

# 3<sup>rd</sup> International Conference and Exhibition on **Biowaivers, Biologics & Biosimilars**

October 27-29, 2014 Hyderabad International Convention Centre, Hyderabad, India

## Understanding osteomyelitis and its solution through cost effective biomaterial based strategies

Samit Kumar Nandi

West Bengal University of Animal and Fishery Sciences, India

Osteomyelitis especially chronic osteomyelitis is a severe and challenging setback in bone surgery. Conventional antimicrobial therapy in solving this situation does not provide satisfactory results due to several reasons. Orthopedic surgeons find no way in deciding an optimal treatment strategy in curing such maladies. Conversely, patients feel frustrated and disappointed of the therapeutic outcomes and development of adverse drug effects, if any, additionally weeks of stay in hospital. Numerous important factors related to bone physiology that could influence the accomplishment of a pharmacological treatment include differences in blood supply and local vascularization, and the “blood–bone” barrier. Local delivery system of antimicrobial agents is one of the ideal alternatives in treatment of chronic osteomyelitis as it can release drug locally for prolonged periods and at concentrations generally higher than those achieved by conventional drug delivery strategies. Further, silver nanoparticle deposited 316L SS based fracture management devices may be an alternative low cost therapeutic measures for treatment of osteomyelitis. In the present study, we have used Ceftriaxone-Sulbactam and Cefuroxime axetil loaded bioceramic implants (hydroxyapatite and tricalcium phosphate) including bioactive glass in experimental osteomyelitis animal model. After through characterization both *in vitro* and *in vivo*, it was observed that all the antibiotic loaded implants in animal model had successfully eradicated the bone infection. Consequently, the said materials were also tested in clinical cases of human osteomyelitis patient with effective outcome. Finally silver nanoparticle deposited 316L SS based fracture management devices were also evaluated in animal osteomyelitis model and showed effective results. Based on the findings, it can be concluded that biomaterial based strategies may be an effective, alternative, low cost therapeutic option for treatment of osteomyelitis.

### Biography

Samit Kumar Nandi, Associate Professor and Former Head, Department of Veterinary Surgery & Radiology, West Bengal University of Animal and Fishery Sciences, India has completed his PhD from the same University for which he was conferred Jawaharlal Nehru Award by ICAR, Government of India. Further for his contribution to material science, he was been awarded the outstanding National Bioscience Award for Career Development 2008, CSIR Technology Award 2010, Government of India and conferred Biotech Product and Process Development and Commercialization Award 2013 from His Excellency, President of India. He is a prolific writer and has contributed more than 100 scientific articles in national and international journals of repute and is serving as Reviewer of number of journals all over the Globe. He has presented several invited lectures in international conferences in India, including China, USA, Thailand and was highly appreciated.

[samitnandi1967@gmail.com](mailto:samitnandi1967@gmail.com)