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Co-factors affect time and size of reaction in a 'passive cutaneous anaphylaxis' model of egg allergy in humans.

Introduction:

Cofactors, such as alcohol, acetylsalicylic acid (ASA) and especially exercise, are known to induce reactions in wheat allergic patients below their threshold at wheat dosages normally considered safe. Only few studies have sought to investigate the effects of co-factors on other type-1 food allergies. The experimental 'passive cutaneous anaphylaxis' model (modified Prausnitz-Küstner) allows in a patient-safe manner to study the time and size of an allergic reaction using sera from allergic patients in healthy subjects, who can be orally challenged with or without inclusion of co-factors.

Objective:

The aim was to investigate the influence of ASA and alcohol on egg allergy. Donor sera from 4 egg allergic patients (i-iv) with s-IgE to ovalbumin at (i) 0.1, (ii) 8.87, (iii) 19.5, and (iv) 170 kU/l were injected intracutaneously to the forearm of 11 healthy/non-allergic volunteers. They were then orally challenged separately with: 1) egg white 2) egg white + ASA and 3) egg white + alcohol. 'Time to wheal' and 'wheal size' were compared between the three experiments.

Results:

Two sera (i-ii) with the lowest s-IgE to ovalbumin did not react sufficiently and were excluded from further analysis. The 2 remaining sera (iii-iv) significantly decreased 'time to wheal' with both ASA ($p < 0.01$) and alcohol ($p < 0.05$) added as co-factor compared to baseline. Increase in 'wheal size' was only found with co-factors added for the less reactive serum (iii) and not for the serum with the highest s-IgE (iv).

Conclusion:

Both alcohol and ASA affected reaction time and size of reactions elicited after egg ingestion in this passive cutaneous anaphylaxis model. This could indicate that patients with egg allergy could have faster and more severe reactions after ingestion of egg in combination with co-factors, and that co-factors should be considered in relation to other food allergies than wheat.