A passive cutaneous anaphylaxis model for investigation of absorption of hen’s egg

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Aim: Previous studies have shown that threshold distribution for hen’s egg does not resemble other food types, indicating that absorption and reaction could be more complex in egg allergic patients. Studies using Passive Cutaneous Anaphylaxis (Prausnitz-Küstner (P-K) technique) have shown valuable data with peanut allergen absorption. The method allows studying “dose-response-effects” in vivo with a high degree of safety; however, egg is still undescribed using this technique. Our aim is to examine the absorption time of egg with/without acetylsalicylic acid (ASA) as co-factor.

Methods: Test subjects (TS) (n=10) were primed with sera (0.1 ml) from challenge-verified egg allergic patients on the forearm and then 24 hours later challenged orally with a total of 141g raw, pasteurized whole egg, corresponding to approximately 3 hen’s egg, using a titrated algorithm. The reaction-time to wheal and corresponding threshold were recorded. Repeated priming and challenge with addition of 1g of ASA was performed on the opposite arm after minimum 3 days “wash-out” period. Dietary egg was eliminated for 3 days prior to testing.

Results: Preliminary results indicate large variation between TS concerning time to reaction [range 15-70min] and eliciting dosage [range 10-100g]. ASA as cofactor affected reaction time in an unpredictable manner with a high degree of variation; from unaffected to a higher reaction time and even failure to elicit a reaction with ASA as co-factor.

Discussion: The variation between dosage, test subjects and reaction-time was large and unpredictable, which could explain previous findings concerning distribution of thresholds for egg. The underlying mechanism is unclear. The effect from ASA on reaction time seems not as straightforward for egg, compared to other allergens such as wheat.

Conclusion: Absorption and reaction time, as well as the effect of ASA, using the P-K technique varies in in TS primed with sera from one egg allergic patient. This could indicate different phenotypes and/or different mechanisms for co-factors.