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## ANTIBACTERIAL ACTIVITY OF GOLD NANORODS AGAINST *STAPHYLOCOCCUS AUREUS* AND *PROPIONIBACTERIUM ACNES*: MISINTERPRETATIONS AND ARTIFACTS

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The antibacterial activity of gold nanorod (GNR) suspensions of different surface functionalities was investigated against standard strains of *Staphylococcus aureus* and *Propionibacterium acnes*, taking into consideration two commonly overlooked factors: the colloidal stability of GNR suspensions upon mixing with bacterial growth media and the possible contribution of impurities/molecules in GNR suspensions to the observed antibacterial activity. The results demonstrated that cationic polyallylamine hydrochloride (PAH)-GNR were severely aggregated when exposed to bacterial growth media compared to other GNR suspensions. In addition, the free cetyltrimethylammonium bromide (CTAB) present in GNR suspensions is most likely the origin of the observed antibacterial activity. However, the antibacterial activity of GNR themselves could not be excluded. Probing these two critical control studies prevents misinterpretations and artifacts of the antibacterial activity of nanoparticles. Unfortunately, these practices are usually ignored in the published studies and may explain the significant conflicting results. In addition, this study indicates that GNR could be a promising candidate for the treatment of skin follicular diseases such as acne vulgaris.

### Biography

Nouf Nawaf Mahmoud completed her BSc in Pharmacy (the University of Jordan), MSc in Clinical Pharmacy (the University of Jordan) and a PhD in Pharmaceutical Technology (the University of Jordan) before joining the academic staff at Al-Zaytoonah University of Jordan. She is an Assistant Professor of Pharmaceutics at the faculty of Pharmacy and a member of Quality Assurance committee at the faculty. Her research focuses on the Nanotechnology and its biomedical applications, understanding the nano-bio interface and in particular the gold nanoparticles-skin interactions and developing advanced transdermal delivery nano systems.

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