Reducing Peanut Allergy Risks by Means of Genetic Modification

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Food allergies are recognized public health problems. A review article (Al-Muhsen et al., 2003) reported that food allergies affect between 4 and 8% of children and between 1 and 2% of adults. They occur most often in young children and in individuals with a family history of other atopic diseases. Eight foods are responsible for more than 90% of food allergies: cow’s milk, eggs, soy [*Glycine max* (L.) Merr.], wheat (*Triticum aestivum* L.), peanut (*Arachis hypogaea* L.), tree nuts [walnut—*Juglans* spp., hazelnut—*Corylus avellana* L., almond—*Prunus dulcis* (Mill.) D.A. Webb, cashew—*Anacardium occidentale* L., pecan—*Carya illinoinensis* (Wangenh.) K. Koch, and pistachio—*Pistacia vera* L.], fish, and shellfish (Hefle et al., 1996). Among food allergies, peanut allergy is one of the most serious in terms of persistence and severity (Sampson et al., 1992). The majority of children outgrow their food allergies, and the foods can be reintroduced in their diet when they are older (Hourihane et al., 1996, 1997b; Ewan, 1996). However, peanut allergy is the third most common food allergy in young children (Bock, 1987) and the most common food allergy in older children, adolescents, and adults (Sicherer et al., 1999). In addition, it is the most permanent and the most capable of causing severe, life-threatening, and even fatal allergic reactions (Sampson et al., 1992; Bock et al., 2001, Al-Muhsen et al., 2003).

Prevalence of Peanut Allergy

The prevalence, which refers to the number of people sensitive to peanut, varies among countries and cultures (Frankland, 1996). In 2001, Woods and coworkers identified peanut as the most common source of food allergy in the USA, with an estimate of 1.3% prevalence in adults (Sampson, 2002). In U.S. children, the prevalence of peanut allergy was estimated to have increased twofold in the 5-yr period of 1997 to 2002 (Burks, 2003). Recent studies have estimated at ~5% the prevalence of peanut allergy in U.S. children (Wang et al., 2005; Sicherer and Sampson, 2006). Peanut allergy represents 28% of food allergies in children. It develops before age 1 in 46% of cases and under age 15 in 93% of cases (Moneret-Vautrin et al., 1998). Children can and do lose responsiveness to food allergy in general; thus, prevalence of food allergy can decline with age (Bock, 1987; Bock...