

# GlutenTox<sup>®</sup> Sticks Plus

Quick test for the determination of gluten content

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Biomedal  DIAGNOSTICS

## 1. Product Description

**GlutenTox<sup>®</sup> Sticks Plus** is a rapid and sensitive lateral flow immunoassay test for the semiquantitative determination, or even quantitative determination by means of GlutenTox<sup>®</sup> Reader, of gluten in all kind of foodstuffs, from raw materials to processed food and/or heat-processed foods and also products for personal care and cosmetics. It can also be used for surface detection to ensure the working surfaces are suited to produce gluten-free products.

The extraction solution provided in this kit, Universal Gluten Extraction Solution (UGES), is suited for all types of food thanks to the combination of denaturing agents, reducing agents and solubilizers. This extraction protocol achieves a more effective extraction of gliadins even in complex samples, such as heat-processed food and samples containing polyphenols, tannins or antioxidants.

The test is designed for quality control and research laboratories. It allows two options for the reading of the results:

- Visual reading. By using different dilutions, various cut-off can be assessed in less than one hour (ie. 3 ppm, 10 ppm, 20 ppm and/or 100 ppm).
- Digital reading with the Glutentox<sup>®</sup> Reader. A reliable and quantitative result is obtained in less than one and a half hour.

**GlutenTox<sup>®</sup> Sticks Plus** is based on an anti-gliadin-33mer mouse monoclonal antibody (G12) that is specific to the toxic fraction of gluten (33-mer peptide) and reacts to prolamins of wheat (gliadin), barley (hordein), rye (secalin), and oat (avenin).

## 2. Sensitivity/Specificity

- Detection limit of the assay 3 ppm of gluten in samples (detection limit of stick - 15 ng/mL of gliadin).
- Specific to prolamins of wheat (gliadin), barley (hordein), rye (secalin) and oat (avenin).
- Does not cross react with soy, rice or corn.

## 3. Reagents

- GlutenTox<sup>®</sup> Sticks (25 tests).
- Universal Gluten Extraction Solution (UGES) (250 mL).
- Dilution Solution (30 mL).
- Microtiter plate strips (4 strips x 8 wells).
- Positive Control (10 g).
- Negative Control (10 g).

## 4. Storage/Stability

To obtain optimal test performance, the product must be stored in its original packaging between 2°C and 30°C and used before expiration date.

## 5. Validation

To ensure the test's ability to analyze all types of food (of diverse nature) and other samples such as cosmetics and personal care products, different commercial samples have been tested. After analyzing the samples with GlutenTox<sup>®</sup> Sticks Plus in all types of matrices tested (see Tables 1 and 2) the results were satisfactory and consistent with the gluten found with the official method, which demonstrates the applicability of test on a broad range of samples.

**Table 1. Food samples tested for validation of GlutenTox® Sticks Plus**

Group	Tested samples
<b>Flour and semolina</b>	Corn flour, precooked corn flour, corn semolina, rice flour, wheat flour, buckwheat flour
<b>Milk products</b>	Cow milk, milk with soluble fiber, milk with cereals, natural or flavored yogurt, cheese spread, shredded cheese blend
<b>Baked and cereal products</b>	Toast, bread sticks, biscuits (Rich tea), chocolate cookies, Madeleines, cakes, cornflakes, pastas, corn pancakes, rice cakes, spelt cakes, snacks
<b>Meat products</b>	Minced turkey, minced chicken, turkey sausages, chicken nuggets, pork sausages, chorizo
<b>Fishery products</b>	Cod and Hake
<b>Vegetables</b>	Lettuce mix, scrambled eggs with vegetables
<b>Broth, soups, creams and dry mixes</b>	Vegetable broth, chicken rice soup, dehydrated vegetable soup, stock cubes, vegetable soup, peanut butter
<b>Sauces, dressings, spices and condiments</b>	Yogurt salad dressing, ketchup, soy sauce, salad dressing, garlic powder, paprika powder, cooking cream
<b>Sugars</b>	Glucose syrup, powdered sugar
<b>Prepared meals and dishes</b>	Meatballs in sauce with peas, egg ravioli with meat, beans stew
<b>Beverages</b>	Water, milk, fruit juices, beers, soy drinks, rice drinks, oat drinks, soft drinks

**Table 2. Other samples tested for validation of GlutenTox® Sticks Plus**

Group	Tested samples
<b>Personal care products</b>	Bath gel, shampoo, deodorant, toothpaste, mouthwash
<b>Cosmetics</b>	Creams (face, body and hands), cleanser, lip balm
<b>Others</b>	Pet food (dry food, wet food), cleaning products, medicines (tablets, capsules and syrups)

## 6. Applications

- For semi-quantification (or quantification by using a Reader) of gluten in food, beverages and other consumer products, including personal care and cosmetic products.
- For quality control of gluten free food.
- For research on gluten toxicity.
- To trace gluten contamination in food and working surfaces.
- For safety regulation according to HACCP, IFS and BRC programs.

## 7. References

Morón B, Cebolla A, Manyani H, Alvarez-Maqueda M, Megías M, Thomas M del C, López MC, Sousa C. Sensitive detection of cereal fractions that are toxic to celiac disease patients by using monoclonal antibodies to a main immunogenic wheat peptide. *Am J Clin Nutr.* (2008), 87:405-414.

Morón B, Bethune MT, Comino I, Manyani H, Ferragud M, López MC, Cebolla A, Khosla C, Sousa C., Toward the Assessment of Food Toxicity for Celiac Patients: Characterization of Monoclonal Antibodies to a Main Immunogenic Gluten Peptide, *PLoS ONE* (2008) 3: e2294.