Food allergies: a global issue that is redefining food safety needs

Over the past two decades, food allergies have been on the rise in most countries, driven by the combined effect of changing lifestyles, environments and contemporary eating practices. This increase has transformed a once marginal condition into a major public health issue affecting millions of children and adults. For families, day-to-day risk management becomes a constant challenge. This document offers a summary of global trends, biological and dietary determinants, and the limits of current solutions in a market that is in the process of being structured.

The rise of food allergies is part of a profound transformation of our societies: changes in diets, industrialization of food, rapid urbanization and changes in microbial environments. Much more than just a statistical increase, it is a structural phenomenon that is redefining the way people interact with their diet and health. Allergies thus reveal the emerging fragility of our modern food systems and the growing importance given to food security in people's daily lives.

1. A growing phenomenon: a global problem

According to international estimates, allergic diseases rank as the fourth most prevalent chronic condition worldwide, and food allergies affect about 250 million people[1]. In developed countries, paediatric prevalence is as high as 8–10%, with similar rates observed in several countries in nutrition transition such as China[2]. The majority of relevant clinical forms are IgE-mediated and potentially severe[3]. In the United States, 7.6% of children and more than 10% of adults have a food allergy, of which more than 5% are medically confirmed[4] [5]. Multi-allergies affect 40–50% of patients[4]. In France, 2–3% of adults and 5–8% of children are affected[7]. The prevalence has been increasing for several decades, with a 50% increase in pediatric allergies in fifteen years in the United States[6], and a parallel increase in severe forms and emergency room visits[7].

2. An everyday illness: impact on families, patients and health systems

Food allergy requires continuous vigilance: systematic reading of labels, organization of meals, anticipation of risks during social activities and high exposure to cross-contamination, especially in restaurants or communities[1] [8]. Children with allergies are often excluded from certain food activities, which affects their integration. The psychological burden is major: fear of accidents, anticipatory anxiety, changes in social habits and professional constraints for adults [9] [10]. Social determinants have a strong influence on quality of life and access to resources[9]. The economic cost is considerable: in the United States, severe reactions represent about 225 million dollars per year in direct costs [11], in addition to food substitutes, specialized consultations and organizational constraints. Studies also show that a family with an allergic child incurs an additional annual cost of $4,000 to $5,000

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related to specialty foods, daily adaptations, and social limitations[10]. Catering services in community settings and transportation environments remain high-risk contexts [12] [13], especially since nearly one in two allergic children is accidentally exposed each year, and 30 to 50% of severe reactions occur outside the home, where cross-contamination remains frequent.

3. Key mechanisms: diet, microbiota and epithelial barrier

The rise of ultra-processed foods, the increasing use of additives and the diversification of food matrices are changing the intestinal immune environment and promoting sensitization[1] [14].

The intestinal barrier plays a central role: weakened by certain additives or pollutants, it becomes more permeable, facilitating the passage of allergens[3]. At the same time, the decrease in microbial diversity, widely documented in urbanized environments, leads to a 30-40% reduction in bacterial diversity compared to traditional rural populations, thus weakening the production of key metabolites involved in immune tolerance[14]. These mechanisms explain the convergence observed between industrialized countries and countries in nutritional transition, where the rapid adoption of modernized diets is accompanied by an increase in pediatric allergies[2] [15]. Allergy thus appears to be a lasting consequence of the global change in diet.

4. Limitations of current solutions: prevention, diagnosis and risk management

Primary prevention shows partial results and is highly dependent on family and medical conditions [16]. Diagnostic approaches remain limited: IgE testing and skin prick tests with variable sensitivity, a long and potentially risky oral food challenge, and the lack of reliable biomarkers for non-IgE-mediated forms. [17] [18]. Advanced tools such as the *Basophil Activation Test* or molecular diagnostics are still not very accessible. The available treatments (*Oral Immunotherapy*, *Epicutaneous Immunotherapy*) have a partial benefit and require intensive follow-up[19]. Anti-IgE biotherapies are promising but expensive and limited to certain centers[20]. Daily life is still mainly based on food avoidance and imperfect labelling, which is insufficient to prevent cross-contamination in restaurants or on the move[12] [13].

5. A rapidly accelerating market: an opportunity for innovation and investment

Rising prevalence, rising healthcare costs, and organizational burden on families are creating a rapidly expanding global market[1] [10]. Recent estimates indicate that the global market for food allergy diagnostic and management solutions is expected to grow from approximately USD 7.9 billion in 2023 to more than USD 13.3 billion in 2030, representing an annual growth of close to 8%, confirming the rapid structuring of this sector[21]. Players in the catering, transport and agri-food sectors are faced with an increased demand for transparency and security[12] [13]. Innovation is advancing in areas such as immunotherapy, functional diagnostics or digital traceability, but solutions remain fragmented and difficult to access on a daily basis[20]. The unmet needs are major: simple, reliable, readily available tools that can be directly used by people in their daily lives. In this context, the emergence of validated diagnostic solutions marks the beginning of a new era of food safety.

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