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Nanotoxicity nano-threat to nature

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Production of nanoparticles is ever increasing with concomitant development of nanotechnologies. Current core concern is on the biological properties of nanoparticles and in fact is a subject of active consideration. Till date, no specific conclusion is derived about their actual harmful effects. Recent nanotoxicity studies have mainly focused on the health risks to healthy adult human population. The nanotoxicity effects on susceptible organisms with simpler systems such as bacteria, earthworms, fishes, chick embryos have often been overlooked. Since the morphological, anatomical, physiological and genetic structures differ in these organisms, from those as in human, they often suffer more damage from the same exposure. Therefore, the present comprehensive study was initiated to check possible toxicity of single walled carbon nanotubes (SWCNT) and multi-walled carbon nanotubes (MWCNT) in sensitive biological systems like growth of *E. coli* and *S. aureus*, micronuclei in earthworm coelomocytes, fish gill chromosomes, skeletal defects in chicken embryos and compared with damage in bone marrow chromosomes of mouse and chromosomal aberrations in human peripheral blood lymphocytes, after acute or chronic *in vitro* exposure. Virtually in all biological systems studied, we found toxicity of both SWCNT as well as MWCNT. The present study describes in details fine analysis of toxicity in different systems explaining probable mechanisms of nanotoxicity. For studying nanomaterial interactions, novel approaches are required since they are novel chemicals. In order to foresee and prevent the potentially harmful effects of nanoparticles in nature, on health and the environment in particular, the results of the present study will be of considerable help.

Biography

Meonis Pithawala is presently working as an Assistant Professor at C G Bhakta Institute of Biotechnology, Uka Tarsadia University, India. He has 19 research papers and 9 review articles published in peer reviewed national and international journals. He has presented oral presentations at 2 international conferences. He has remained Principal Investigator for government funded major research project. He is a Reviewer in more than five international journals, Member of Institutional Animal Ethical Committee and is associated with couple of administrative and examination bodies of the university. He is also a Member of the Society for Ethnopharmacology, Kolkata, India.

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