

## METHOD FOR QUANTITATION OF FOOD ALLERGENS IN SERUM BY BASOPHIL HISTAMINE RELEASE

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AIM. To develop a method quantitating food allergens in serum by measuring histamine release from passively sensitized basophils, elicited by allergen in serum, after oral intake of the food in question. The method is based on a model utilizing calculations of Area Under Curve (AUC), plotted against LOG transformed allergen concentrations.

METHOD. Blood bank buffy coat basophils were stripped off IgE and passively sensitized using sera containing high IgE titer against the allergen in question. Basophils were incubated with a known allergen standard and the unknown allergen preparations in 12 dilutions. Residual cellular histamine was measured by the glass fiber method and results expressed as per cent histamine release. Area under titration curves of allergen standards were calculated and plotted against logarithmically transformed allergen concentrations resulting in a linear dose-response curve. This standard curve was used to calculate allergen levels in unknown samples based on AUC.

RESULTS: Samples of buffer and serum were spiked with peanut in concentrations ranging between 500 and 2.5 pg. peanut/mL showed recoveries ranging from 88% to 102 % with CV's ranging from 3.5 % to 31 %. Recoveries were independent of peanut concentration but CV % increased when peanut levels decreased. These data were reproduced using other allergens like pork kidney (Gal-Alpha-Gal), hazelnut, grass and wasp. Sensitivity, recovery and variability were dependent on 1) high tittered specific IgE in serum (80 to 100 kIU/l), highly responding basophils (> 30 % histamine release to anti-IgE) and well-defined food allergen standard containing documented amounts of all individual allergens.

CONCLUSIONS. Food allergens can be detected in buffer and serum in the pg/mL level and the method can be used to determine allergen kinetics after food intake, determine the fraction of food uptake in relation to intake and determine allergen content in food matrices.