β-GLUCAN
(Yeast and Mushroom)

PRODUCT INSTRUCTIONS

SKU: 700004358
K-YBGL

09/25

(100 Assays per Kit)

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INTRODUCTION:

β-Glucans are a heterogeneous group of polysaccharides widely distributed across biological kingdoms, including algae, fungi, yeast, and higher plants. Of particular interest are β-glucans containing β-1,3 and β-1,6 glycosidic linkages, which have been extensively studied for their immunomodulatory, antioxidant, and potential cholesterol-reducing properties. These structural motifs are considered the principal bioactive components responsible for the therapeutic potential of fungal and yeast-derived products.

In contrast to cereal β-glucans—characterized predominantly by β-1,3 and β-1,4 linkages and readily quantified using selective enzymatic assays such as the β-Glucan Assay Kit (Mixed Linkage) (Ref Code: K-BGLU, SKU: 700004269)—fungal and yeast β-glucans contain β-1,3 and β-1,6 linkages, which exhibit greater structural complexity and lack a universally accepted direct assay method.

To address this, an indirect approach—originally outlined by McCleary *et al*. in 2016—has been widely adopted. This method involves measuring total glucans using acid hydrolysis or chemo-enzymatic digestion, followed by enzymatic determination of α-glucans. The β-glucan content is then calculated by subtracting the α-glucan value from the total glucan result.

While this technique is effective in many cases, particularly in the presence of α-glucan contaminants such as starch, maltodextrins, and sucrose, it is not without limitations. The accuracy and reliability of results can be compromised by several factors, including the presence of additional interfering substances, the complex and variable composition of product matrices, and differences in mushroom or yeast species used in formulation.

As commercial formulations have become increasingly complex with the growing use of additives and novel substrates an update to this method was necessary to maintain accuracy and applicability across diverse product types. This update was completed in October 2025.

PRINCIPLE:

- 1,3:1,6-β-D-Glucans, 1,3-β-D-glucans and α-glucans are solubilised in 12 M H_2SO_4 and then hydrolysed to completion in 2 M H_2SO_4. D-glucose released is then measured using **GOPOD reagent.** This gives a measure of total glucan.
- α-Glucans found in starch, maltodextrins, sucrose and trehalose are degraded by incubation with the **EnzyAlpha™** reagent. Free D-glucose and D-glucose released during hydrolysis are then measured using **GOPOD reagent**.
- β-Glucan is calculated indirectly as the difference between total glucan and α-glucan determined as described herein.

SPECIFICITY, SENSITIVITY AND ACCURACY:

- This method is **NOT** applicable to the analysis of yeast/mushroom β-glucan in the presence of other β-glucans, for example cellulose (1,4-β-D-glucan). If a sample contains α-glucans that are not hydrolysed by the starch, maltodextrin, sucrose and trehalose degrading enzymes, an overestimation of β-glucan content will occur.
- The limit of detection (LOD) for **solid** samples is 0.5% (*w/w*) , and the limit of quantification (LOQ) is 1.5% (*w/w*).
- The limit of detection (LOD) for **liquid** samples is 0.1% (*w/v*), and the limit of quantification (LOQ) is 0.3% (*w/v*).
- Standard errors of < 5% are achieved routinely for the Yeast Glucan Control supplied.
- For detailed information on product performance, please refer to the validation report available on the product page.

SAFETY:

The general safety measures that apply to all chemical substances should be adhered to. After use, the reagents may be disposed of with standard laboratory waste, in accordance with local regulations and guidelines. For guidance on safe usage and handling, consult the Safety Data Sheet (SDS), available at Neogen.com or Megazyme.com.

KIT CONTENTS:

Kits suitable for performing 100 assays are available from Neogen. The kits contain:

Bottle 1 (2x 15 mL):	**EnzyAlpha™** Contains sodium azide (0.02% *w/v*) as a preservative. Store below -10 °C. See individual label for expiry date.
Bottle 2:	**GOPOD Reagent Buffer** Contains sodium azide (0.09% *w/v*) as a preservative. Store at 4°C. See individual label for expiry date.
Bottle 3:	**GOPOD Reagent Enzymes** Freeze-dried powder. Store below -10°C. See individual label for expiry date.
Bottle 4 (5 mL):	**D-Glucose standard**, (1.0 g/L) Contains 0.2% (*w/v*) benzoic acid as a preservative. Store sealed at room temperature. See individual label for expiry date.
Bottle 5 (2 g):	**Yeast Glucan Control** Glucan content stated on the bottle label. Store at 4°C. See individual label for expiry date.

