

Silver Nanocomplexes – the New Age Nanomedicine for Bacterial Infections †

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Abstract: The nosocomial microbes and multi-drug-resistant (MDR) bacteria are the foremost cause of global concerns and infections. Though there is the availability of marketable antibiotics, there is no further improvement in the conditions, requiring administration of drug combinations. To overcome the confinement of the existing treatment strategies, nanotechnology is being recruited as an innovative tool for fighting antibacterial infections. Our group has recently designed the silver-based nanocomplexes (SPBANPs: silver Prussian blue analog nanoparticles and SNPnPs: silver nitroprusside nanoparticles) that demonstrate excellent antibacterial activity in both Gram-positive and Gram-negative bacteria established through different *in vitro* assays [1-2]. The nanoparticles were systematically characterized by various analytical techniques. The stability analysis of the nanoparticles exhibited their reliability for a longer time period. The *in vitro* antibacterial assays involving zone of inhibition, colony-forming, SOD, and catalase activity staining exhibited considerable antibacterial activity in different strains (*E.coli*, *B.subtilis*, *K.pneumonia*, and *P.aeruginosa*) of Gram-positive and Gram-negative bacteria. Furthermore, the nanoparticles demonstrated excellent wound healing and anticancer properties, recognized by both *in vitro* and *in vivo* experiments. The beauty of both nanoparticles is that they function through inhibiting bacterial infections devoid of any antibiotics or drugs. Therefore, the results recommend that the nanoparticles hold the prospective to act as excellent antibacterial agents and serve for wound healing and anticancer tricks soon.

Keywords: silver Prussian blue nanoparticles; silver nitroprusside nanoparticles; antibacterial; anticancer.

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Conflicts of Interest

The authors declare no conflict of interest.

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