

A Pediatric Perspective on Bioactives in Oral Nutritional Supplementation

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Introduction

Oral nutritional supplementation has become a vital component in managing pediatric patients who suffer from malnutrition, growth failure, or specific medical conditions that impair nutrient absorption or intake. While ONS typically focuses on providing essential macronutrients and micronutrients, recent research has begun to highlight the role of bioactive compounds in enhancing the effectiveness of nutritional interventions. Bioactives, which include plant-derived compounds, antioxidants, polyphenols, and other functional ingredients, have shown promise in improving overall health outcomes, modulating inflammation, and supporting the immune system in children. In pediatrics, the concept of bioactives is particularly relevant, as children's bodies are still developing, and their nutritional needs are unique compared to adults. As healthcare practitioners and caregivers work to optimize nutrition for young patients, understanding how bioactives can support pediatric health through oral nutritional supplementation is crucial. This article explores the potential role of bioactives in pediatric ONS, emphasizing their benefits, challenges, and practical considerations [1-3].

Description

Bioactive compounds like vitamin D, probiotics, and polyphenols are known to play key roles in modulating the immune system. For children with compromised immune systems, such as those with autoimmune disorders, HIV, or cancer, bioactives in ONS can enhance immune defenses, reduce the risk of infections, and aid in faster recovery. For instance, vitamin D, a well-known bioactive, is essential for the proper functioning of the immune system. Supplementation with vitamin D has been shown to reduce the incidence of respiratory infections, which are common in children with conditions like asthma or cystic fibrosis. Similarly, probiotics and prebiotics help maintain a healthy gut microbiota, which is closely linked to immune health. Chronic inflammation is a common issue in many pediatric conditions, including obesity, inflammatory bowel disease, and allergies. Bioactives with anti-inflammatory properties, such as omega-3 fatty acids (from fish oil) and polyphenols (from fruits and vegetables), can help reduce systemic inflammation, improve clinical outcomes, and prevent complications associated with inflammation. For example, omega-3 fatty acids are known to lower levels of pro-inflammatory cytokines and may benefit children with conditions like juvenile arthritis or inflammatory bowel diseases (e.g., Crohn's disease and ulcerative colitis), which are often accompanied by inflammation. Adequate growth and development during childhood are directly influenced by the quality and quantity of nutrition. Bioactives like omega-3 fatty acids and antioxidants support brain and cognitive development. Omega-3s, particularly DHA (docosahexaenoic acid), are critical for neurological function, contributing to brain development, learning, and memory. Their inclusion in

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ONS formulations can be particularly beneficial for children with developmental delays, premature infants, and those with neurodevelopmental disorders like ADHD and autism spectrum disorders [4,5].

Conclusion

The inclusion of bioactive compounds in oral nutritional supplementation offers promising opportunities for improving pediatric health, especially for children facing challenges related to growth, immune function, and gut health. Bioactives such as omega-3 fatty acids, polyphenols, probiotics, and vitamins can provide targeted support for children with specific nutritional needs, helping to enhance their overall well-being and developmental outcomes. However, the incorporation of bioactives into pediatric ONS must be approached with caution, ensuring the right balance between efficacy, safety, and palatability. Ongoing research into the precise mechanisms and effects of bioactives will continue to refine their role in pediatric nutrition, allowing for more personalized and effective dietary interventions. Ultimately, bioactives represent an exciting frontier in pediatric healthcare, offering potential benefits for both acute and long-term health in children.

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Conflict of Interest

None.

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