

Nanoparticles and DNA damage

Thomas Prevenslik, QED Radiations, Hong Kong

Abstract

Statement of the Problem: Nanoparticles or NPs are known to cause DNA damage [1] for over at least the past decades, but the causal relation of NPs to human health remains unknown. Chemical reactions of NPs with the DNA cannot be the causal relation as DNA damage occurs [2] even with inert gold NPs suggesting a physical causal relation such as high temperature. Photodynamic therapy [3] is thought to kill cancer cells by high temperatures in laser heating of NPs. Although the laser increases the temperature of surrounding tissue, the NP temperature itself does not because the Planck law of QM requires [4] the NP heat capacity to vanish. QM stands for quantum mechanics.

Methodology: Contrarily, photodynamic therapy does not induce necrosis of cancers by increasing the temperature of the quantum sized NPs, and instead NPs produce EM radiation beyond the UV that induces cancer necrosis suggesting the causal relation of NPs to human health is therefore the well-known genotoxicity of DNA to UV radiation. The wavelength λ of the emitted EM radiation is, $\lambda = 2nd$, where n and d are the refractive index and diameter of the NP. For NPs having $n = 1.5$, DNA damage for EM radiation beyond the UVC ($\lambda < 254 \text{ nm}$) occurs [5] for NP diameters $d < 85 \text{ nm}$ as shown in Figure 1.

Discussion: Solar UV is only thought to cause DNA damage to the skin and may lead to cancer, but cannot penetrate the skin to damage internal organs. However, NPs rescind this paradigm. Indeed, NPs by entering the body in the GM food we eat produce [1] the low levels UV to damage the DNA of tissue in the gut and digestive tract. The DNA damage from GM food that includes NPs in Monsanto's Roundup herbicide tot enhances crop yields by controlling weeds in modern agriculture are discussed. GM stands for genetically modified. **Recommendations** To avoid genetic cancers in human DNA evolution, herbicide manufacturers should stop use of NPs in controlling weeds.

Image

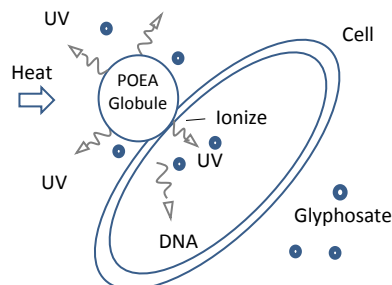


Figure 1. NP of nano globule formed from Monsanto's Roundup containing POEA adjuvant in water producing UV radiation damaging the DNA
POEA = polyoxyethyleneamine

Recent Publications

1. Prevenslik TV (2017) GM food: A crime against humanity? 3rd International Conference on Food and Agricultural Engineering (ICFAE) Budapest, Hungary, May 10-12, 2017.
2. Bahadar H, et al. (2016) Toxicity of Nanoparticles and an Overview of Current Experimental Models, Iranian Biomedical Journal 20, January 1-11
3. A. El-Hussein, ET et al. (2012) Assessment of DNA Damage after Photodynamic Therapy International Journal of Photoenergy 2012, doi: 10.1155/2012/281068
4. Planck M (1900) On the Theory of the Energy Distribution Law of the Normal Spectrum, Verhandl. Dtsch. Phys. Ges., 2, 237.
5. Prevenslik TV (2010-2018) See <http://www.nanoqed.org>



Biography

Thomas Prevenslik developed the simple theory of QED based on the Planck law of QM. Differing from the complex QED by Feynman and others, simple QED assumes any heat absorbed in nanoparticles having high surface-to-volume ratios place interior atoms under high EM confinement that by the Planck law of QM precludes the atoms from having the heat capacity to conserve heat by an increase in temperature. In the instant topic of *Nanoparticles and DNA damage*, the NPs are not physical entities, but rather are nano globules that form from adjuvants upon mixing with water prior to spraying, the adjuvants added to Monsanto's herbicide glyphosate to enhance penetration through the leaves of weeds. Since crops are contiguous with weeds, the NPs of nano bubbles finally reside in the crop and upon ingestion in the human. Heat produced in metabolism produces low levels of UV radiation that damages the DNA of nearby cells. Monsanto is urged to stop the use of the glyphosate and adjuvants to avoid DNA damage leading to cancer in the present and successive human generations.

Email: thomas@nanoqed.org
Mobile Phone: +49-172-325-7678
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