



# RCSI

# RCSI Bahrain

## RSS PROJECT SUMMARY YEAR 2017

RCSI DEVELOPING HEALTHCARE LEADERS WHO MAKE A DIFFERENCE WORLDWIDE

<b>Project Title</b>	Synthesis and antimicrobial activity of nano particles.
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<b>Project Summary</b>	
<p>Microbial infections have become a global health burden due to the evolution of resistance strains which has resulted in prolonged treatment and therefore higher health expenditure (1). With the limited number of “last resort” antibiotics, researchers are focusing on alternative antimicrobial agents. On such alternative that has been gaining increased interest in recent years is the use of nano materials; 10 – 100 nm. Nanomaterials may be able to fill the gap where antibiotics are more frequently failing, particularly in regards to the development of resistant strains to antibiotics (2). The antimicrobial capabilities of nano particles depends on two main factors; firstly, their physiochemical properties and secondly, the type of microorganism (3). In this research project, we plan to synthesis iron oxide and silver nano particles of varying sizes. The proposed work will attempt to elucidate the potential of iron oxide and silver nano particles as antimicrobial agents against both bacteria and fungi that are known to have pathogenic strains.</p> <p>The research question What is the in vitro antimicrobial effect of nanoparticles of varying sizes?</p> <p>The aims of the study</p> <ul style="list-style-type: none"><li>• To characterize nano particles produced by a thermal and hydrothermal methods.</li><li>• To examine the antimicrobial effect of nano particles on Gram+ and Gram- bacteria and fungi which are known to have pathogenic strains.</li></ul> <p>The objectives of the study</p> <ul style="list-style-type: none"><li>• To synthesis nano particles using thermal and hydrothermal methods</li><li>• To examine particles using UV-Visible Spectroscopy, XRD and TEM in order to determine their shape, size and stability</li><li>• To qualitatively examine the antimicrobial effect of nano particles using the agar plate diffusion test</li><li>• To determine the minimum inhibitory concentration and minimum lethal concentration of nano particles to bacterial and fungal strains</li></ul>	

<b>Subjected to Ethics Approval</b>	<b>Yes:</b> <input type="checkbox"/> <b>No:</b> <input checked="" type="checkbox"/>
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<b>Primary References</b>	1. Yah, C. and Simaye, G. (2015). Nanoparticles as potential new generation broad spectrum antimicrobial agents. DARU Journal of Pharmaceutical Sciences, 23(43), pp. 1-14.
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