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RECEIVED 20 December 2023
ACCEPTED 27 December 2023
PUBLISHED 11 January 2024

CITATION
Manti S, Galletta F and Leonardi S (2024)
Editorial: Nutrition, diet and allergic diseases.
Front. Nutr. 10:1359005.
doi: 10.3389/fnut.2023.1359005

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Editorial: Nutrition, diet and allergic diseases

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KEYWORDS

children, adults, allergic diseases, clinical outcomes, nutrition, immune system, diagnosis

Editorial on the Research Topic Nutrition, diet and allergic diseases

The first 1,000 days of life are crucial in the growth and development of infants, as they have a diet of limited variability, mainly consisting of breastmilk and/or infant formula, followed by the introduction of milk and solid foods. The composition of all these foods significantly affects immune response and development, also affecting immunity later in life. Essentially, all dietary antigens are proteins that may prevent or contribute to the development of allergies.

In vitro and *in vivo* studies, especially in nutrition, increasingly require attention since they allow the identification and investigation of different and new treatments for allergic disorders. Accordingly, the notion that the composition and metabolic activity of foods and the role of intestinal microbiota in the development of allergies have become clearer over the last few years, and there is an urgent need to provide information on this issue.

The potential effects of vitamin D supplementation on airway obstruction may be through inflammatory cytokine changes, which are evident in T2-low asthma. In asthma, Zhou et al. first reported both *in vivo* and human models, outlining the associations between vitamin D levels and airway inflammation, airway resistance, and small-airway function (1). Similarly, supplementation with pomegranate, thanks to its anti-inflammatory properties, was significantly associated with an improvement in forced expiratory volume in 1 s (FEV1), FEV1/forced vital capacity (FVC) ratio (FEV1/FVC), and forced expiratory flow of 25–75% (FEF25–75%) in patients with mild and moderate allergic asthma (Shateri et al.). On the contrary, an increase in markers reflecting a pro-inflammatory immune response, such as High-density lipoprotein-cholesterol (HDL), folate, iron, and eosinophil levels, were independently and inversely associated with the immunological status of asthmatic adults (Wen, Zhuang et al.; Wen, Wang, Giri et al.; Wen, Wang, Xia et al.).

Globally, we urgently require an overview of best practices for biospecimen collection and analyses, as well as studies on the fundamentals of clinical data management (preparation and study startup including data collection, entry, cleaning, and authentication), and databases focusing on nutritional issues.

Author contributions

SM: Conceptualization, Supervision, Validation, Visualization, Writing—original draft. FG: Visualization, Writing—review & editing. SL: Conceptualization,

Supervision, Validation, Visualization, Writing—review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

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