

# Nanotechnology: Nanoparticle Characterization and Application in Pharmacology and Toxicology

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## EDITOR NOTE

The past few decades have witnessed a great deal of exploration of nanomedicine and the potential application of nanoscience in biomedical science. Nanoparticles have the unique potential of both sensitivity and selectivity with customizability. These are fundamental requirements of medicine. Unlike macro scale features, the nanostructures' properties and functions are very distinct and this elicits great deal of research. The present issue of the journal comprises of a research article on synthetic peptide for effective inhibition of viral infection; a review on nano-scale metal alloys and their fatigue resistance; a study on eco-friendly green-synthesized nanoparticles on reduction of haematological toxicity as well as a report on dosage response evaluation of nanoparticles having antioxidant effect.

Mendonça et al. [1] reportedly synthesized C-terminal heptad repeat (HRC) peptides with Tryptophan at position 454 in order to improve membrane anchoring and found that mono- and dimeric peptides reduced measles infection *in vivo*. Study of the physico-chemical properties, self-assembly and membrane insertion kinetics, it was revealed that bis-conjugation with lipophilic group, increase stability and order with reduced antiviral efficacy. This study would be useful in devising nanotechnology based strategies for development of anti-viral therapeutics.

Ashbli and Menzemer [2] have made a novel attempt to review the research dealing with fatigue in nanocrystalline NiTi shape memory alloys. The authors have emphasized that as the grain size becomes smaller the superelastic properties gets bigger; due to higher density, the fatigue crack growth rate for nc NiTi SMA are higher; thermo-mechanical treatments enhance nc NiTi fatigue resistance. The review study emphasized on parametric studies to measure fatigue performances giving importance to MD technique.

Mitra et al. [3] have physically and chemically characterized the gold nanoparticles synthesized using aqueous extract of the *Terminalia arjuna*

bark acting as reducing and capping agent and evaluated their effect on the alteration of hematological indices against acetaminophen induced toxicity in male Wistar rats. The results revealed that green synthesized nanoparticles were useful for restoration of hematological alterations caused by toxicity. The study is of significance in development of novel theoretical approaches for protection against infections.

Khbulava et al. [4] have evaluated the effect of single and continuous high dose of selenium nanoparticles through oral administration on the alimentary tract. The results revealed that multiple exposures at regular intervals was less toxic and did not cause gastritis, gastric metaplasia, haemorrhage or intestinal wall disorganization when compared to single exposure. The study is of significance in understanding and optimizing most effect dosage regimen of antioxidant treatment.

In tune with this journal's continued effort in bringing forth novel applications of nanotechnology in biomedicine, the articles constituting this issue represent the latest advances in this field of medical application of nanotechnology, and includes nanomaterial preparation, molecular assembly and its bio-functional characterization. We hope that this issue will become a trend setter for research of nanotechnology for biomedical applications.

## References

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