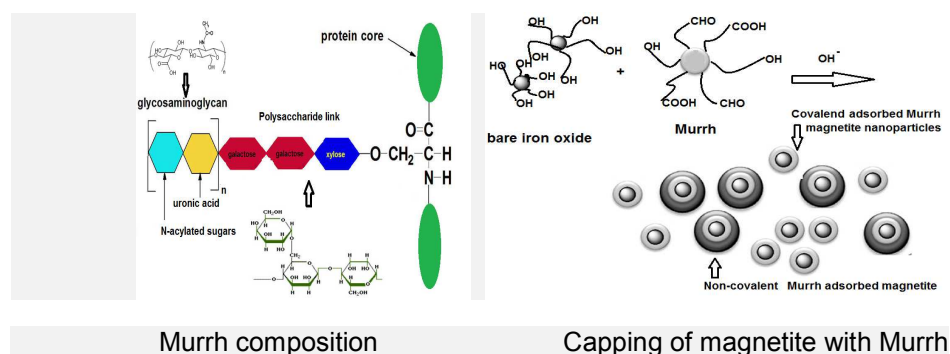


Production of Antimicrobial Silver and Magnetite nanoparticles Using Natural Products based on Rosin And Murrh Gums^[1]

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In the present study, new silver and magnetic nanoparticles were prepared using modified cationic, nonionic surfactants and amino-amidoximes based on rosin as natural products^[2, 3]. The produced modified rosin surfactants and amino-amidoximes were used as capping agents for magnetite nanoparticles to prepare hydrophobic coated magnetic powders^[4-6]. Water soluble carbohydrates produced from Murrh natural gum were used to produce capped magnetite and silver nanoparticles as natural gums. A new class of monodisperse amphiphilic magnetite and silver nanoparticles were prepared by a simple and inexpensive green method.



The structure and morphology of magnetite and silver capped with modified rosin and Murrh gums were characterized by Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), transmission electron microscopy (TEM), zeta potential, thermogravimetric analysis (TGA) and dynamic light scattering (DLS). The magnetic properties were determined from vibrating sample magnetometer (VSM) analyses. These prepared silver and magnetite nanoparticles were tested as bioactive nanosystems and their antimicrobial effects were investigated.

¹ under preparation; ²A. M. Atta, H. A. Al-Lohedan, S. A. Al-Hussain, *Int. J. Mol. Sci.* **2015**, *16*(4), 6911-693; ³A. M. Atta, H. A. Al-Lohedan, S. A. Al-Hussain, *Molecules* **2014**, *19*(8), 11263-1127; ⁴A. M. Atta, G. A. El-Mahdy, H. A. Al-Lohedan, S. A. Al-Hussain, *Int. J. Mol. Sci.* **2014**, *15*(4), 6974-6989; ⁵G. A. El-Mahdy, A. M. Atta, H. A. Al-Lohedan, *J. Taiw. Instit. Chem. Eng.*, **2014**, *45*, 1947-1953; ⁶M. Ali, H. A. Al-Lohedan, A. M. Atta, A. O. Ezzat, S. A. Al-Hussain, *J. Mol.*, **2015**, *204*, 248-254.