
STATEMENT ON CYTOTOXIC TESTING FOR FOOD ALLERGY (BRYAN'S TEST)*

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CYTOTOXIC testing for food allergy (Bryan's Test) is an *in vitro* technique dating to 1947 and claimed to be useful for diagnosing food allergies.¹ Although the technique has been deemed ineffective and without scientific basis by the Food and Drug Administration, the American Academy of Allergy, and others,²⁻⁶ this test has been promoted to the public⁴⁻⁶ as a valid guide to safe foods for subjects thought to have food allergies. It has also been used in conjunction with a claim that obesity results from binging on foods to which one is allergic, and that diets should therefore be modified based on the results of that test.⁷

The fundamental premise underlying cytotoxicity testing is that *in vitro* mixing of a person's white blood cells with an antigen to which that person is allergic results in injury to the cells.^{1,8} The procedure, popularized by Bryan and Bryan,⁹⁻¹⁴ consists of adding a suspension of the patient's white cells in the patient's serum to a dried food extract solution on a microscope slide. The slide is then examined after 10 minutes and at half hour intervals during the next two hours. The "cytotoxic" effect is purportedly manifested by a distortion or disintegration of the cells. All attempts to confirm the validity of this test in controlled studies¹⁵⁻¹⁹ have uniformly failed. Several reviews of the subject,^{3,20,21} including a position statement by the American Academy of Allergy,³ have concluded that this procedure is not effective in the diagnosis of food or inhalant allergy. Specific criticisms of the test include:

- 1) The lack of correlation between the results of cytotoxicity tests and either clinical allergy¹⁵⁻¹⁹ or skin tests for immediate hypersensitivity.¹⁶ Franklin and Lowell¹⁵ mixed the blood of ragweed-sensitive patients with ragweed pollen extract or with saline and found no difference in leukocyte count between the two mixtures. In 24 clinical hypersensitivity instances correlated with positive skin tests among 13 patients, Chambers et al.¹⁶

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obtained only one positive cytotoxicity test. In a controlled study of the cytotoxicity effect of 50 food antigens in 45 subjects Lieberman et al.¹⁷ obtained positive results in 19 out of 20 subjects without clinical symptoms. Among the 15 subjects with previously documented urticaria, angioedema, or anaphylactic reactions to foods, only four had a positive test with the appropriate food antigen. Repeated testing yielded inconsistent results even in the above four cases. Two other double blind studies^{18,19} similarly failed to show a correlation between cytotoxic test results and clinical food allergy.

2) The test largely depends on subjective interpretation.^{3,17,20}

3) The few studies that originally ascribed value to cytotoxic testing in allergic diseases consisted primarily of uncontrolled case reports without adequate correlation of test results with clinical data.²⁰

4) There is no scientific basis for expecting that cytotoxic testing could detect food allergy,²⁰

Thus, as stated by the American Academy of Allergy,³ cytotoxicity testing for allergy (also known as leukocytotoxic test or Bryan's test) "has never been proved effective by controlled studies, nor has a scientific basis for its use been demonstrated." Similarly, the Food and Drug Administration "has determined that the cytotoxic test remains, in 1985, an unproved diagnostic procedure unsupported by the scientific literature or by well-controlled studies and clinical trials."²

Since the results of this test do not correlate with the presence or absence of allergy, reliance on this test for planning diets may result in dangerous allergic reactions or unnecessary food deprivations.

The claim⁷ that people can become fat by "binging" on foods to which they are allergic lacks scientific foundation. There is no evidence in the scientific literature of any causal relationship between allergy and obesity.

Conclusions:

1. Leukocytotoxic testing (Bryan's test) remains an unproved and misleading technique with respect to the diagnosis of food allergy.

2. Since the results of this test do not correlate with the presence or absence of food allergy, reliance on this test may result in a dangerous allergic reaction in allergic individuals or in unnecessary food deprivation in the nonallergic.

3. There is no scientific basis for the claim that obesity can result from binging on foods to which one is allergic.

4. There is no evidence that cytotoxic testing is of any use in the diagnosis or treatment of obesity.

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