



SOY
Molecular Allergology



References

References related to Soy components

Background

IgE-mediated allergy to soy might be the result of primary sensitization to soy, but could also result from cross-reactivity to birch-related tree pollen, peanut and other legumes or combinations (1–5).

1. L'Hocine L, Boye J. Allergenicity of soybean: new developments in identification of allergenic proteins, cross-reactivities and hypoallergenization technologies. *Crit Rev Food Sci Nutr* 2007; 47: 127–143.
2. Holzhauser T et al. Soybean (Glycine max) allergy in Europe: Gly m 5 (beta-conglycinin) and Gly m 6 (glycinin) are potential diagnostic markers for severe allergic reactions to soy. *J Allergy Clin Immunol* 2009; 123(2): 452–8.
3. Ito K et al. IgE to Gly m 5 and Gly m 6 is associated with severe allergic reactions to soybean in Japanese children. *J Allergy Clin Immunol*. 2011 in press.
4. Kleine-Tebbe J et al. Severe oral allergy syndrome and anaphylactic reactions caused by a Bet v 1-related PR-10 protein in soybean, SAM22. *J Allergy Clin Immunol* 2002; 110: 797–804.
5. Mittag D et al. Soybean allergy in patients allergic to birch pollen: clinical investigation and molecular characterization of allergens. *J Allergy Clin Immunol* 2004; 113: 148–54.

IgE positivity to soy may be the result of different cross-reactivities, some without clinical reactions to soy (6,7).

6. Sampson HA. Utility of food-specific IgE concentrations in predicting symptomatic food allergy. *J Allergy Clin Immunol*. 2001; 107: 891–6.
7. Matricardi et al. Primary versus secondary immunoglobulin E sensitization to soy and wheat in the Multi-Centre Allergy Study cohort. *Clin Exp Allergy*; 2008; 38: 493–500.

Cutaneous and gastrointestinal symptoms are the most common symptoms for soy allergy, but also severe and systemic reactions can occur (2,4,5).

4. Kleine-Tebbe J et al. Severe oral allergy syndrome and anaphylactic reactions caused by a Bet v 1-related PR-10 protein in soybean, SAM22. *J Allergy Clin Immunol* 2002; 110: 797–804.
5. Mittag D et al. Soybean allergy in patients allergic to birch pollen: clinical investigation and molecular characterization of allergens. *J Allergy Clin Immunol* 2004; 113: 148–54.
2. Holzhauser T et al. Soybean (Glycine max) allergy in Europe: Gly m 5 (beta-conglycinin) and Gly m 6 (glycinin) are potential diagnostic markers for severe allergic reactions to soy. *J Allergy Clin Immunol* 2009; 123(2): 452–8.

Who is at risk of severe reaction?

Patients with IgE antibodies to the storage proteins Gly m 5 and Gly m 6 are at risk of severe reactions to soy (2,3).

2. Holzhauser T et al. Soybean (Glycine max) allergy in Europe: Gly m 5 (beta-conglycinin) and Gly m 6 (glycinin) are potential diagnostic markers for severe allergic reactions to soy. *J Allergy Clin Immunol* 2009; 123(2): 452–8.
3. Ito K et al. IgE to Gly m 5 and Gly m 6 is associated with severe allergic reactions to soybean in Japanese children. *J Allergy Clin Immunol*. 2011 in press.

Sensitization to the allergen component Gly m 4, a PR-10 protein, indicates risk of reactions to soy. IgE antibodies to Gly m 4 are often associated with local reactions, e.g. OAS, but systemic reactions may occur (4,5,8,9).

8. Ballmer-Weber B et al. Soy allergy in perspective. *Curr Opin Allergy Clin Immunol* 2008; 8: 270–275.
4. Kleine-Tebbe J et al. Severe oral allergy syndrome and anaphylactic reactions caused by a Bet v 1-related PR-10 protein in soybean, SAM22. *J Allergy Clin Immunol* 2002; 110: 797–804.
5. Mittag D et al. Soybean allergy in patients allergic to birch pollen: clinical investigation and molecular characterization of allergens. *J Allergy Clin Immunol* 2004; 113: 148–54.
9. Kosma P et al. Severe reactions after the intake of soy drink in birch pollen-allergic children sensitized to Gly m 4. *Acta Paediatrica* 2011; 100: 305–307.

Patients sensitized to the soy protein Gly m 4, a Bet v 1 homologue, are at risk of systemic reactions when consuming high amounts of low-processed soy, e.g. soy milk (4,5,8,9).

8. Ballmer-Weber B et al. Soy allergy in perspective. *Curr Opin Allergy Clin Immunol* 2008; 8: 270–275.
4. Kleine-Tebbe J et al. Severe oral allergy syndrome and anaphylactic reactions caused by a Bet v 1-related PR-10 protein in soybean, SAM22. *J Allergy Clin Immunol* 2002; 110: 797–804.
5. Mittag D et al. Soybean allergy in patients allergic to birch pollen: clinical investigation and molecular characterization of allergens. *J Allergy Clin Immunol* 2004; 113: 148–54.
9. Kosma P et al. Severe reactions after the intake of soy drink in birch pollen-allergic children sensitized to Gly m 4. *Acta Paediatrica* 2011; 100: 305–307.

Other facts to consider

Soy protein is an important protein source worldwide (1).

1. L'Hocine L, Boye J. Allergenicity of soybean: new developments in identification of allergenic proteins, cross-reactivities and hypoallergenization technologies. *Crit Rev Food Sci Nutr* 2007; 47: 127–143.

For soy allergic patients with IgE antibodies to Gly m 5 and/or Gly m 6, it might be relevant to investigate a sensitization to other similar storage proteins, such as the peanut components Ara h 1 and Ara h 3 (1).

1. L'Hocine L, Boye J. Allergenicity of soybean: new developments in identification of allergenic proteins, cross-reactivities and hypoallergenization technologies. *Crit Rev Food Sci Nutr* 2007; 47: 127–143.

Soy can be a hidden allergen in a wide variety of processed foods such as meat products, sausages, bakery goods, chocolate or breakfast cereals (1,8).

1. L'Hocine L, Boye J. Allergenicity of soybean: new developments in identification of allergenic proteins, cross-reactivities and hypoallergenization technologies. *Crit Rev Food Sci Nutr* 2007; 47: 127–143.
8. Ballmer-Weber B et al. Soy allergy in perspective. *Curr Opin Allergy Clin Immunol* 2008; 8: 270–275.



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