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Focus on optimization of colorimetric assay for the detection of hydrogen peroxide using a green synthesis pathway for silver capped nanoparticles

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Fascinating green and cost-effective technique for the synthesis and preparation of silver nanoparticles for an easy assay for the detection of hydrogen peroxide as reactive oxygen species is described in the present study. Silver nanoparticles were capped using an extract of an algae harvested from the Arabian sea in Al-Fujairah, UAE. Nanoparticles were obtained in an optimum time of 3h under optimum temperature of 75˚C in a water bath shaker. The optimum pH was found to be the normal pH of the plant extract (pH= 7). The nanoparticles were characterized by using Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), Dynamic Light Scattering (DLS) and Energy-Dispersive X-ray Spectroscopy (EDS). The nanoparticles were used for the sensing of hydrogen peroxide based on a colorimetric technique. The silver catalytic ability for the decomposition of hydrogen peroxide was assessed using different concentration of AgNPs, pH effect, temperature effect and different loads of hydrogen peroxide. The red color of the silver nanoparticles solution was found to change gradually to a transparent solution with the increase of the concentration of H_2O_2.

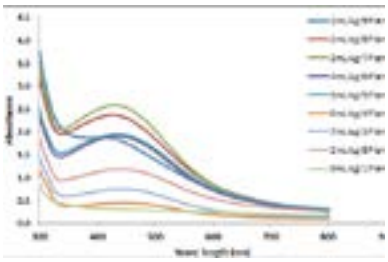

Fig: 1

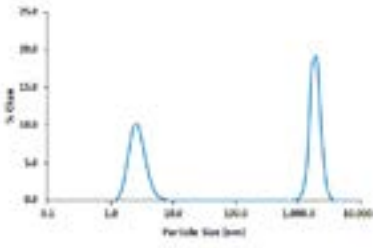

Fig: 2

Biography

Hamid Idriss is working as Senior Chemsitry Labs officer in the Department of chemistry, College of Sciences, University of Sharjah. He has a long experince in forensic chemsitry and Natural products. He published two papers on Tarminalia brownii a plant used as a traditional medication for a number of diseases. He worked also as senior chemsitry Laboratory in Qatar petrolium for more than 5 years. His interest shifted to synthesis of Nanoparticles using green techniques such as plant extracts.

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