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Biological Applications of Transition Metal Complexes of Schiff Bases containing Thiosemicarbazone: A Review

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Abstract: *Transition metal complexes of Schiff base containing thiosemicarbazone have appeared as a vital class of biologically active compounds in bioinorganic and medicinal chemistry which have therapeutic potential in the treatment of microbial infections, parasitic diseases, cancer disease and other pathological conditions. These ligands exhibit significant coordination ability because of the presence of nitrogen and sulphur as donor atoms. When these ligands are coordinated with transition metals, the chelation enhances their biological activities and the resulting complexes exhibit pharmacological effects which make them promising candidates in medicinal chemistry. The characteristics of these complexes such as redox behaviour, various coordination geometries and strong interactions with biomolecules make them to interact selectively with the biological targets. The present review provides the current knowledge on structural activity relationships, coordination behaviour, biological applications and toxicological considerations of transition metal complexes of thiosemicarbazone Schiff bases. The review also emphasizes on antibacterial, antifungal, antiviral, antioxidant and anticancer activities and future research directions in inorganic medicinal chemistry.*

Keywords: *Thiosemicarbazone, Schiff bases, Biological activity, Biological active compounds, medicinal chemistry, pharmacological effects*