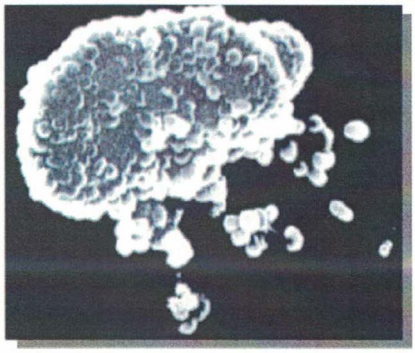
Mediator Release Test (MRT®) - Principles & Method

Mediator Release is the Direct Cause of Symptom Manifestation in Immune Mediated Food and Chemical Sensitivities



Mediators Released From Immune Cells:

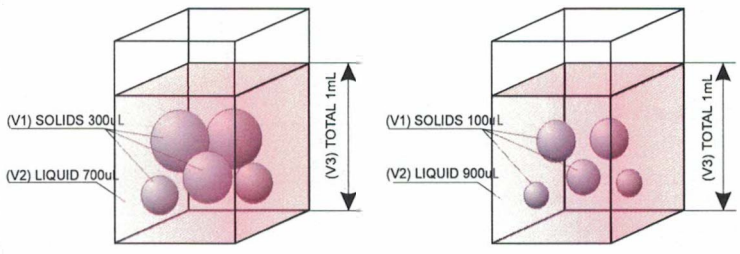
- ⊙ Histamine
- ⊙ Prostaglandins
- ⊙ Cytokines
- ⊙ Serotonin
- ⊙ Platelet Aggregating Factor
- ⊙ Eosinophil Chemotactic Factor
- ⊙ Peroxidase Enzymes
- ⊙ Dopamine
- ⊙ Leukotrienes
- ⊙ Interleukins
- ⊙ Etc.

Non-IgE mediated reactions may involve a variety of immune mechanisms (IgG, IgM, IgA, C3, C4, T-cell activation, phagocytosis, etc.) and non-immune mechanisms (pharmacologic, toxic) working independently or concurrently to trigger pro-inflammatory and pro-algesic mediator release from associated leukocytes and platelets. Released mediators produce corresponding physiologic effects leading to symptom manifestation.

Because of the complexity of underlying mechanisms governing reactions, the variety of immunocytes involved and the vast array of mediators potentially released, a simple, yet comprehensive method of identifying food and chemical induced mediator release has been developed. The patented Mediator Release Test® (MRT®) is an accurate "End-Point" test which indirectly measures mediator release through precise measurement of changes to the liquid/solids ratio of a blood sample after whole blood has been incubated with an individual food, additive, or chemical. MRT isn't limited to a single mechanism (such as ELISA) or quantification of a single mediator (such as LHRT). Rather, MRT detects the outcome of all non-IgE mediated reactions through it's innovative approach.

See Reverse Side For More Information

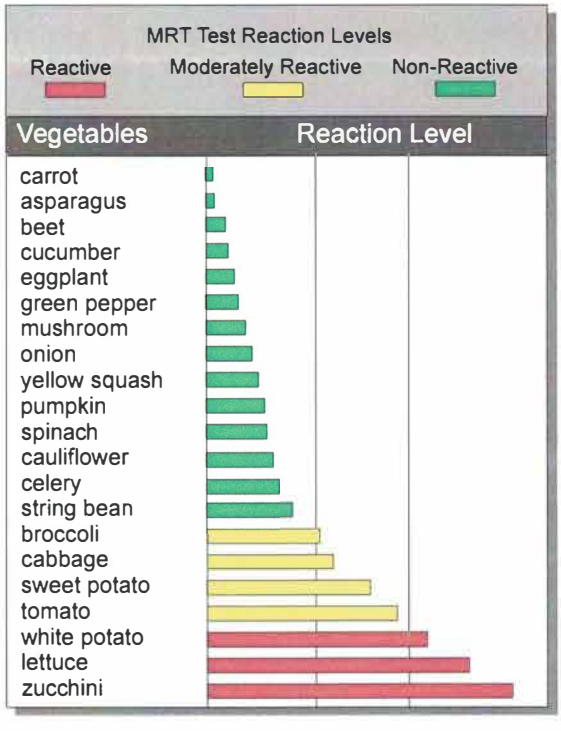
- Sensitivity 94.5% • Specificity 91.7%
- Split Sample Reproducibility >90%



PRINCIPAL OF MEDIATOR RELEASE TESTING:

V1 + V2 = V3 as applied to in vitro antigen challenge of immunocytes where V3 is constant. The instrumentation measures V1 (cellular volume) and V2 (extracellular volume) precisely using patented method of measurement to detect any release of intracellular mediators when antigen is presented. Perceived harmful substances trigger mediator release in associated cells causing a decrease in the V1 solids (cellular) portion and an increase in the V2 liquid (plasma) portion of the tested sample.

Significant reactions are categorized as either Reactive or Moderately Reactive. Non-significant reactions are categorized as Non-Reactive and form the basis for the LEAP ImmunoCalm® Dietary Management Program.



