Soybean Food and Feed Allergy

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Food allergies are recognized as a growing problem. In the industrialized countries the percentage of the population that exhibits clinical food allergy has increased rapidly over the past decade. Increased diversity of diets and food sources have allowed much wider choices of food and with that much greater potential to encounter a food that elicits an immunological response. Among the major foods wheat (*Triticum aestivum* L.), dairy, eggs, and soybean (*Glycine max* (L.) Merr.) are often cited as major sources of food allergies because of their inclusion as significant fractions of all foods, especially processed foods so often used in industrialized countries. Other plants sources of allergens include peanut (*Arachis hypogaea* L.), tree nuts, sesame (*Sesamum indicum* L.), and sunflower (*Helianthus annuus* L.) that although not prominent components of most diets can provoke severe and sometimes life-threatening allergic responses. Legumes have a prominent role in food allergies with significant food allergies occurring from peanut, soybean, pea (*Pisum sativa* L.), chickpea (*Cicer arietinum* L.), carob (*Ceratonia siliqua* L.), and lentil (*Lens culinaris* Medikus) (Wensing et al., 2003; Moneret-Vautrin et al., 1999; Matheu et al., 1999; Martinez et al., 2000; Ibanez et al., 2003; Sicherer, 2001; Belver et al., 2002; Bernhisel-Broadbent and Sampson 1989; Bernhisel-Broadbent et al., 1989; Magnolfi et al., 1996; Zeiger et al., 1999; Klemola et al., 2005; see Herman 2004 for review). Among these allergies, peanut sensitivity is prominent in public perception because the response of sensitive people to accidental exposure can provoke severe responses leading to death.

Food allergies develop from sensitization by proteins that could be otherwise safely consumed. The question of why some proteins that are normally safe to consume are mistakenly identified by a sensitive individual as an immunological threat remains to be determined. That this occurs is a major medical problem that extends to both production and companion animals. Food allergies are often manifested with an escalating series of responses to allergen challenge, beginning with mild atopic disease then after repeated exposure the patient exhibits more intense reactions culminating in a risk of fatal anaphylaxis. Atopic dermatitis, hives, is the most common atopic disease, with 60% of children developing symptoms during their first year of life and 85% during the first 5 yr (Sampson, 1990). Approximately 30% of children with atopic dermatitis have allergic reactions to food constituents, including cow’s milk, egg, and peanut (Sampson, 1992;