PREPARATION OF REAGENT SOLUTIONS:

1. Use the contents of **Bottle 1** as supplied.
2. Dilute the contents of the **Bottle 2** - **GOPOD Reagent Buffer** to 1 L with distilled water. The concentrated buffer contains 0.09% (*w/v*) sodium azide and should be handled accordingly. If salt crystals are present in the concentrated buffer ensure they are completely dissolved when this buffer is diluted. **This is Solution 2**. Use immediately.
3. Dissolve the contents of **Bottle 3 - GOPOD Reagent Enzymes** in approx. 20 mL of **Solution 2** and quantitatively transfer to a wide mouth bottle containing the remainder of **Solution 2**. Mix well and cover this bottle with aluminium foil to protect the enclosed reagent from light. This is the **Glucose Determination Reagent** (**GOPOD Reagent**). Stable for ≥ 1 month at 4°C or ≥ 12 months below -10°C.
   If this reagent is to be stored in the frozen state, it should be divided into aliquots. Do not freeze/thaw more than once.
   When the reagent is freshly prepared it may be light yellow or light pink in colour. The solution may develop a stronger pink colour upon storage at 4°C. The absorbance of this solution should be less than 0.05 when read against distilled water.
4. Use the contents of **Bottle 4** as supplied.
5. Use the contents of **Bottle 5** as supplied.

OTHER REAGENTS REQUIRED (not supplied):

1. **Sodium Acetate Buffer (200 mM, pH 4.5)**
   Add 11.6 mL of glacial acetic acid (1.05 g/mL) to 900 mL of distilled water and adjust to pH 4.5 using 4 M (16 g/100 mL) sodium hydroxide solution. Adjust the volume to 1 L.

2. **Sodium Acetate Buffer (1.2 M) containing Calcium Chloride (5 mM), pH 3.8**
   Add 68.6 mL of glacial acetic acid (1.05 g/mL) to 800 mL of distilled water and add 0.55 g of calcium chloride and stir until dissolved Adjust to pH 3.8 using 4 M sodium hydroxide. Adjust the volume to 1 L with distilled water.
3. **Sodium Hydroxide (8.0 M)**
   In a well-ventilated fume cupboard, add 320 g of NaOH to 700 mL of distilled water and dissolve by stirring. Allow the solution to cool to room temperature and then adjust the volume to 1 L.

4. **Sodium Hydroxide (1.7 M)**
   Add 68 g of NaOH to 800 mL of distilled water and dissolve by stirring. Adjust the volume to 1 L with distilled water.

5. **Sulphuric Acid (12 M, 72 % *w/w*)**
   In a well-ventilated fume cupboard, carefully add 640 mL of concentrated acid (98 %, sp. gr. 1.835) to 300 mL of distilled water. Dilute to 1 L with distilled water and mix well.

6. **Ethanol (80 % *v/v*)**
   In a well-ventilated fume cupboard, carefully add 80 mL of ethanol (97 % *v/v*) to 20 mL of distilled water and mix well.

CONTROLS AND PRECAUTIONS:

1. With each set of determinations, the Yeast Glucan Control (**Bottle 5**) should be included.
2. An Hydrolysis Correction Factor (HCF) is required in Method A (Measurement of Total Glucan) to account for the loss of glucose that occurs due to the strong acid treatment employed. While it is strongly recommended that the user experimentally determines the HCF, a value of 1.05 been repeatably achieved and can be used in the calculations for Total Glucan - see associated validation report for more information. Alternatively, it can be experimentally measured when running Method A as outlined in the procedure below.
3. The time of incubation with GOPOD reagent is not critical but should be at least 20 minutes. The colour formed should be measured within 60 min.
4. The absorbances of the samples assayed should not exceed that obtained for the D-glucose standard tested. If the sample absorbance exceeds the standard value dilute the sample further to achieve a suitable absorbance.
5. With each set of determinations, reagent blanks and glucose controls (100 µg in quadruplicate) should be included. An optional sample blank may be included for highly coloured samples.
   a. The **reagent blank** consists of 0.1 mL of sodium acetate buffer (200 mM, pH 4.5) + 3.0 mL **GOPOD Reagent**.
   b. The **D-glucose standard** consists of 0.1 mL of **Bottle 4** (D-glucose standard, 1.0 g/L) + 3.0 mL **GOPOD Reagent**.
   c. **Sample blank** (optional): If a sample extract is strongly coloured a sample blank should be performed by adding 0.1 mL of reaction hydrolysate (diluted or undiluted) and 3 mL of distilled water instead of **GOPOD Reagent** and the recorded absorbance should be subtracted from the sample absorbance.

