Prashant S. Chikramane et al., J Nanomedic Nanotechnol 3:1
doi: http://dx.doi.org/10.4172/2157-7439.S1.07

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference and Exhibition on
Nanotechnology & Nanomedicine
March 12-14, 2012 Omaha Marriott, USA

TITLE

Extreme homeopathic dilutions – A potential source of bioactive nanoparticles

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By virtue of the extreme dilutions involved, often way beyond the Avogadro's number (6.023×10^{23} molecules/mole), and the difficulty in visualizing presence of any bioactive species, homeopathic medicines are repeatedly subject to intense criticism especially with respect to their biological efficacy. However, contrary to the existing beliefs, our physicochemical studies involving highly sensitive, state-of-the-art techniques like the transmission electron microscope (TEM), electron diffraction (ED) and the inductively coupled-plasma atomic emission spectroscopy (ICP-AES), with special sample preparation techniques, unequivocally show the presence of metallic starting raw materials in nanoparticulate form in metal-based high potency (30C and 200C) medicines involving extreme dilution factors of 10^{60} and 10^{400} respectively. The nanoparticulate starting metals were found to be in the size range of approximately 5-15nm at extremely low concentrations of several picogram/ml. We also postulate a hypothesis of the probable mechanism of retention of these metallic nanoparticles. We hypothesize formation of a particulate monolayer on the surface of the solution based on the manufacturing process of these medicines that is retained at every dilution step. Studies carried out to validate the hypothesis clearly show that the dilutions are only apparent and not real. Bio-assays involving HepG2 human hepatocarcinoma cell-line have shown that the homeopathic medicines were highly active at extremely low doses. Statistically significant differences were obtained in various cell proliferation/activation studies in homeopathic medicine treated groups as compared to the control groups. The identification of nanoparticles suggests the presence of highly active biocatalysts in the form of nanoparticles in these extreme dilutions.

Biography

Prashant S. Chikramane has completed his Masters in Pharmaceutical Sciences (M. Pharm. Sci.) from the Institute of Chemical Technology (ICT), Mumbai, India. He has also gained experience in various multinational companies in the field of Clinical Research, conducting trials of new chemical entities (NCE) in different stages of drug development (Phase I – IV). He is currently pursuing his PhD. from Indian Institute of Technology (IIT) Bombay, Mumbai, India, under guidance of the co-authors, in nanomedicine, especially those arising out of alternative routes of medicine.