# NEW PERSPECTIVES ON LEISHMANIASIS TREATMENT AND THE POTENTIAL OF NANOPARTICLES CONTAINING NATURAL EXTRACTS: A LITERATURE REVIEW

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## Abstract

Introduction:Leishmaniasis is a significant public health issue, affecting around 12 million people in 88 countries. Caused by *Leishmania* spp., it manifests in cutaneous, mucocutaneous, and visceral forms, with the latter being the most severe. In Brazil, treatments include Glucantime, Amphotericin B, and Miltefosine, but these drugs have high toxicity and costs. The growing resistance of *Leishmania* spp. to conventional therapies and their limitations have driven the search for alternative treatments. Nanotechnology, combined with natural bioactive compounds, has emerged as a promising strategy to develop more effective and less toxic therapeutic options. **Objective** This review evaluates the therapeutic potential of nanoparticles with natural bioactive compounds for leishmaniasis treatment. **Methods:** A bibliographic search was conducted in PubMed, SciELO, and Google Scholar using the keywords "leishmaniasis," "nanoparticles," "natural compounds," and "medicinal plants," focusing on relevant studies in Portuguese, English, and Spanish. **Results and Discussion:** Nanoparticles with natural compounds show strong antileishmanial potential, reducing parasite load and improving therapy. Encapsulated lupeol enhances bioavailability and efficacy, while polymeric nanoparticles with 17-DMAG effectively target *Leishmania* with lower toxicity. *Libidibia ferrea* fractions in microemulsions also show promise. Nanotechnology offers better efficacy, reduced toxicity, and cost-effectiveness, but large-scale production, clinical validation, and regulatory approval remain challenges. **Conclusion**: Nanoparticles with natural bioactives offer a promising alternative for leishmaniasis treatment, enhancing efficacy and reducing toxicity. Further research should optimize formulations, validate clinical safety, and ensure accessibility in endemic areas. Integrating nanotechnology could revolutionize treatment and improve patient outcomes.
**Keywords:** Leishmaniasis, Nanotechnology, Phytotherapeutics