MEASUREMENT OF 1,3:1,6-β-GLUCAN IN YEAST AND MUSHROOM PREPARATIONS:

A. MEASUREMENT OF TOTAL GLUCAN

The protocol below describes analysis of solid samples. Liquid samples can be analysed by aliquoting 0.5 mL of sample in place of weighing the sample and proceeding with step 3. The calculation should be adjusted accordingly as described in the calculation section.

1. Mill mushroom or yeast sample to pass a 1.0 mm screen using a centrifugal mill.
2. Add the milled sample (approx. 90 mg, record exact weight) to a 20 x 12 mm culture tube. Tap the tube to ensure that all the sample falls to the bottom of the tube.
3. Add 2.0 mL of 12 M sulphuric acid to each tube, cap the tubes and stir vigorously on a vortex mixer. Place the tubes in a 30°C water bath and incubate for 1 h. Vigorously stir the tube contents for 10-15 sec every 15 minutes on a vortex mixer to ensure complete dissolution of the β-glucan.
4. Add 4 mL of distilled water to each tube, cap the tubes and vigorously stir the contents on a vortex mixer for 10 seconds. Then add 6 mL of distilled water, cap the tubes and stir the contents for a further 10 seconds.
5. Loosen the caps on the tubes and place them in a boiling water bath (~ 100°C). After 5 minutes, tighten the caps and continue the incubation for 2 hours. Vigorously stir the tube contents for 10-15 seconds every 30 minutes on a vortex mixer.
6. Cool the tubes to room temperature (~ 15 minutes) and carefully loosen the caps.
7. Quantitatively transfer the contents of each tube to a 100 mL volumetric flask using 200 mM sodium acetate buffer (pH 4.5) to rinse the tubes.
8. Add 6 mL of 8.0 M NaOH solution to the volumetric flask and adjust to volume with 200 mM sodium acetate buffer (pH 4.5). Mix the contents thoroughly by inversion.
9. Filter an aliquot of the solution using either filter paper (i.e. Whatman® filter paper Grade 201 or equivalent) or syringe filters (Corning® 0.2 µm or equivalent). Alternatively, centrifuge an aliquot of the solution at 15,000 g for 5 minutes.
10. Transfer 0.1 mL aliquots (in duplicate) of clarified extract to the bottom of glass test tubes (16 x 100 mm).
11. Add 3.0 mL of **GOPOD Reagent** to each tube and incubate at 40°C for 20 minutes.
12. Measure the absorbance of all solutions at 510 nm against the reagent blank.

Determination of Hydrolysis Correction Factor (HCF) - Optional:

The glucose Hydrolysis Correction Factor can be experimentally determined by comparing pure glucose (D-Glucose CAS: 50-99-7; >99 % purity, not supplied) recovery levels before and after acidic treatment. The HCF must be applied to each set of determinations to account for loss of glucose during the acidic hydrolysis procedure. Alternatively, a value of 1.05 been repeatably achieved and can be used in the calculations for Total Glucan - see associated validation report for more information.

1. Weigh 90 mg of pure glucose into a 20 x 125 mm culture tube and run Method A as described above to generate a value for **Glucose (% *w/w*) with acid.**
2. In parallel, weigh 90 mg of pure glucose into another 20 x 125 mm culture tube and run the method described above replacing all volumes dispensed with distilled water to generate a value for **Glucose (% *w/w*) without acid**.

3. Hydrolysis Correction Factor (HCF) Calculation:

   The HCF is calculated for glucose with acid and glucose without acid:

$$\text{Glucose } (\%\, w/w) = \Delta\text{A} \times \text{F} \times \frac{100}{\text{W}}$$

   It follows for Hydrolysis Correction Factor:

$$\text{HCF} = \frac{\text{Glucose } (\%\, w/w) \text{ without acid}}{\text{Glucose } (\%\, w/w) \text{ with acid}}$$

B. MEASUREMENT OF α-GLUCAN

The protocol below describe analysis of solid samples. Liquid samples can be analysed by aliquoting 0.5 mL of sample in place of weighing the sample and proceeding with step 2. The calculation should be adjusted accordingly as described in the calculation section.

