

The Effects of Postbiotics in the Management of Atopic Dermatitis, a Meta-Analysis on Randomized Controlled Trials

Norshuhada Sharudin, Muhamad Fareez Ismail*

Structured Abstract

Background: Atopic dermatitis (AD) is a chronic inflammatory skin disease that severely affects patients' quality of life and is often treated with corticosteroids and immunomodulators. However, these conventional therapies have limitations, including adverse effects and reduced long-term efficacy. Recent research has turned to microbiome-based therapies, such as postbiotics, non-viable microbial products with bioactive properties, as a potentially safer and more stable alternative for managing AD.

Methods: This study involved a systematic review and meta-analysis of randomized controlled trials (RCTs) assessing the efficacy and safety of postbiotics in managing AD. A comprehensive literature search was conducted using databases such as PubMed, Cochrane, and Inciteful. Inclusion criteria focused on human RCTs evaluating postbiotics for AD treatment. Data from six eligible studies were extracted and analyzed using RevMan 5.4 software, with outcomes measured primarily using the SCORAD index. Subgroup analyses were performed based on topical corticosteroid (TCS) usage and treatment duration.

Results: The meta-analysis found that while postbiotic treatment alone did not result in a statistically significant improvement in SCORAD scores (MD = -1.02; 95% CI: -4.78 to 2.75; $p = 0.60$), subgroup analysis revealed that combining postbiotics with TCS (MD = -3.10; 95% CI: -3.56 to -2.64; $p < 0.00001$) or extending treatment duration beyond three months (MD = -2.35; 95% CI: -4.54 to -0.15; $p = 0.04$) significantly improved clinical outcomes. Adverse events were minimal or absent, supporting the safety of postbiotics across diverse age groups.

Conclusion: In conclusion, although postbiotics alone may have limited standalone efficacy in treating AD, this study highlights their potential as a safe and effective adjunctive therapy, especially when used in combination with corticosteroids or for prolonged treatment periods. The findings emphasize the need for further large-scale, well-designed clinical trials with standardized postbiotic strains and dosing to validate their therapeutic role in AD management.

Keywords: Atopic Dermatitis, Postbiotics, SCORAD, Adjunctive Therapy, Randomized Controlled Trials

*Correspondence: fareezismail@uitm.edu.my

School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia.