

Abstract

Design and Fabrication of Heterojunctions of Thiosemicarbazones and Metallic Nanoparticles in Search of Their Medicinal Activity [†]

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Introduction: Thiosemicarbazone (TSC) derivatives and their complexes have emerged as versatile medicinal agents. Now, the focus has shifted to targeted drug delivery, and here, the application of nanotechnology is being explored. Nanoparticle (NP) technologies are being explored, owing to their tremendous medicinal applications. They are also being explored to overcome the water insolubility of medicinal agents and for their ability to target specific targets.

Methods: This article aims at exploring the fabrication strategies and applications of functionalized TSCs conjugated with NPs for improved therapeutic potential. Studies were taken from the recent literature, and are indexed in leading databases.

Results: The literature survey reveals the fabrication of TSCs with chitosan-coated superparamagnetic magnetite NPs, which showed significant anti-proliferative activity against a number of cell lines. Similarly, cobalt oxide nanoparticles conjugated with TSCs have been tested against hepatic cancer cell line HepG2. Other than for their anticancer activity, the functionalized nanoparticles have also been employed against drug-resistant pathogens. To improve oral bioavailability and pharmacological activity, nanoparticle-based block polymers have been proposed to encapsulate the TSC moiety. The in vitro activity of the fabricated NPs was tested against *Leishmania amazonensis*. Against microphages, less cytotoxicity was observed.

Conclusions: The article may shed light on the structure–bioactivity relationship of novel nanocomposites derived from TSCs and NPs and their specific mechanisms of action.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/proceedings2024105050/s1>, Conference poster.

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