Biologically Active and Thermally Stable Polymeric Schiff Base and Its Coordination Polymers with Some Divalent Transition Metals Ions

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ABSTRACT

Developments of coordination polymers by linking transition metal ions with the polydentate ligands such as polymeric Schiff base have been constantly growing interest over the past years. The polymeric Schiff base based coordination polymers have attractive chemical, physical and biological properties and they have been found applications such as aqueous thickeners, impregnates, textile seizers, adhesives, additives, resins, catalysts and biomedical. In present work an attempt have been taken to synthesize new polymeric Schiff base of anthranilic acid, glutaraldehyde, barbituric acid and formaldehyde, and their coordination polymers with divalent metals [Mn(II), Ni(II), Co(II), Cu(II) and Zn(II)]. The newly synthesised Schiff base coordination polymers have been characterized by IR, ^{1}H-NMR and UV-visible spectral techniques. The elemental analysis, magnetic moment measurement and thermal behaviour of the synthesized materials along with geometry of the central metal ions have also been discussed. All the coordination polymers have been screened for their antibacterial activity against *S. aureus*, *E. coli, S. typhi* and antifungal activity against *A. niger* and *C. albicans* by agar well diffusion method. The results of electronic specral studies show that Cu (II) polymer is square planar, while Mn(II) and Co(II) polymers have octahedral geometry. The biological and thermal studies reveal that Cu(II) and Zn(II) based polymeric Schiff base coordination polymers show higher antibacterial activity and thermal stability than the other coordination polymers due to its higher stability constant, and they may be used as antifungal and antifouling agents for various projects.

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