**Abstract**

[Halloysite](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/halloysite) [nanotube](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/nanotube" \o "Learn more about Nanotube from ScienceDirect's AI-generated Topic Pages) (Hal nanotube) – a clay mineral [nanomaterial](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/nanomaterial" \o "Learn more about Nanomaterial from ScienceDirect's AI-generated Topic Pages), was surface modified using cationic, anionic and [non-ionic surfactants](https://www.sciencedirect.com/topics/engineering/nonionic-surfactant) – cetyltrimethylammonium bromide (CTAB), sodium dodecyl [sulphate](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/sulphate" \o "Learn more about Sulphate from ScienceDirect's AI-generated Topic Pages) (SDS) and Tween 80 respectively. The pristine Hal nanotube and the three surfactant modified Hal nanotubes (SM-Hal nanotubes) were tested against three phytopathogenic bacteria Xanthomonasoryzae, Agrobacterium tumifeciens and Ralstoniasolanacearum. In the present study, by performing various bacterial toxicity assays, it has been established that SM-Hal nanotubes had a higher killing efficiency of phytopathogenic bacteria than pristine Hal nanotube. The surfactant modifications improved the dispersion of the Hal nanotube and altered the physico-chemical properties like grain size, particle diameter, surface charge and [hydrophilicity](https://www.sciencedirect.com/topics/engineering/hydrophilicity" \o "Learn more about Hydrophilicity from ScienceDirect's AI-generated Topic Pages), which consecutively enhanced the interaction and the toxic effects on phytopathogenic bacteria. SM-Hal nanotubes inhibited phytopathogenic bacteria at a lower minimum inhibitory concentration (MIC) as compared to the pristine Hal nanotube. Among the three SM-Hal nanotubes, CTAB-modified Hal nanotube effectively suppressed the growth, disrupted the cell [membrane integrity](https://www.sciencedirect.com/topics/engineering/membrane-integrity), induced higher [reactive oxygen species](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/reactive-oxygen-species) (ROS) production and inhibited the [biofilm formation](https://www.sciencedirect.com/topics/engineering/biofilm-formation" \o "Learn more about Biofilm Formation from ScienceDirect's AI-generated Topic Pages) of all the three phytopathogenic bacteria followed by Tween 80-modified and SDS-modified Hal nanotubes. Hence, it is evident that these tailor made SM-Hal nanotubes, can be effectively used as potent clay mineral nanomaterials to control phytopathogenic bacteria.