

Establishment of Functionality Evaluation System for Anti-Allergy of Health Functional Food

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The term allergy was originally defined by Clemens Von Pirquet as ‘an altered capacity of the body to react to foreign substance’, which was an extremely broad definition that included all immunological reactions. Allergy is now defined in a much more restricted manner as ‘disease following an immune response to an otherwise innocuous antigen’. Allergy is a member of a class of immune responses that have been termed hypersensitivity reactions; these are harmful immune responses that produce tissue injury and may cause serious disease. Hypersensitivity reactions were classified into four types by Gell and Coombs.

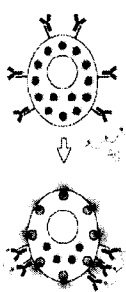
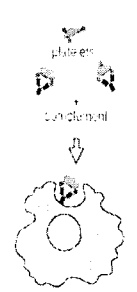
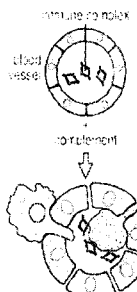
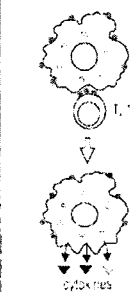
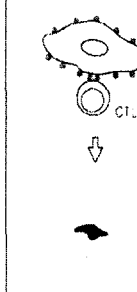
	Type I	Type II	Type III	Type IV	
Immune reactant	IgE antibody, T _H 2 cells	IgG antibody	IgG antibody	T cells	
Antigen	Soluble antigen	Cell- or matrix-associated antigen	Soluble antigen	Soluble antigen	Cell-associated antigen
Effector mechanism	Mast-cell activation	Complement, FcR ₁ cells, macrophages, NK cells	Complement, Phagocytes	Macrophage activation	Cytotoxicity
					
Example of hypersensitivity reaction	Allergic rhinitis, asthma, systemic anaphylaxis	Some drug allergies, hepatitis	Serum sickness, Arthus reaction	Contact dermatitis, tuberculin reaction	Contact dermatitis

Table. Four types of allergy

To reduce allergic symptoms, we have used antihistamine agents or steroids. But the effects of such medicines are temporizing and if the medicines are applied for long time, the possibility of side effects is very high. Moreover, the patients feel an economic and a psychological burden. So, patients with allergic disease frequently turn to complementary and alternative options. Complementary and alternative medicine (CAM) therapies have become a major component of health care in U.S.A. Atopic disorders affect > 20% of the adult population in U.S.A., and 42% of persons with such conditions as asthma, allergic rhinitis and atopic dermatitis have resorted to CAM. In Korea, patents about anti-allergic food are 77 cases. And so many health functional foods for anti-allergy are sold all over the country.

Recently our group developed the herbal formulation ALLERGINA for the regulation of allergic inflammatory reactions. ALLERGINA dose-dependently inhibited systemic and local anaphylactic reactions, histamine release, and tumor necrosis factor-alpha and interleukin-6 secretion. In addition, the number of pediatric patients with recurrent otitis media with effusions (ROME) is increasing because of the frequency of recurrence. The patients with ROME were treated with either ALLERGINA (11 ears) or antibiotics (13 ears). The mean levels of interleukin (IL)-2 and IL-4 in MEEs were significantly higher in the ALLERGINA-treated patients than in the antibiotics-treated patients, whereas levels of IL-1beta, IL-6, IL-8, and tumor necrosis factor-alpha in MEEs were significantly lower in the ALLERGINA-treated patients than in the antibiotics-treated patients. Clinical signs of ROME disappeared markedly after all the patients were given an oral administration of ALLERGINA. It is estimated that these kinds of experimental studies may be requested in order to be evaluated as health functional foods for anti-allergy.