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IMPACT OF SYNTHESIZED NI(II) COMPLEXES IN ANTI-FUNGAL PROPERTIES

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ABSTRACT

Nickel(II) complexes, particularly those synthesized with various ligands, have gained attention for their potential biological activities, including antifungal properties. These complexes are formed by coordinating nickel ions (Ni²⁺) with organic or inorganic ligands, which can alter the physicochemical properties of the metal and enhance its biological activity. The impact of synthesized Ni(II) complexes in antifungal properties has been the subject of several studies, as they show promising results against a wide range of fungal pathogens. The antifungal mechanism of Ni(II) complexes is primarily attributed to their ability to interact with fungal cell membranes, disrupting their structure and function. These complexes can penetrate the fungal cell membrane, leading to the accumulation of intracellular ions, loss of membrane integrity, and interference with cellular metabolism. The metal ions, especially Ni²⁺, may also participate in redox reactions within the fungal cell, generating reactive oxygen species (ROS) that can damage cellular components, including proteins, lipids, and nucleic acids. In addition to their direct antifungal activity, Ni(II) complexes can also exhibit synergistic effects when combined with other antifungal agents, enhancing their efficacy. This makes Ni(II) complexes valuable in overcoming fungal resistance to traditional antifungal drugs. The impact of synthesized Ni(II) complexes as antifungal agents highlights their potential as alternative treatments for fungal infections, especially in the face of increasing drug resistance.