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**Green Synthesis of Tetracycline Derivative Doxycycline Capped Gold Nanoparticles and Evaluation of its Antimicrobial Activity** VARAVOOT SIRIYUTWATANA, ASHLEY MCDADE, JASON PAYNE, Western Kentucky University — Nowadays, bacteria are rapidly developing mechanisms to become resistant to available antibiotics. Therefore, building up an effective alternative and its administration at a concentration, which will help in preventing bacterial resistance to drugs is important. We report a single step biofriendly synthesis of tetracycline derivative doxycycline capped gold nanoparticles (D-GNPs). Gold nanoparticles act as an effective drug carrier hence capping of doxycycline on surface of GNPs will ensure targeted drug delivery. Effects of different parameters like solvent, temperature, reaction time on synthesis of D-GNPs were observed. Synthesized GNPs were then characterized by various analytical techniques like TEM, UV-vis spectroscopy, SEM, EDS and FTIR. TEM study showed that the resulting GNPs were spherical with a size within 15-20 nm. UV-vis spectroscopy showed the characteristic absorbance peak at 550 nm. Elemental and surface analysis was carried out by SEM, EDS and FTIR. The next step of our study involves evaluation of antimicrobial properties. For this conventional assays like spread plate assay and turbidimetry assay along with modern assays like XTT and alamar blue assay will be used. It is through this study that the potential use of D-GNPs in medicine can be assessed.

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