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MRT is Accurate

94.5% Sensitivity 91.7% Specificity

Pediatryczny, 1997, Supplement 1, 61-65

MRT TEST - NEW GENERATION OF TESTS FOR FOOD HYPERSENSITIVITY IN CHILDREN AND ADULTS

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Background: An assessment of the diagnostic usefulness of the new Mediator Release Test (MRT) for isolating staple food intolerance/sensitivity was performed.

Methods: 21 children between the ages of 2 to 5 years previously seen and treated in the allergy center for confirmed hypersensitivity to cow's milk were tested for cell mediated hypersensitivity reactions to the main milk fractions separately, as were (6) clinically asymptomatic control subjects. The novel feature of the newly developed MRT test is the claimed ability to detect cellular reactions (granulocytes, lymphocytes, phagocytes and blood platelets) to food antigens using a new proprietary in vitro method. The method is employed to detect movement of any intracellular mediators to the extracellular compartment in response to antigen challenge. The method does this by determining "plasma volume differential" between all circulating immunocytes and plasma before and after in vitro antigen challenge.

Results: The MRT method yielded a sensitivity of 94.5 percent. Also, through analysis of the data stream, it was determined that the most frequent reactions in the subjects were to alfa-lactoalbumin in 85.7 percent, beta-lactoglobuline in 66.7 percent, whey proteins in 57.1 percent and casein in 47.6 percent.

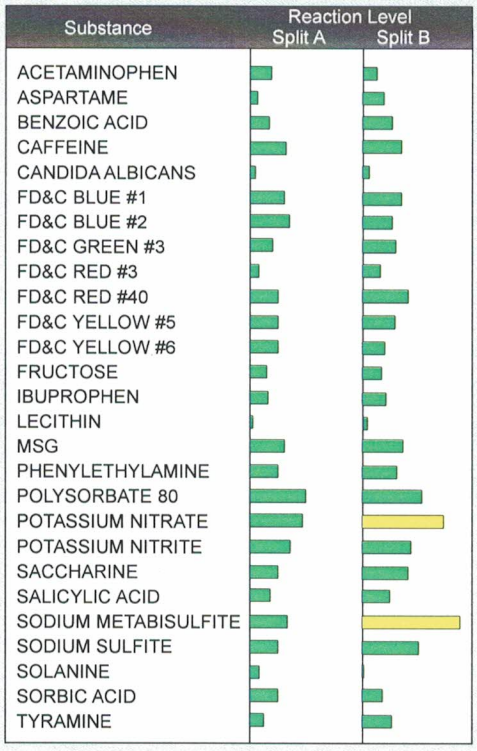
It was demonstrated that differentiated cell types were involved in the reactions to antigen challenge with the following frequency: Lymphocytes 38.5%; Granulocytes 47.5%; "mixed reaction" (combination of Lymphocytes and Platelets) 14%. In the control group all assays were negative except a modest response to the fraction of alfa-globuline (16.6%) in one control subject and the beta-globuline (16.5%) in another subject.

Conclusions: These results suggest that the MRT method will likely be useful in identifying cell-mediated food intolerance/hypersensitivity reactions and implementing dietary modifications for symptomatic relief from non-IgE reactions to offending foods.

MRT is Reliable

Consistently > 90% Split Sample Reproducibility

An accepted method of determining the reliability of laboratory testing is via split sample reproducibility. Signet performs weekly split sample testing as part of its internal Quality Assurance Program. MRT split sample testing consistently reproduces greater than 90%. The graphs below are from a recent Q.A. split sample run (9/18/02).



MRT Differentiates Between Symptomatic and Asymptomatic Populations

Excerpted from Particle Size Measurement in Suspensions, Part 2: An in vitro procedure for screening adverse reactions to foods and chemicals, Pasula M, American Clinical Laboratory, Vol. 18 Number 9, October 1999, P.14-15

"In assessing the hypothesis of the MRT, one needs to determine whether measurement of such volumetric changes differentiates populations of individuals. Accordingly, if one tests a population of clinically asymptomatic patients, the percentile differential between the plasma control baseline and the level of the test samples should be significantly smaller than the same differential between the control baseline and the sample level from a clinically symptomatic population.

To identify MRT baseline level differentials (normal and abnormal values) for healthy and symptomatic populations, 40 University of Miami (Miami, Florida) football players were selected to undergo the 50 food and chemical MRT analysis (Table 3). Twenty players represented the asymptomatic, negative population. This group reported no symptoms, no personal history, and no family history of allergic disorders. Another 20, with symptoms and family history, were assigned to the symptomatic group."

The data in table 3 clearly shows that MRT can discriminate between healthy and patient populations.

Table 3. Food and Chemical MRT Analysis Results

	Total allergens tested	Percent of positive results	Percent of equivocal results	Percent of negative results	Baseline level differential
Asymptomatic Group	1000	1.6	7.2	91.2	1.16
Symptomatic Group	1000	7.2	13.3	79.5	1.46