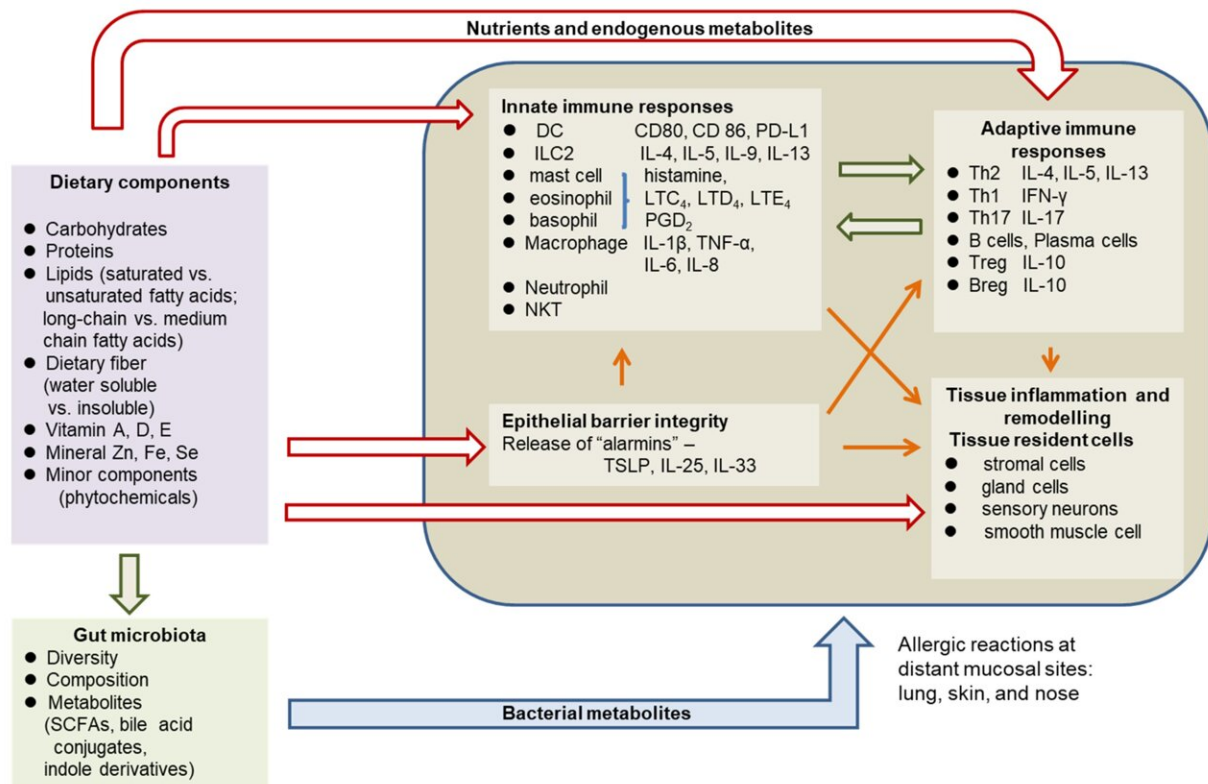


Plant-based diet may be useful in treating allergic diseases associated with obesity

August 30 2023, by Zhang Nannan



The impact of diet and nutrition on allergic reactions in the lungs, skin, and nose. The arrows indicate regulation. Red arrows represent nutrients and endogenous metabolites and blue arrow represents bacterial metabolites. Food components and endogenous metabolites can affect all stages of an allergic reaction by influencing the epithelial barrier and the release of alarmins, by interacting with innate and adaptive immune cells through special receptors to either promote immune activation or induce tolerance, and by directly acting on tissue epithelium and resident cells to regulate tissue inflammation and remodeling.

Diet plays a critical role in determining the ecology of the gut microbiota including diversity, composition, and metabolism. Bacterial metabolites can also reach distant organs and regulate all these processes through multiple mechanisms. DC: dendritic cells; ILC2, type 2 innate lymphoid cells; TSLP, thymic stromal lymphopoietin; SCFAs: short-chain fatty acids; LTC₄, leukotriene C₄; LTD₄, leukotriene D₄; LTE₄, leukotriene E₄; PGD₂, prostaglandin D₂; NKT: natural killer T cells; Treg, T regulatory cells; Breg, B regulatory cells. Credit: *Nutrients* (2023). DOI: 10.3390/nu15173683

Allergic diseases are a group of chronic inflammatory disorders of the lung, skin and nasal epithelium characterized by aberrant IgE and Th2 cytokine-mediated immune responses to exposed allergens. A wide range of nutrients and dietary components have been shown to play critical roles in the prevention or treatment of allergic diseases through host and gut microbiota-derived metabolites.

In a study published in *Nutrients*, Zhang Ping of the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences reviewed recent advances in the understanding of diet and food components as contributing factors in the etiology of allergy, molecular targets of nutrient regulation of immune cells and structural cells involved in allergy, and clinical findings on nutritional intervention in the treatment of [allergic diseases](#).

The researcher conducted a systematic literature search and reviewed the most relevant articles. The literature review showed that diet and nutrition play a key role in the development and severity of allergic diseases by regulating tissue and immune homeostasis. The identified dietary and nutritional risk factors for allergy are [high energy](#), high protein, high saturated fat, n-6 fatty acids, medium-chain [fatty acids](#), cholesterol, low total dietary fiber, low vegetables and fruits, high simple sugars and processed foods, low levels of minerals Zn and iron and

vitamins A, D, and E.

Excessive calories, high intake of protein and saturated fat, or lack of dietary fiber and micronutrients can trigger the immune system's defense mechanism and prepare the host for allergic reactions. Therefore, [calorie restriction](#), coupled with adequate dietary fiber and adequate macronutrient intake is essential for maintaining immune tolerance to allergens.

Since plant-based diets are enriched in micronutrients and dietary flavonoids, which are associated with potent anti-inflammatory and anti-allergy effects, the researcher suggested that a plant-based diet may be particularly useful in the treatment of severe allergic diseases associated with obesity.

More information: Ping Zhang, The Role of Diet and Nutrition in Allergic Diseases, *Nutrients* (2023). [DOI: 10.3390/nu15173683](https://doi.org/10.3390/nu15173683)

Provided by Chinese Academy of Sciences

Citation: Plant-based diet may be useful in treating allergic diseases associated with obesity (2023, August 30) retrieved 28 April 2024 from <https://medicalxpress.com/news/2023-08-plant-based-diet-allergic-diseases-obesity.html>

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