

Abstract

In this study, the nanocomposite of Starch-graft-Polyaniline/ Magnesium Oxide (Starch-g-PANi/ MgO) was synthesized. MgO nanoparticles (NPs) were prepared by chemical method and in the presence of *Prosopis farcta* pod extract and The size distribution was compared. The extract of *Prosopis farcta* pod, an eco-friendly agent, was used for the preparation of Magnesium Oxide nanoparticles using magnesium nitrate and sodium hydroxide as a surrogate for Chemical method. Starch-g-PANi copolymer was synthesized in the presence of ammonium peroxydisulphate (APS). The morphology and the particle size of MgO NPs, Starch-g-PANi co-polymer and the nanocomposite, were investigated using UV Spectrometry, Transmission Electron Microscopy (TEM), X-ray diffraction (XRD) analysis, Energy Dispersive X-ray Spectroscopy (EDS), Photoluminescence (PL) and scanning electron microscopy (SEM) and ¹H-NMR spectroscopy. According To The X-ray diffraction results, The particle size of 24/74 nm was obtained for MgO NPs by averaging the index peaks. The UV spectrum of Starch-g-PANi showed a new peak at 620 nm pertaining to the grafted PANi. SEM and TEM images showed The desirable shapes and the size distribution of NPs and The size difference in The presece of *Prosopis farcta* extract. Finally, the biological activity of nanocomposites was evalutated on the blood serum in rats.

Keywords: Graft copolymer, Starch, Polyaniline, Nanocomposite, Magnesium oxide, Biological activity.



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**The Thesis Submitted for the Degree of Master of Science
(In the field of Organic Chemistry)**

**Preparation, characterization and biological activity of
novel polyaniline-grafted starch/Magnesium Oxide
nanocomposite and the comparison of the size
distribution of nanoparticles synthesized via Chemical
and green methods.**

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January 2016