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Synthesis characterization and anti-bacterial properties of $MoO_2(acac)_2$ immobilized on nanostructured polyaniline

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The metallic nanoparticlesare considered as the most promising compounds as they contain remarkable antibacterial properties due to their large surface area to volume ratio.There are many interest for researchers in this area due to the growing microbial resistance against metal ions, antibiotics and the development of resistant strains [1].Among the all novel metal nanoparticles, silver nanoparticles are the arch products from the field ofnanotechnology which have gained boundless interests because of theirunique properties such as antibacterial and antifungal activity as well as their catalytic properties [2].

In the present study,PANI/Ag nanocomposites with Ag concentration were synthesized by polymerization techniques using Ammonium persulfate as an oxidising agent.For the synthesis of PANI/Ag nanoparticles, silver ions were loaded onto the surface of the modified polyaniline and reduced to silver nanoparticles by addition $NaBH_4$. For the synthesis of PANI/Mo, complex $MoO_2(acac)_2$ was loaded onto the surface of modified polyaniline nanoparticles.Antimicrobial effects of PANI/Ag and PANI/Mo sampleswere tested against Bacillus subtilisand Pseudomonas syringeato evaluate their antibacterial activity and also against Fusariumgraminearum and Rhizoctoniasolanifor assessment of their antifungal activity. The obtained biological results showed that,bothnanocomposite have shown excellent antibacterial and antifungal activity against abovementioned organisms.

The structure and properties of PANI/Ag and PANI/Mo nonocompositeswere assessed by XRD,FT-IR,ICP, CHNS and TGA.

References

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