PURPOSE OF THE STUDY. Legume allergy, mainly to lentils and chickpeas, is the fifth most common cause of food allergy in Spanish children. Serological cross-reactivity among legumes is frequent, but its clinical relevance is controversial. The aim of this study was to investigate the cross-reactivity among lentils, chickpeas, peas, white beans, and peanuts and its clinical relevance in pediatric patients.

STUDY POPULATION. Fifty-four children with clinical allergy to legumes were included.

METHODS. Cross-reactivity was evaluated with enzyme-linked immunosorbent assay inhibition experiments and oral food challenges to legumes. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis immunoblots were conducted with raw and boiled legume extracts.

RESULTS. Enzyme-linked immunosorbent assay inhibition experiments demonstrated >80% inhibition with lentil, chickpea, and pea extracts. Immunoblots performed with raw legume extracts (lentil, chickpea, and pea) and individual sera revealed that >50% of the sera identified an allergen of ~50 kDa in all 3 legume extracts. In all 3 boiled extracts, an intense band at ~50 kDa was visualized by using a serum pool. The oral legume challenges demonstrated that 37 children (69%) were allergic to ≥2 legumes (median: 3 legumes). The most frequent associations were allergy to lentils and chickpeas (57%), allergy to lentils and peas (54%), and allergy to lentils, chickpeas, and peas (43%).

CONCLUSIONS. In vitro inhibition experiments demonstrated a high degree of cross-reactivity among lentils, chickpeas, and peas. Food challenges confirmed that clinical allergy to all 3 legumes is frequent in this cohort of Spanish children.

REVIEWER COMMENTS. Although legumes are not major allergens in the United States and some European countries, they are a common cause of food allergies in Mediterranean countries. The authors demonstrated that, in their group of Spanish children, there was a high degree of in vitro and in vivo cross-reactivity among legumes, which is in contrast to North American children, in whom clinical reactivity to ≥1 legume is considered to be infrequent (eg, children with peanut allergy typically tolerate most legumes). These contrasting results highlight the fact that genetic and dietary influences (among other factors) can have significant influences on food allergy. Additional studies are needed to elucidate the contribution of dietary habits and genetics to food allergy.
In Vitro and In Vivo Cross-reactivity Studies of Legume Allergy in a Mediterranean Population

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Pediatrics 2009;124;S123
DOI: 10.1542/peds.2009-1870BB

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