J Biotechnol Biomater 2015, 5:6
http://dx.doi.org/10.4172/2155-952X.C1.044

OMICS International
conferenceseries.com

6th World Congress on
Biotechnology
October 05-07, 2015 New Delhi, India

Green synthesis of silver nanoparticles using weed plants and study the antimicrobial properties of the synthesized nanoparticles

Abha Verma[1,2]
[1]Institute of Foreign Trade and Management, India
[2]Meerut Institute of Engineering and Technology, India

Small sizes, large surface to volume ratios and crystallographic surface structure of nanoparticles are responsible for their unique optical, electronic, mechanical, magnetic and chemical properties. Since noble metal nanoparticles are widely applied to areas of human contact, there is a growing need to develop environmentally friendly processes for nanoparticles synthesis. Biological methods of synthesis have paved way for the "greener synthesis" of nanoparticles and these have proven to be a better method due to slower kinetics, they offer better manipulation and control over crystal growth and their stabilization. Biologically synthesized silver nanoparticles are being widely used in the field of medicine. This study focuseson extracellular biosynthesis of silver nanoparticles using leaf extracts of a common weed. The synthesis of silver nanoparticles was detected by changing colour of plant leaf extracts from green to brown after treatment with $AgNO_3$ and UV-Vis Spectrophotometric analysis. These phyto-synthesized silver nanoparticles were tested for their antibacterial activity using agar well diffusion method against gram positive and gram negative bacteria. The results suggests use of phyto-extracts as an easy alternative for silver nanoparticles synthesis overthe conventional methods.

abha_1501@rediffmail.com

Development and characterization of different mesoporous bioactive glass nanopowders and their *in vitro* bioactivity

Akrity Anand and **Biswanath Kundu**
CSIR-Central Glass and Ceramic Research Institute, India

Significant efforts are being given throughout the world for an ideal solution on orthopaedic diseases and trauma which lead to a new research in biomedical field and bone tissue engineering. Mesoporous Bioactive Glass (MBG) can be used as a combined function of controlled local antibiotic delivery as well as its in-built property to form hydroxyapatite layer helps in bone restoration. In the present investigation MBG nanopowders of SiO_2-CaO-P_2O5 system have been successfully fabricated by three different methods by using structure directing agent Pluronic P123 via hydrothermal method (MBHM), an ionic surfactant CTAB (hexadecyltrimethylammonium bromide) (MBCTAB) and through wet chemical method (MBWC) using citric acid and polyethylene glycol. A comparative study of phase, morphology and textural properties of all MBG nanopowders were accomplished by DTA-TGA, XRD and FTIR spectroscopy, DLS, FESEM, BET and TEM. *In vitro* bioactivity test were studied by immersing MBG nanopowders in SBF for 24 and 48 hours with the intention to examine the hydroxyapatite layer over the surface of glass powders. ICP-AAS confirmed increase in Ca^{2+} and PO_4^{3-} ions in MBG samples and other characterizations like FTIR, XRD and FESEM confirmed the HAp deposition over the MBG nanopowders. Cytotoxicity evaluation was also done to investigate the cell growth and viability of NIH3T3 cell line on the MBG powdered pellets. These observations proposed that MBHM650 and MBWC650 could be suitable as filler material basically in dental and orthopaedics applications whereas high surface area of MBCTAB650 powders can be more useful for delivering pharmaceuticals agents *in vitro/in vivo*.

akrityanand1@gmail.com
biswa.kundun@gmail.com