

## Technical Bulletin: Polyphenols in Gluten Extraction

Polyphenol Pack (KIT3008) can be used in combination with GlutenTox® Sticks Plus (KIT3005), GlutenTox® Sticks Plus for Reader (KIT3007) and the GlutenTox® ELISA (Competitive G12, KIT3012; and Rapid G12, KIT3075) to optimize the extraction of gluten from matrices with high polyphenol content.

### Introduction

Polyphenols are naturally occurring molecules present in a large variety of foods. Polyphenols interfere in the gluten extraction procedure by binding and precipitating proteins such as gliadins, and these complexes cannot be extracted for further analysis. Therefore, samples with polyphenols will yield results with lower amounts of gluten, posing a risk to the quality of the final product.

Cocoa and chocolate are the most common ingredients with high polyphenol content, but a large variety of ingredients are also sources of polyphenols: legumes (chickpeas, lentils, beans), berries, purple corn and corn fiber, tea, coffee, wine, and soy.

### Reducing the effect of polyphenols in gluten extraction

To minimize the impact of polyphenols in the procedure of gluten extraction, it is common to add certain proteins to the extraction reaction that bind polyphenols and prevent them from forming complexes with gluten proteins.

Hygiena offers the Polyphenol Pack to be used in combination with GlutenTox Sticks Plus, GlutenTox Sticks Plus for Reader, GlutenTox ELISA Competitive G12 and GlutenTox ELISA Rapid G12.

Polyphenol Pack contains:

- Special additive
- Positive control (gluten-containing cocoa powder)
- Negative control (gluten-free cocoa powder).

### Method

Always refer to the manual of use of each product to find detailed instructions on the use of the Polyphenol Pack. Here we provide a short summary:

One part of Special Additive is added to one part of sample and mixed using a vortex mixer. Extraction buffer (UGES) is added to the mixture following the instruction manual of each product (see Table 1):

**Table 1. Amounts of Sample, Special Additive and UGES**

GlutenTox Product	Sample	Special Additive	UGES
Sticks Plus	1 g / 1 mL	1 g	10 mL
Sticks Plus for Reader	1 g / 1 mL	1 g	10 mL
ELISA Competitive G12	0.5 g / 0.5 mL	0.5 g	5 mL
ELISA Rapid G12	0.5 g / 0.5 mL	0.5 g	5 mL

After homogenizing the mixture, always choose the extraction with heat (i.e., 40 min at 50°C/122°F) in a thermostatic bath to maximize the gluten extraction.

### References

- INS3003 GlutenTox Sticks Plus Manual
- INS3004 GlutenTox Sticks Plus for Reader Manual
- INS3007 GlutenTox ELISA Competitive G12 Manual
- INS3026 GlutenTox ELISA Rapid G12 Manual