



SPECIAL ARTICLE

Food allergies in paediatrics: Current concepts<sup>☆</sup>



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Allergic enterocolitis;  
Atopic dermatitis;  
Eosinophilic  
oesophagitis

**Abstract** The concept of allergic reaction currently includes all those where an immunological reaction depends on a reaction mediated by IgE, as well as those that involve other immune mechanisms, such as T-cell regulators. There are many different clinical situations, like the classic immediate reactions (IgE mediated) such as urticaria, angioedema, immediate vomiting, abdominal pain, both upper respiratory (aphonia or rhinitis) and lower (wheezing or dyspnoea) symptom, and cardiovascular symptoms. The reactions that involve more than one organ, such as anaphylaxis, which could be an anaphylactic shock if there is cardiovascular involvement. The clinical signs and symptoms produced by non-IgE mediated reactions are usually more insidious in how they start, such as vomiting hours after the ingestion of food in enterocolitis, diarrhoea after days or weeks from starting food, dermatitis sometime after starting food. In these cases it is more difficult to associate these clinical symptoms directly with food.

In this article, we attempt to clarify some concepts such as sensitisation/allergy, allergen/allergenic source, or the relationship of different clinical situations with food allergy, in order to help the paediatrician on the one hand, to prescribe strict diets in case of a suspicion based on the cause/effect relationship with the food, and on the other hand not to introduce unnecessary diets that very often have to last an excessively long time, and could lead to nutritional deficiencies in the children.

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**PALABRAS CLAVE**

Alergia a alimento;  
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alimento;  
Fuente alérgica;  
Alérgeno alimentario;

**Alergia alimentaria en la edad pediátrica, conceptos actuales**

**Resumen** En la actualidad se engloba en el concepto de reacción alérgica tanto aquellas cuyo mecanismo inmunológico depende de una reacción mediada por IgE, como las que implican a otros mecanismos inmunitarios como las células T reguladoras. Existen situaciones clínicas muy diferenciadas, como son las clásicas de las reacciones inmediatas (IgE mediadas), como

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Reactividad cruzada;  
Anafilaxia por  
alimento;  
Proctocolitis alérgica;  
Enterocolitis  
alérgica;  
Dermatitis atópica;  
Esofagitis eosinofílica

urticaria, angioedema, vómitos inmediatos, dolor abdominal, síntomas respiratorios tanto de vías altas (afonía o rinitis), como de vías bajas (sibilancias o disnea), síntomas cardiovasculares y la reacción que implica a más de un órgano, como la anafilaxia que puede ser choque anafiláctico si hay afectación cardiovascular; la clínica producida por las reacciones no mediadas por IgE suele ser más insidiosa en su comienzo, así vómitos pasadas 2 h de la ingesta del alimento en las enterocolitis, diarreas al cabo de días o semanas de iniciar el alimento, dermatitis al cabo de un tiempo de iniciar el alimento; en estos casos es más difícil relacionar dicha clínica directamente con el alimento.

En este artículo pretendemos clarificar algunos conceptos como sensibilización/alergia, alérgeno/fuente alérgica o la relación de diversas situaciones clínicas con la alergia a alimento para ayudar así al pediatra, por una parte, a efectuar dietas estrictas en caso de sospecha fundada de relación causa efecto con el alimento y, por otra, a no inducir dietas innecesarias que, muchas veces, se prolongan durante un tiempo excesivo y pueden provocar importantes deficiencias nutricionales en los niños.

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## Definitions

**Sensitisation:** presence of elevated levels of IgE antibodies to one or more foods demonstrated by in vivo methods (usually a skin prick test) or in vitro methods (determination of circulating specific IgE).

**Allergy:** adverse effect detrimental to health compatible with an allergic reaction to a food resulting from a specific immune response that resolves when the food is removed from the diet and can be reproduced when the food is reintroduced.

**Allergen source:** food that causes the reaction.

**Food allergen:** specific component of the food (usually proteins, but can also be haptens) that is recognised by the immune system and that causes the characteristic clinical manifestations through an immunological mechanism.

**Cross-reactivity:** phenomenon that occurs when an antibody (Ab) recognises not only the original allergen, but also similar allergens. Cross-reactivity is common for foods in the same family, for example different nuts or types of shellfish.

At present, a large proportion of children have clinical manifestations of food allergy, which is more marked in developed countries. Its prevalence peaks at 6–8% at age 1 year, declining progressively until the end of childhood, when the prevalence plateaus at around 3–4%, the same percentage described in the adult population.<sup>1,2</sup> The prevalence of primary food allergy seems to be stable, but the prevalence of cross-reactivity reactions is on the rise.<sup>3</sup>

Up to one third of children with food allergy have severe reactions to more than one food allergen.<sup>4</sup> During infancy, asymptomatic sensitisation to some foods, especially milk and egg, is common, so the rate of sensitisation to foods in the first two years of life (6%)<sup>5</sup> drops to 2.2% for cow's milk allergy confirmed by characteristic clinical manifestations, a positive aetiological investigation (skin prick test and measurement of specific IgE) and positive challenge test.<sup>6</sup> Egg is the food most frequently involved in allergic reactions to food, but in early childhood there are children sensitised to eggs that have never consumed them, many of whom tolerate egg at first ingestion.<sup>7</sup>

Food allergy is a significant problem.<sup>8</sup> Food allergy in early childhood, especially egg allergy, is frequently associated with future development of respiratory allergy, asthma and/or allergic rhinitis in the first or second decade of life.

We must clearly understand two specific concepts: allergy to one or more foods, and food sensitisation. Sensitisation refers to the presence of IgE antibodies to a food detected by in vitro (specific IgE measurement) and in vivo (usually skin prick test) methods in the absence of clinical manifestations, whereas allergy refers to clinical conditions compatible with an allergic process in which immune system involvement can be evinced or a challenge test clearly demonstrates the association between the involved food or foods and the presenting clinical manifestations (see *Definitions* box).

The ratio of sensitisation to allergy varies with age, and it is much higher in infants aged less than one year, as IgE levels consistent with sensitisation are found in up to 20%, but only 3% have symptoms of allergic reactions that are later confirmed by food challenge tests.<sup>9</sup>

The foods involved in allergic reactions also vary with age. Thus, in the first two years of life, cow's milk is food that produces allergic reactions most frequently, followed by egg; in early childhood, other foods become prevalent, such as wheat, soy, peanuts and other nuts, fish and shellfish; and by the end of the first decade and in the second decade of life, vegetables gain prominence as allergens. The foods involved in allergic reactions also vary depending on regional dietary patterns.

In Spain, where the Mediterranean diet is widespread, legumes are a food group that is frequently involved in food allergy, compared to other countries with different dietary patterns. We must keep in mind that the peanut is a legume that is usually consumed dried and belongs to the family of the Fabaceae; in other regions, such as America, peanut allergy is a serious public health problem, but due to the dietary habits in Spain the frequency of allergic reactions to peanuts is not as significant. Our group was first in identifying the importance of sensitisation to legumes in disease processes with an allergic component, such as eosinophilic oesophagitis.<sup>10</sup>

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