

Peer Review

Review of: "Vitamin D, Calcium to Magnesium, and the Gut Microbiome"

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The article accurately reflects its focus, though a clear and concise abstract summarizing objectives, key points, and findings would enhance its readability. The introduction effectively highlights the importance of vitamin D and magnesium in relation to gut microbiome health but would benefit from a clear research objective or hypothesis. In the section on vitamin D and magnesium, some terms may be too technical for a broader audience; simplifying these or providing brief definitions is recommended. Supporting the hypothesis that magnesium limits vitamin D synthesis with clinical evidence would strengthen this section. It remains unclear whether the recommended ratio is based on observational or experimental data. The discussion on vitamin D's impact on gut microbiome health is well-supported by recent studies, though emphasizing practical implications, such as dietary or supplementation recommendations, would be beneficial. Clarifying if interventional studies demonstrate a causal link between vitamin D supplementation and microbiome changes would also be valuable. The therapeutic interventions section offers relevant strategies but would benefit from clearer explanations of the proposed flowchart and more actionable guidelines. Additionally, confirming whether clinical trials support these recommendations would add credibility. The conclusion summarizes key points effectively, though including more concrete takeaways or practical recommendations would enhance its impact.

Several limitations of the article should be addressed to improve its scientific rigor. These include the lack of clinical trial evidence supporting key claims, no clear criteria for literature selection, over-reliance on hypothetical models without empirical validation, insufficient discussion of confounding variables, limited consideration of population diversity, and a dense structure with minimal practical guidance. Providing more details on study selection methodology, incorporating clinical data, and

improving readability through better section transitions, summaries, and visual aids would address these issues.

Declarations

Potential competing interests: No potential competing interests to declare.