# **Supplementary information**

## Well diffusion assay

In brief, the bacteria were cultured in Luria Bertini broth at  $35^{\circ}C \pm 2^{\circ}C$  on an orbital shaker incubator (New Brunswick Scientific, USA) at 160 rpm. 200 µl of overnight culture broth containing 10<sup>6</sup> CFU/ml was spread on a 90 mm LB agar plate to obtain bacterial lawn. Around 8 mm sized wells were punched into the agar with the head of sterile micropipette tips. Using a micropipette, 80 µl (50µg/ml) of the solution sample was poured into each of wells on all plates. After overnight incubation at  $35^{\circ}C \pm 2^{\circ}C$ , the size of the zone of inhibition was observed.

## Growth curve analysis

To analyse the growth curve of bacterial strains in presence of their corresponding synthesized nanoparticles, Bacterial strains were grown in 200 $\mu$ l of liquid Luria Bertini broth (LB) supplemented with 5×10<sup>6</sup> cfu/ml and different concentration of corresponding silver nanoparticles. Growth rate was determined by measuring OD at 600nm in a microplate reader (Epoch, Biotek)

# **FESEM Bacterial sample preparation**

Overnight bacterial strains cultures were incubated with ECAgNP, SAAgNP, STAgNP and BTAgNP for 4 hours. Followed by incubation, 1.5ml of bacterial cultures were centrifuged and washed with 1X PBS twice. The cultures were then resuspended in 50µl of 1X PBS and fixed with 4% paraformaldehyde (PFA) for 20 min. After fixation dehydration was done in sequential treatment of 10%, 30%, 50%, 70%, 90% and 100% alcohol. The bacteria were then placed in silicon substrate chip and analyzed in FESEM. EDS analysis was done to validate and detect the attachment of nanoparticles to the bacterial surface.

### HCT116 cell culture

HCT116 Cells were cultured in Dulbecco's Modified Eagle's Medium with phenol red (DMEM) supplemented with 10% (vol/vol) new born calf serum, 100units/mL penicillin, and 100 units/mL streptomycin and 1% L-glutamine (vol/vol) and grown at 37°C in a humid atmosphere containing 5%  $CO_2$ . Cells were harvested using Trypsin-EDTA and centrifuged at 1000rpm for 5 min. The cells were then resuspended in DMEM with 10% complete medium for subculture and other uses.

### Analysis of nanoparticles uptake by flow cytometry

Uptakes of nanoparticles by the HCT116 cells were determined by flow cytometry using standard protocol described by Zucker et al<sup>1</sup>. HCT cells were exposed to silver nanoparticles as described in treatment protocol. Followed by treatment, cells were trypsinized, centrifuged at 135g for 10min, resuspended in 500µl of medium and kept in ice. The data were acquired at 10000 cell count by Attune acoustic focusing cytometer (Applied Biosystems, ThermoScientific USA) equipped with 488nm argon laser. The cytometer was setup to measure FSC and SSC logarithmically. 1 mg /ml of nanoparticles were used to set the standard FSC and SSC. The data were processed in FCS express 5 (DeNovo, Los Angeles, CA). Mean side scatter of each sample was measured and presented in form of histogram.

#### Cell cycle analysis

HCT116 Cells were exposed to different types of synthesized silver Nanoparticles for 24h and 48h after 24hr of seeding with density of  $1 \times 10^{6}$  cells per well in 24 well plate. After treatment, they were trypsinized and kept on ice. For cell cycle analysis, they were incubated with 1:2 dilution in 0.5% NP-40 non-ionic detergent made up with PBS without Ca<sup>2+</sup>and Mg<sup>2+</sup>. Staining was done with Propidium Iodide (20µg/ml, MP Biomedical, USA) after PBS washing. Nuclei measurement was performed by BL3 filter (640LP) of Attune focusing Flow cytometer. Nuclei subpopulations were analysed by FCS express5 (Denovo, Los Angeles, CA) software and the cells with different phases were calculated from histogram using Area parameter. Three independent experiments were performed and presented as Mean ± SD.



Fig.S1 Schematic representation of synthesis of silver nanoparticles (ECAgNP, SAAgNP, STAgNP and BTAgNP)



**Fig. S2** Structure of Bap 1 matrix biofilm protein present in Gram negative (E.coli) and Gram positive (S.aureus) protein.



S.typhimurium

E.coli

**Fig. S3** Inhibition zone formed by different biogenic silver nanoparticles against two bacterial strains as determined by Well diffusion assay (a) ECAGNP) (b) SAAgNP (C) STAgNP (d) BTAgNP.



**Fig S4** Growth curve of different bacterial strains in presence of their corresponding silver nanoparticle (a) ECAgNP with *E.coli* (b) SAAgNP with *S.aureus* (c) STAgNP with S.typhimurium (d) BTAgNP with *B. thuringiensis*.



**Fig. S5** ROS production by different bacterial strains in presence of their corresponding synthesized silver nanoparticles at different concentration (A) *E.coli* with ECAgNP (B) *S.aureus* with SAAgNP (C) S.typhimurium with STAgNP (D) *B.thuringiensis* with BTAgNP.



Fig S6 A. Viability of HCT116 in presence of different concentration of synthesized biogenic silver nanoparticles by MTT assay B.  $LC_{50}$  of different synthesized biogenic silver nanoparticles for HCT116 colon cancer cell lines.



**Fig. S7** Comparative uptake of different biogenic silver nanoparticles by HCT116 after treatment for 24h and 48h determined by flow cytometry (A) ECAgNP (B) SAAgNP (C)STAgNP (D) BTAgNP.



**Fig. S8** Production of ROS by HCT116 after treatment with different silver nanoparticles for 24h and 48h determined by flow cytometry.(A) ECAgNP (B) SAAgNP (C)STAgNP (D) BTAgNP.



**Fig.S9** Cell cycle analysis of HCT116 cells after treated with different silver nanoparticles for 24h and 48h determined by PI staining.