GREEN SYNTHESIS AND CHARACTERIZATION OF BIMETALLIC Ag@Pd NANOPARTICLES USING AQUEOUS EXTRACTS OF SCHINUS MOLLE AND THEIR AND THEIR CATALYTIC ACTIVITY.

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In this work, we present the results obtained the green synthesis of Ag@Pd bimetallic nanoparticles using an aqueous extract of Schinus Molle L. as a reducing and stabilizing agent. The biosynthesis was carried out in two steps; first, seeds of Ag nanoparticles varying the ratio of plant extract/AgNO₃ precursor salt were obtained. Second, different K₂PdCl₄ precursor salt concentration was added to form a palladium shell in the Ag seeds, with no more plant extract addition. The characterization of the nanoparticles was carried out by UV-vis spectroscopy (UV-vis), X-ray diffraction (XRD), scanning electron microscopy (SEM), and transmission electron microscopy (TEM). From the UV-vis spectra, it was noted that the typical AgNPs absorption band depressed with the addition of the K₂PdCl₄ precursor that indicates the Ag@PdNPs formation. The XRD analysis revealed that the as-synthesized Ag@PdNPs have a face-centered cubic structure, SEM and TEM observations showed that most of the obtained particles were irregular morphology having particle sizes in the range of 20-50 nm, most of them with an average size of about 25 nm. Finally, the nanoparticles exhibited an excellent catalytic activity in the degradation of the methylene blue dye.

Keywords: Ag@Pt Nanoparticles, Biosynthesis, Catalytic Activity

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