

3rd World Congress on

MEDICAL SOCIOLOGY & PUBLIC HEALTH

International Conference on

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PUBLIC HEALTH AND EPIDEMIC DISEASES

September 21-22, 2018 | Dallas, USA

Effect of radiation on deoxyribose nucleic acid (DNA): The fundamental blueprint for all of the body's structures

Raymond Limen Njinga

North-West University, South Africa

External or internal sources of radiation may have some impact on the living tissues. The functions of all living tissue are carried out by molecules. These molecules are combinations of different types of atoms which are bonded by chemical bonds. They depend upon their composition, structure or shape. Radiation exposure to a certain dosage might alter or break the chemical bond between two carbon atoms and change the composition or structure. Of all the molecules in the body, the most crucial is the deoxyribose nucleic acid (DNA) which encodes the blueprint in each cell as a long sequence of molecules wound around proteins and packed into structures called chromosomes within the cell nucleus. In this study we investigate the effect of indirect action on the DNA due to free radical from ionize water molecules. The free radical reacts with other DNA molecules as it seeks to restore a stable configuration of electrons thereby causing biological effects. From this studies, a dose of about 100 gray would cause the cell not to perform its function while a mean lethal dose of 2 gray would cause the cell not to reproduce, but still performs its other functions. However, it was revealed that if the irradiation dose from the free radicals in water does not kill the cell it would create an error in the DNA blueprint. This may contribute to eventual loss of control of cell division. Hence, the cell begins dividing uncontrollably causing cancer which might be long or short term depending on the level of dosage and time of exposure. Excess dose may also alter the DNA resulting to cell mutations that occur in germ cells called genetic or heritable effects and at least 1,300 diseases are known to be caused by a mutation.

rnjinga@gmail.com