1. Add the milled sample (approx. 100 mg, record exact weight) to a 20 x 125 mm culture tube. Tap the tube to ensure that all the sample falls to the bottom of the tube.
2. Add 0.2 mL of 80% Ethanol (*v/v*) and stir the tubes in a vortex mixer.
3. Add a magnetic stirrer bar (5 x 15 mm) followed by 2 mL of ice cold 1.7 M NaOH to each tube and suspend the pellets by stirring for 15 minutes in an ice water bath over a magnetic stirrer.
4. Add 8 mL of 1.2 M sodium acetate buffer (pH 3.8) containing 5 mM Calcium Chloride to each tube with stirring. Immediately add 0.3 mL of **Bottle 1 [EnzyAlpha],** mix thoroughly and place the tubes in a water bath at 50°C.
5. Incubate the tubes at 50°C for 30 minutes with intermittent mixing on a vortex stirrer.
6. Remove the tubes from the incubator and let them equilibrate to room temperature (~ 15 minutes).
7. Centrifuge an aliquot of the solution at 15,000 g for 5 minutes. Alternatively, samples can be clarified using a filter paper (Whatman filter paper Grade 201 or equivalent) or a syringe filter (Corning® 0.2µm or equivalent).
8. **For samples containing > 10 % α-glucan content**; add 1 mL of the sample solution to 9 mL of distilled water, mix well and add 0.1 mL in duplicate to the bottom of glass test tubes (16 x 100 mm) for analysis using **GOPOD Reagent.** ***NOTE:*** *a Dilution factor (Df) of 10 should be included in the calculation.*
9. **For samples containing < 10% α-glucan content**; directly transfer 0.1 mL of the sample solution in duplicate to the bottom of glass test tubes (16 x 100 mm) for analysis using **GOPOD Reagent.**
10. Add 3.0 mL of **GOPOD Reagent** to each tube and incubate at 40°C for 20 minutes.
11. Measure the absorbance of all solutions at 510 nm against the reagent blank.

CALCULATIONS:

NOTE: These calculations can be simplified by using the *Mega-Calc*™ tool, downloadable from the product page.

1. Calculation of the Total Glucan content:

a) For **solid** samples (%, *w/w*):

$$\text{Total Glucan } (\%\, w/w) = \Delta\text{A} \times \text{F} \times \frac{100}{0.1} \times \frac{1}{1000} \times \frac{100}{\text{W}} \times \frac{162}{180} \times \text{HCF}$$

$$\text{Total Glucan } (\%\, w/w) = \Delta\text{A} \times \frac{\text{F}}{\text{W}} \times 90 \times 1.05$$

Where:

ΔA = sample absorbance – blank absorbance.

F = a factor to convert absorbance to μg of D-glucose.

$$= \frac{100\ (\mu\text{g of glucose})}{\text{Absorbance for } 100\ \mu\text{g of glucose} - \text{blank absorbance}}$$

100/0.1 = volume correction factor (0.1 mL out of 100 mL was analysed).

1/1000 = conversion from micrograms to milligrams.

100/W = conversion back to 100 mg of sample (i.e. as % *w/w*).

W = mass of sample analysed in milligrams.

162/180 = a factor to convert from free D-glucose, as determined, to anhydroglucose, as occurs in β-glucan.

HCF = Hydrolysis Correction Factor

= 1.05 or experimentally determined value

b) For **liquid** samples (% $\boldsymbol{w/v}$):

$$\text{Total Glucan } (\%\, w/v) = \Delta\text{A} \times \text{F} \times \frac{100}{0.5} \times \frac{100}{0.1} \times \frac{1}{1000} \times \frac{1}{1000} \times \frac{162}{180} \times \text{HCF} \times \text{Df}$$

$$\text{Total Glucan } (\%\, w/v) = \Delta\text{A} \times \text{F} \times 0.180 \times 1.05 \times \text{Df}$$

Where:

ΔA = sample absorbance – blank absorbance.

F = a factor to convert absorbance to μg of D-glucose.

$$= \frac{100\ (\mu\text{g of glucose})}{\text{Absorbance for } 100\ \mu\text{g of glucose} - \text{blank absorbance}}$$

100/0.5 = volume adjustment (0.5 mL of sample was treated and volume adjusted to 100 mL).

100/0.1 = volume adjustment (0.1 mL was analysed but results are presented per 100 mL of sample).

1/1000 = conversion from micrograms to milligrams.

1/1000 = conversion from milligrams to grams.

