at about 50^0- the temperature at which the geometrics of the precipitate chelates remain constant. The state of the art instrument was applied to register the thermally defined profiles of the metal chelates.For measuring emitting radiations from the virgin and treated soil samples, collected at Tara Hill Dehradun {Uttarakhand} India with aqueous solution of EDTA & DTPA ,the TENMARS Radiation meter{TM-9/TM-99}{TENMARS ELECTRONIC Co} was used and applied. The GPS coordinates of each spot, from which soil samples were collected {altitude and longitude} was noted using GPS device.

RESULTS

The concept of de-radioactivity had been a chance discovery. While scouting Tara Hills Dehradun [Uttarakhand] India near Uttaranchal college of science and technology, the authors missed switching off TM-91/TM92, but kept surveying the area. All of a sudden the TM-91/TM-92 signaled the possibility of radioactivity in the soil of Tara Hill. Immediately four soil samples were collected and their GPS coordinates were recorded. The samples were tested with TM-91/TM-92. Radiation measured fell in the range of 0.34-0.37 uSv/h (Table 1). The samples were suspended in aqueous solution of EDTA or DTPA and left for 07 days. The samples were filtered and sun-dried after 07 days and retested with TM-91/TM-92. To our surprise the emitting radiation got reduced to a tune of about 30%, suggestive of the possibility of the chelators as the de-radioactivators or neutralizers of metallic radioisotopes present in the soil. This is how the concept or idea of de-

radioactivity struck the mind of the first author and explored the new subject for the humanity protection through the neutralization of the metallic radio-isotopes, the part of fallout of nuclear explosion in peace and war.

Table 1: The GPS coordinates of the virgin soil samples and the measured radiation(uSv/h) with the TM-91/TM-92.

Soil Spot	GPS coordinates	Radiation{uSv/h}
I	30^0 23' 46 44" N	0.37
II	30^0 23' 45.66" N	0.35
III	30^0 23' 47.18" N	0.34
IV	30^0 23' 46.84" N	0.36

DISCUSSION

The concept of de-radioactivity is derivable from the considerations of the forward nuclear reactions.

$$_7N^{14} + {}_0n^1 \rightarrow {}_6C^{14} + {}_1H^1 + Q \text{ ----------1}$$

$$_6C^{14} \rightarrow {}_7N^{14} + {}_{-1}e^0 + E_{max} \text{ ----------2}$$

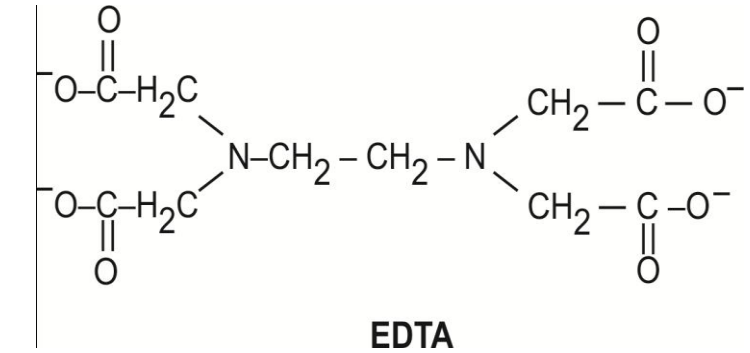
$$\text{OR } {}_7N^{14} + {}_0n^1 + {}_6C^{14} \rightarrow {}_6C^{14} + {}_1H^1 + Q + {}_7N^{14} + {}_{-1}e^0 + E_{max} \text{ --3}$$

$$\text{OR } {}_0n^1 \rightarrow {}_1H^1 + Q + {}_{-1}e^0 + E_{max} \text{ ----------4}$$

