Synthesis of new Co(II) complexes with 3-methoxy-salicylaldehyde based hydrazones as a possible approach in the treatment of cobalt poisoning

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***Abstract*—**Hydrazones play an important role in bioinorganic chemistry as they easy form stable complexes with most of the transition metals. Many hydrazones are used as chelating agents in medical treatment for reducing the toxic effects of metals. By coordinating with metal ions these compounds can promote the excretion of the metals out the body. Cobalt ions are essential to human body as a part of Vitamin B_{12}. Although cobalt is important for human health, the excess of cobalt can be harmful. Two new Co (II) complexes with 3-methoxysalicylaldehyde-4-hydroxybenzoylhydrazone and 3-methoxysalicylaldehyde isonicotinoylhydrazone have been synthesized as a possible approach in the treatment of harmful health effects of cobalt poisoning. The hydrazones reacted with cobalt ions as monobasic tridentate ligands to yield mononuclear complexes with 1:2 metal:ligand molar ratio. The cobalt complexes were characterized by elemental analyses and IR spectroscopy. The spectral data of the complexes were interpreted on the basis of comparison with the spectra of the free ligands. This analysis revealed coordination to the metal ion through phenolic-oxygen, azomethine-nitrogen and amide-oxygen atoms. The complexes are quite stable and therefore these aroylhydrazones can be used as chelators in the cases of poisonings with cobalt.

***Keywords*—** *hydrazones, Co(II) complexes, Co poisoning*