

Abstract

Green approach was adopted for the synthesizing nanoparticles of manganese oxide. Linseeds were used for the extraction of hydrogel. Hydrogel play role of capping, reducing and stabilizing agent in the synthesis of nanoparticles. The solutions of hydrogel extracted from linseed and potassium permanganate in distilled water was combined to synthesize the nanoparticles of manganese oxide. Then characterization was done to confirm the formation of manganese oxide nanoparticles. The characterization techniques involve UV-visible spectroscopy, Fourier transformer infrared spectroscopy (FTIR), scanning electron microscopy (SEM) and energy dispersive X-ray spectroscopy (EDX). UV-visible spectroscopy and FTIR spectroscopy was done for the confirmation of MnO nanoparticles. SEM was carried out to see the structure and size of nanoparticles and EDX was to see the elemental composition. Then the antibacterial and antibiofilm potential of nanoparticles was estimated by performing antibacterial assay and antibiofilm assay against three different bacterial strains i.e. *Aeromonas*, *B. licheniformis* and *E. coli*. The technique of agar well diffusion was employed to determine the antibacterial potential of nanoparticles. The MnO nanoparticles show antibacterial and antibiofilm potential against bacterial strains. Photocatalytic dye degradation was also performed with Methylene blue dye in sunlight and results were obtained after regular intervals and percentage degradation was calculated.