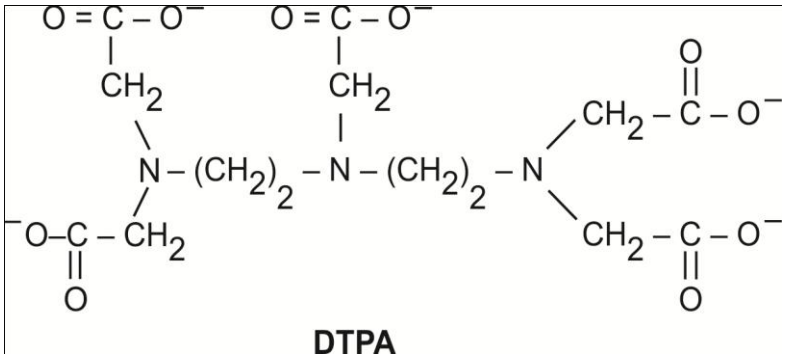
Equation four{4} is suggestive of the fact that the radioisotopes are unstable elements and decay in the forward direction causing spontaneous nuclear decay of nucleus neutron to a proton and an electron with the emission of radiation when the nuclear isotopes {metallic & nonmetallic once} are in the free state, suggesting that the intra-equilibrium of nucleus remains unstable with the constant decay of neutron irreversibly, but this study on de-radioactivity had been suggestive of the possibility of back forwarding the this forward nuclear reaction{equation-4} or stopping or preventing the neutron decay under the applied conditions{Equation-5}.

$$_0n^1 \leftrightarrow {}_1H^1 + {}_{-1}e^0 + E_{max} \text{ ------5}$$

The chelators under study: EDTA and DTPA are the strong metal chelators with the geometrics (schemes 1 and 2)



ERP$_s$ 2: Primary Valencies: 04. Secondary Valency:02 (Scheme 1).



ERP$_S$ 03: Primary Valencies:05., Secondary Valiences:03 {Scheme 2}.

The EDTA and DTPA under study are the strong metal chelators with the geometrics Scheme 1 & 2.

The data on metals suggest that the stable metals and the metallic isotopes show similar chemical propertires. The former are stable and do not disintegrate. The latter has the natural tendency to disintegrate spontaneously. Through this study conducted with the application of EDTA & DTPA, the effective de-radioactivation of metallic radioisotopes under the applied condition of their chelation with the chelators in reference, which intra-trap, fix and embed themetallic radioisotopes or stable isotopes so strongly with no allowance to the inta-trapped metallic isotopes to dissociate to free state – the

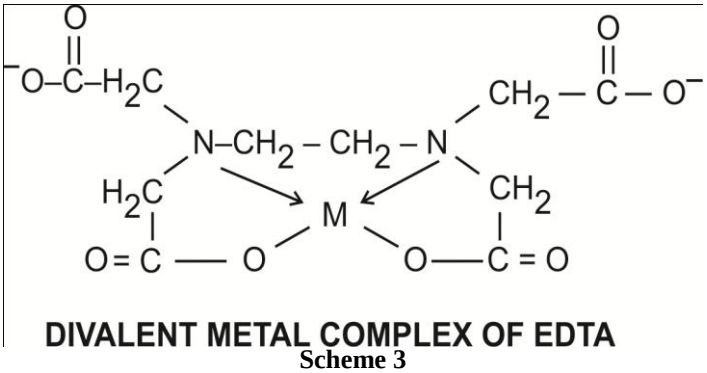
basic condition of radioactivity, has been achieved. The envolved primary valencies and bonds in chelation increase with the increase in valency of metallicisotopes: parent and daughter metallic radioisotopes, while the secondry valency and the bonds remain constant in metal -EDTA chelator {02} and metal- DTPA chelator-03. The characteristics of the finished products: metal EDTA /DTPA chelates are given in Table 2.

Table 2: Involved Primary And Secondary Valences And Bonds In EDTA/DTPA Metallic Radioisotopes Chelates.

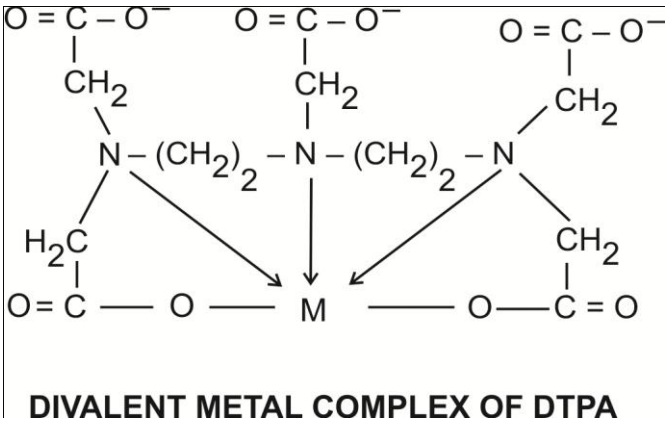
Chelator	Metallic radioisotope	Primary			Secondary	
		Valency {free}	valency	Bond	Valency	Bond
EDTA	M(II)	02	02	02	02	02
	M(III)	01	03	02	02	02
	M(IV)	Nil	04	02	02	02
DTPA	M(II)	03	02	03	03	03
	M(III)	02	03	03	03	03
	M(IV)	01	04	04	03	03
	M(V)	Nil	05	05	03	03

Roman Numeral= Valency., EDTA{ERP_S}=02.,DTPA{ERP_S}=03.

The representative EDTA/DTPA – divalent metal(M2) - radioisotope chelate is shown below (Scheme 3 and Scheme 4). Other structures can be similarly explained involving metal III-V and EDTA or DTPA chelator .



Scheme 3



Scheme 4

The inherent ERP_S {electron rich points} in EDTA (02) and DTPA(03) supply excess electrons to the nucleus of metallic radioisotopes on chelation with metallic radioisotopes, and would suppress the forward decay of unstable nucleus of radioisotopes with no allowance to the inherent neutrons to decay to a proton and an electron- a condition opposed to the radioactivity principle. This means that the chelators are the best de-radioactivators of the radioactivity. The phenomenon has been termed as de-radioactivity. The chelators had been found inactive chemically in the non metallic stable and radioisotopes like hydrogen, helium, carbon, boron, phosphorus, iodine, neon, argon , krypton, xenon, oxygen, fluorine, sulfur and chlorine. The de-radioactivity concept realized and achieved with the chelators: EDTA and DTPA has the possible application

in the deactivation of metallic radioisotopes, the part of fallout of nuclear explosion conducted by different nations in peace and war due to the radiating unstable parents and the daughter radioisotopes with the capacity to doom humanity to the point of doomsday or produced or manufactured in nuclear labs for peaceful medical application like cancer{cobalt-60}. This chelators have a promise to reclaiming the land areas where USA, UK, France, Russia, China, India, Pakistan, Israel, North Korea have tested and exploded nuclear devices or on the two cities of Japan: Hiroshima and Nagasaki nuked by USA in 1942, with the application of aqueous solution of EDTA and DTPA, and making the land area useful and habitable for human population by de-radioactivating the metallic radioactive isotopes contaminants deeply rooted in the soils of the sites of the explosion. The chelators can be seen as another promise for protecting the scientists engaged in nuclear labs where the metallic radioisotopes are dealt with constantly as these chelators are also the nuclear medicines.

ON THE HORIZON

The possibility of manufacturing EDTA or DTPA or both loaded MASKS and aqueous solution of EDTA or DTPA or both for deactivating the metallicradioisotopes, contaminating the land areas where the different nations have tested nuclear weapons, and protecting the million in the eventuality of the Third World Nuclear War-imminent event in future-from the genetic and somatic effects of the metallic radioisotopes, cannot be ruled out. Such attempts are in progress at the campus of Uttaranchal College of Science and Technology (Uttarakhand) India for humanity protection in future.

CONCLUSION

The EDTA and DTPA chelators, defined with the positional alignment in their intrageometrics forming 5 or 6 membered rings – the signs of strong chelation, with the metallic radioisotopes are the excellent option to de-radioactivate or prevent and pre-empt somatic and genetic effects upon humanity, and neutralize them in the event of nuclear explosion on earth in peace and war and protect humanity and animal kingdom in the event of Third World Nuclear War, the possibility of which cannot be ruled out in future due to the fluid and volatile political situation in the world.

ACKNOWLEDGEMENT

The authors express their appreciation for the cooperation, extended by Miss Ridhima Sawhney for completing this manuscript.

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