

Impact of Probiotics on Gut Microbiota in Leukemia: A Literature Review

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Background: Gut microbiota plays a crucial role in maintaining health and immune balance in the body [1,2]. Alterations in microbiota have been linked to various diseases, including leukemia [3,4]. Also, oncological treatments such as chemotherapy can cause significant changes in gut microbiota, leading to gastrointestinal and immune disturbances [5,6]. **Objective:** This literature review aims to evaluate the impact of oncological treatments on gut microbiota in leukemia patients and explores the role of probiotics in restoring microbial balance. **Methods:** A literature review was conducted using PubMed, ScienceDirect, and Web of Science databases, combining the keywords “Leukemia”, “Probiotics”, and “Microbiota” in various ways. The inclusion criteria were randomized and non-randomized trials, and reviews that assessed the effects of probiotics as an adjuvant treatment to restore gut microbiota and alleviate side effects associated with oncological treatments in leukemia patients. **Results:** Nine articles were considered for this review [1-9]. The findings reveal that chemotherapy and radiation significantly disrupt gut microbiota, favoring pathogenic strains, and contributing to gastrointestinal and systemic complications [5,6]. Probiotics, such as *Lactobacillus rhamnosus* and *Enterococcus faecium* M-74, help restore gut microbiota balance by promoting the growth of beneficial bacteria and suppressing pathogenic strains. This restoration improves gut barrier integrity, reduces inflammation, and mitigates side effects like nausea, diarrhea, and febrile neutropenia [7,8]. Additionally, probiotics support the immune system by modulating immune responses and enhancing the production of anti-inflammatory cytokines, which are particularly beneficial in immunocompromised leukemia patients [3]. However, careful monitoring is crucial in immunocompromised patients [6]. **Conclusions:** The review emphasizes the need for further research to optimize probiotic use and establish standardized protocols for its safe and effective application in leukemia care. Furthermore, the recognition of specific strains with probiotic activity for each side effect is required, in order to determine the exact dose, treatment time, and ideal vehicles.

Keywords: Gut Microbiota; Probiotics; Leukemia

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