

The Cytotoxic Food Sensitivity Test: An Important Diagnostic Tool

James A. Jackson, MT(ASCP)CLS, Ph.D., BCLD;¹ Hugh D. Riordan, M.D.;²
Sharon Neathery, M.T.(AT);² Carol A. Guinn, M.T.(ASCP)CLS, M.H.S.²

Many of the patients who come to the Center have three symptoms in common: headache, fatigue, and joint/muscle pain. If one or more of these symptoms are found during the history and physical examination, allergy or sensitivity to food is suspected. Other symptoms or complaints may include gas, bloating, diarrhea, irritable bowel syndrome, etc. As part of the biochemical examination, the cytotoxic food sensitivity test is ordered.

In 1956, Black¹ introduced the cytotoxic food test. It was later refined and modified by Bryant and Bryant in 1960² Although the original Bryant test measured the reactivity of WBCs to food allergens, in 1971 they modified the test to also include the reactions of RBCs and platelets.³ In the test, the response between sensitized cells and specific food allergens is thought to be a combination of a type IV cell mediated, delayed-type immune reaction with involvement of a type I immediate hypersensitivity response.⁴ If a food "allergy", symptoms appear very quickly, if a food "sensitivity", symptoms appear later. It is postulated that food allergens remain in the G.I. tract and cause a set of symptoms from there, or that they leave the gut, enter the circulation, and eventually arrive at the target cell where they may combine with specific antibody receptors of RBCs, WBCs and platelets.⁵

The cytotoxic test has been performed at the BioCenter Laboratory almost 19 years. One of the authors (SN) was originally trained on the technique in the Bryant laboratory and has 24 years experience with the procedure. She performs most all the cytotoxic tests at the Center. The test used

at the Center has been described previously.⁵ Basically, 10 mL of venous blood is drawn (fasting) into a tube containing 1.0 mL of acid citrate dextrose anticoagulant and gently mixed. The blood is transferred to a plastic tube and centrifuged at 1500 RPMs for 20 minutes. One drop of the buffy coat and RBC suspension is placed on prepared slides containing purified antigen in a petroleum jelly ring. The basic panel contains 20 antigens; the standard panel contains 90 antigens; and the supplemental panel contains 90 additional antigens. One ring contains no antigen and is used as the control. The rings are covered with a glass cover slip, incubated for 2 hours and then read under a light microscope at 400 power. Ten fields are viewed and representative PolaroidTM photomicrographs taken. The results are reported as negative (same as the control), Plus 1, plus 2, plus 3 and plus 4.⁶

Patients with positive results are counseled by a physician to eliminate these foods from their diet for a period of time. Patients are also cautioned that symptoms may become worse during the first 3 to 4 days of food elimination. One interesting finding from patients who follow the advice to restrict sensitive foods is that the majority report they lose weight.

Table 1 shows cytotoxic data from patients randomly selected from our files who had the standard panel of 90 antigens performed. The cytotoxic test was ordered by the physicians after the history and physical examination indicated the possibility of foods allergies. Although 100 patient charts were pulled, only 90 had the complete standard panel and could be used. The top 15 reactive antigens are shown.

1. Professor and Assistant Dean, Graduate School, Wichita State University, Wichita, Kansas, 67260-0004.

2. The Center for the Improvement of Human Functioning International, Inc., 3100 N. Hillside, Wichita, Kansas, 67219.

Table 1. Percent Reactive Patients To Specific Antigens

Antigen	No. of Patient:	% Reactive
Onion	60	66.6%
Whole Egg	58	64.4%
Grape, Raisin	57	63.0%
Vanilla	55	61.1%
Corn	55	61.1%
Tea	53	58.8%
Hops	53	58.8%
Apple	52	57.7%
Bean, Navy	50	55.5%
White Potato	50	55.5%
Oats	47	54.4%
Coffee	46	51.1%
Rice	46	51.1%
Grape, Seedless	43	47.7%
Tomato	39	43.3%
Pineapple	35	38.8%
Tobacco	33	36.6%

Milk and dairy products were reactive in about 20% of the patients. However, the majority of these patients were adults.

It is difficult for people to buy foods not treated with some type of preservative or additive, even though many people show a hypersensitivity to them. Because of this, the standard panel contains a representative sample of these chemicals. Table 2 shows the response of the patients to ten common chemicals added to food and water.

Table 2. Percent Reactive Patients To Food Additives

Additive	No. of Patients	% Reactive
BHT	51	56.6%
Nutrasweet ^R	47	52.2%
BHA	43	47.7%
Sodium Bisulfite	38	42.2%
Dextrose	38	42.2%
MSG	38	42.2%
Chlorine	36	40.0%
Fluorine	29	32.2%
Sodium Nitrate	24	26.6%
Sodium Nitrite	23	25.5%

After restricting the sensitive antigens, most all patients report an increase in energy and that they "feel much better". In many instances, as a positive side benefit of ident-

ifying and restricting sensitive foods, the patient loses weight. In some cases, the weight loss can be significant and benefit the obese patients. The Center has started to explore this interesting finding by developing a more automated method of performing the food sensitive test and offering the test to those who want to lose weight and have not been successful in the past. The new test is called CYTOTRIM^R.

The cytotoxic food sensitive test has been used successfully at the Center for about 20 years. We find it a valuable addition to treating patients and have thousands of case histories showing positive results.

References

1. Black AP: *Pediatrics* 17:716-724, 1956.
2. Bryant WTK, BryantM: *Laryngoscope* 70:810-824, 1960.
3. Bryant WTK, Bryant M: *Otolaryngol Clinic of N.Am.* 4:523-534, 1971.
4. Updergraft TR: *Ear, Nose and Throat* 56:48-64, 1977.
5. Mayron LW, et. al.: *Ann Allergy* 38:323-338, 1977.
6. Jackson JA, Riordan HD, Neathery S: *Amer. Clin. Lab.* 3:20-21, 1991.