



Antibacterial investigation of synthesized Silver Nanoparticle against Staphylococcus, E. coli and Salmonella isolated from selected live bird market

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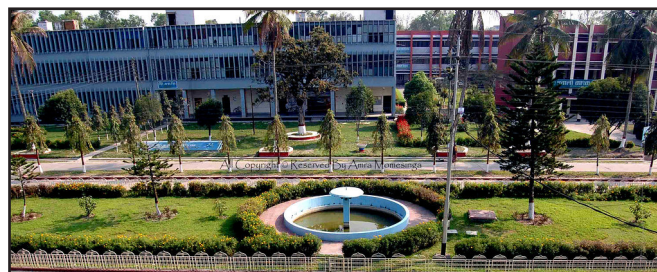
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Abstract:

This research involved synthesis and characterization of Silver Nano particle (AgNP) for using as antibacterial agent. AgNP was achieved from Silver Nitrate reduced with Sodium Tripolyphosphate. The synthesized AgNP were characterized with AFM and SEM. The morphological investigations revealed 100- 150nm sized particles homogenously from the yielded suspension. The antibacterial investigation of synthesized AgNPs were performed against the commonly available poultry bacteria, such as- Staphylococcus, E. coli and Salmonella isolated from different bird types from two live bird markets surrounding Bangladesh Agricultural University campus. The antibiogram profiling of synthesized AgNP along with commercially antibiotic disk through standard disk diffusion method was employed against representatives of Staphylococcus (n=68), coli (n=97) and Salmonella (n=91) isolated from a total of 120 cloacal swab samples collected from Broiler (n=48), Sonali (n=48) and Deshi chicken (n=24) from K.R. and Kewatkhali live bird market surrounding the BAU campus. The antibiogram assays revealed the zone of inhibition surrounding to Ceftriaxone (26.99 ± 0.2), Ciprofloxacin (21.57 ± 0.15), Gentamycin (23.59 ± 0.2) and resistance to Amoxicillin (0.00), Tetracycline (7.23 ± 0.06) while AgNP (22.93 ± 0.38) was sensitive against all the isolates. Finally, MIC for the synthesized AgNP was determined for each of those bacteria. AgNP proved sensitivity to bacteria even resistant to Amoxicillin and Tetracycline. This sensitivity of AgNP against poultry bacteria holds promise to be used as a new antibacterial in poultry industry.

Biography:

Dr. Md. Abdul Kafi (PhD, JSPS & Marie Curie Individual Fellow) is a Professor in the Department of Microbiology and Hygiene, Bangladesh Agricultural University (BAU), Mymensingh-2202, Bangladesh. He received DVM and MS in Microbiology from BAU, Bangladesh. He pursued his PhD in Interdisciplinary programme of Integrated Biotechnology from Sogang University, Korea. He developed nanostructured bioplatfrom for establishing cell on



a chip for environmental monitoring with level free electrochemical methods. He also worked on peptide functionalized chitosan scaffold suitable for hMSC adhesion and proliferation with aim developing organ on a chip. As a Marie Curie fellow he was working on BIOPOLYMER based platform for biocompatible, biodegradable and bioresorbable electronics for wearable/implantable applications. Recently Dr. Kafi involved with production bionanoparticles for various biomedical applications including generation of new antimicrobial agents as an alternative to antibiotics.

Publication of speakers:

1. Khatoon UT, Rao KV, Rao JVR, Aparna Y 2011: Synthesis and characterization of silver nanoparticles by chemical reduction method. International Conference on Nanoscience, Engineering and Technology, 97-99. doi:10.1109/ICONSET.2011.6167920
2. Shareef JU, Rani NM, Anand S, Rangappa D 2017: Synthesis and characterization of silver nanoparticles from Penicillium sps. Materials today 411923-11932
3. Wypij M, Czarnecka J, Swiecimska M, Dahm H, Rai M, Golinska P 2018: Synthesis, characterization and evaluation of antimicrobial and cytotoxic activities of biogenic silver nanoparticles synthesized from Streptomyces xinghaiensis OF1 strain. World Journal of Microbiology and Biotechnology 34 23 doi: 10.1007/s11274-017-2406-3

Webinar on Microbiology and Future Applications

Citation: Abdul Kafi; Antibacterial investigation of synthesized Silver Nanoparticle against Staphylococcus, E. coli and Salmonella isolated from selected live bird market; Future Microbiology 2020; July 22, 2020; London, UK