2nd International Conference on
Nanostructured Materials & Nanochemistry
November 02-03, 2018 | San Francisco, USA

Characterization of silver nanomaterials derived from marine *Streptomyces* sp. Al-Dhabi-87 and it's *in vitro* application against multidrug-resistant and extended-spectrum beta-lactamase clinical pathogens

Abdul Kareem Mohammed Ghilan, Naif Abdullah Al-Dhabi and **Mariadhas Valan Arasu**
King Saud University, Saudi Arabia

A novel antagonistic marine *Streptomyces* sp. Al-Dhabi-87 that was recovered from the Gulf region of Saudi Arabia was used to synthesize silver nanoparticles (NP) from the culture free extract. The produced NP was confirmed by UV-visible spectroscopy (UV-Vis), high-resolution scanning electron microscope (HRSEM), transmission electron microscope (TEM), Fourier-transform infrared spectroscopy (FTIR), energy dispersive spectroscopy (EDAX) and X-ray powder diffraction (XRD) and broth microdilution techniques were employed for the determination of minimum inhibitory concentrations (MIC) values. The synthesized NP was authenticated by alterations in color and wavelength scanning. HRSEM and TEM analysis confirmed that the size of the NP ranged from 10 to 17nm and that it was spherical in shape. In addition, the FTIR spectrum revealed a variation in the band values from 500 to 3300cm-1 respectively. Rietveld refinement analysis of the XRD data confirmed the size of the NP, which coincided with the results of the TEM analysis. In addition, the riveted refinement analysis supported the TEM data. The NP documented significant activity against the wound infection microbial strains, such as Enterococcus faecalis, Staphylococcus epidermidis and Staphylococcus aureus. Gram-negative bacteria, such as *Pseudomonas aeruginosa*, *Klebsiella pneumonia* and *Escherichia coli* revealed MIC values of 0.039, 0.078 and 0.152mg/mL, respectively. The promising activity of NP towards extended-spectrum beta-lactamases *E. coli*, drug-resistant *Acinetobacter baumannii* and multidrug-resistant *S. aureus* (at 0.018, 0.039 and 0.039mg/mL, respectively) was advantageous. Overall, NP that was obtained from the novel *Streptomyces* sp. Al-Dhabi-87, with its promising antimicrobial activity towards the drug-resistant pathogens, would be useful for healing infectious diseases.

Biography

Abdul Kareem Mohammed Ghilan is currently a student at King Saud University, Saudi Arabia

microbiologyghilan@gmail.com

Notes: