Background: For patients with food allergy there has been no alternative treatment to food allergen avoidance. In a study supported by the European union, a new approach aimed to reduce the allergenicity of foods of animal origin to achieve better tolerance. Patients and methods: the prevalence of food allergy was assessed by telephone interviews with more than 40000 persons in 10 European countries. By thermal and enzymatic the allergenicity of the animal food allergens hen's egg, cow's milk, beef and poultry was reduced. Patients with proven food allergy to those foods of animal origin were recruited and assessed allergologically. In-vitro cellular test systems were established. The allergenicity of food products were investigated before and after allergen reduction. Results: The prevalence of food allergy in Europe is 3% with considerable regional differences. In 41.1% of food allergic patients, food allergens of animal origin were thought to be responsible for eliciting symptoms. In total, 249 patients with food allergy were recruited. The threshold for eliciting symptoms was below the lowest test dose (e.g. 10 μg egg powder) in the double-blind placebo-controlled food challenge in...
53 of 249 (21%) of patients, whereas 50 of 249 patients (20%) only reacted to the highest given dose (e.g. one full egg). Symptoms in the provocation test developed predominantly on the skin and in the gastrointestinal tract, however, also involved respiratory tract and cardiovascular system.

Allergen-reduced cow's milk and hen's egg were produced and in part tolerated by patients in the skin prick test and provocation test. The extent of allergen reduction was characterized, also by cellular test systems involving mast cell lines. Conclusions: the concept of allergen reduction in food allergy is a new approach, which could reduce dietary interventions and support tolerance in food allergic patients.