

INFLUENCE OF FOOD ANTIGENS ON VOLUMES OF CIRCULATING WHITE BLOOD CELLS AND PLATELETS AGGREGATION

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Mitogenic properties of peanut and cytohemagglutinin was the first evidence that cytoplasm and it's surrounding membrane is associated with variable changes of involved cell volume. Such cellular transformation became the principal method for assessment of cellular immunity i.e. "delayed hypersensitivity". Immediate hypersensitivity reactions involving degranulation of mast cells and basophils appear to correlate with involved cell size changes. Formation of cluster of aggregated platelets may be another event mediated by antigenic stimulus.

Application of new computerized models allows precise electronic instrumentation to measure volumetric cytodynamics of antigen activation through the ALCAT Test System which is designed to determine objectively the direct interaction of food antigens with circulating WBC on the basis of volumetric changes.¹ ALCAT Test computer produced histograms depict separate peaks for lymphocytes, polymorphonuclear cells, and a specific area effected by platelet aggregation. Vertical and horizontal dislocation of histograms depict cellular degranulation, cell enlargement, or disintegration upon in-vitro challenge with offending antigen.

Fell and Brostoff reported over 70% correlation between Double Blind Oral Food Challenges and ALCAT Test scores based on WBC changes alone (74 positive and 68 negative challenges). Additional evaluation of ALCAT Test computer histograms was conducted on each of 9 migraine and 7 urticaria patients. Each of those patients was challenged with 6 foods; 3 positive and 3 negative according to ALCAT Test WBC volume changes.

In an ALCAT histogram, platelets are seen in the area under 65 fl. This parameter was examined with the following changes in the area under the curve observed:

- 19 out of 136 antigens tested triggered marked changes of the platelet aggregation region of the graph.
- 10 out of 19 of these reactions correlated with ALCAT WBC changes and oral challenge.
- 8 antigens showed platelets reactivity without WBC changes of which 6 correlated with Double Blind Challenge and 2 did not.

The area of the ALCAT Histogram showing platelet aggregation appears to depict an additional and possible independent mechanism in delayed reactions to foods which seems to add useful information to the WBC histograms.

REFERENCES

1. Podleski W.K.; Am. J. Med. 1986 Sept:81(3) : pgs. 437-42.