

## **Probiotics carry iron oxide nanoparticles for iron absorption**

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### **Abstract**

One-third of the world's population has anemia, contributing to higher morbidity and death and impaired neurological development. Conventional anemia treatment raises concern about iron bioavailability and gastrointestinal (GI) adverse effects. This research aims to establish how iron oxide nanoparticles (IONPs) interact with probiotic cells and how they affect iron absorption, bioavailability, and microbiota variation.

Pointing to the study of the literature and developing a review and critical synthesis, the authors utilized a robust search methodology. The literature search was performed in the PubMed, Scopus, and Web of Science databases. Information was collected between January 2017 and June 2022 using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) protocols for systematic reviews and meta-analysis.

The research profile of the selected scientific articles revealed the efficacy of IONPs treatment carried by probiotics versus conventional treatment. Therefore, the authors employed content assessment on four topics to synthesize previous studies. The key subjects of the reviewed reports are the characteristics of the IONPs synthesis method, the evaluation of cell absorption and cytotoxicity of IONPs, and the transport of IONPs with probiotics in treating anemia. To ensure a sufficient iron level in the enterocyte, probiotics with the capacity to attach to the gut wall transport IONPs into the enterocyte, where the magnetite nanoparticles are released.