162/180 = a factor to convert from free D-glucose, as determined, to anhydroglucose, as occurs in β-glucan.

HCF = Hydrolysis Correction Factor

= 1.05 or experimentally determined value

Df = Further sample dilution required prior GOPOD analysis.

2. Calculation of the α-Glucan content (%, *w/w* or *w/v*)

a) For **solid** samples (%, *w/w*):

$$\alpha\ \text{Glucan}\ (\%\ w/w) = \Delta A \times F \times \frac{10.5}{0.1} \times \frac{1}{1000} \times \frac{100}{W} \times \frac{162}{180} \times Df$$

$$\alpha\ \text{Glucan}\ (\%\ w/w) = \Delta A \times \frac{F}{W} \times 9.45 \times Df$$

Where:

ΔA	= sample absorbance – blank absorbance.
F	= a factor to convert absorbance to μg of D-glucose. $= \frac{100\ (\mu g\ \text{of glucose})}{\text{Absorbance for } 100\ \mu g\ \text{of glucose} - \text{blank absorbance}}$
10.5/0.1	= volume correction factor (0.1 mL out of 10.5 mL was analysed).
1/1000	= conversion from micrograms to milligrams.
100/W	= conversion back to 100 mg of sample (i.e. as % *w/w*).
W	= mass of sample analysed in milligrams.
162/180	= a factor to convert from free D-glucose, as determined, to anhydroglucose, as occurs in β-glucan.
Df	= further dilution of the extract (1 or 10)

b) For **liquid** samples (% $\boldsymbol{w/v}$):

$$\alpha\ \text{Glucan}\ (\%\ w/v) = \Delta A \times F \times \frac{11}{0.5} \times \frac{100}{0.1} \times \frac{1}{1000} \times \frac{1}{1000} \times \frac{162}{180} \times Df$$

$$\alpha\ \text{Glucan}\ (\%\ w/v) = \Delta A \times F \times 0.0198 \times Df$$

Where:

ΔA	= sample absorbance – blank absorbance.
F	= a factor to convert absorbance to μg of D-glucose. $= \frac{100\ (\mu g\ \text{of glucose})}{\text{Absorbance for } 100\ \mu g\ \text{of glucose} - \text{blank absorbance}}$
11/0.5	= sample volume adjustment (0.5 mL of sample was treated and volume adjusted to 11 mL)
100/0.1	= volume adjustment factor (0.1 mL was analysed but results are presented per 100 mL of sample)
1/1000	= conversion from micrograms to milligrams.
1/1000	= conversion from micrograms to milligrams
162/180	= a factor to convert from free D-glucose, as determined, to anhydroglucose, as occurs in β-glucan.
Df	= further dilution of the extract (1 or 10)

3. Calculation of the β-Glucan content (%, *w/w* or % *w/v*)

$$\beta\ \text{Glucan}\ (\%) = \text{Total Glucan}\ (\%) - \alpha\ \text{Glucan}\ (\%)$$

APPLICATION EXAMPLE:

Determination of β-glucan content in chewable mushroom gummies containing maltitol

If a sample contains α-glucans that are not effectively hydrolysed by the **EnzyAlpha™** mix (targeting starch, maltodextrins, sucrose, and trehalose), this may lead to an overestimation of β-glucan content. Ensuring complete breakdown of interfering α-glucans is critical for accurate results. One such interfering component is maltitol, a common additive used during product formulation. Maltitol is measured in the Total Glucan determination and must be hydrolysed and measured in the α-glucan procedure in order to accurately determine the β-glucan value. An additional pre-incubation step with α-Glucosidase (available to purchase separately from Neogen.com, Ref Code: E-TSAGS; SKU: 700004243) is required to eliminate the impact of maltitol on the assay.

SAMPLE PREPARATION:

1. Add 5 g of sample (record exact weight) to a 100 mL graduated cylinder and adjust to 100 mL with distilled water.
2. Transfer contents to a blender and blend for approximately 2 minutes. Alternatively, transfer contents to a beaker and stir at 100˚C for 30 minutes to dissolve the sample.

MEASUREMENT OF TOTAL GLUCAN:

1. Add 2 mL of extracted liquid to a 20 x 125 mm culture tube.
2. Proceed from Step 3 of Method A. MEASUREMENT OF TOTAL GLUCAN

MEASUREMENT OF α-GLUCAN:

1. Add 0.25 mL of extracted liquid + 0.25 mL of distilled water to a 20 x 125 mm culture tube.
2. Add 0.1 mL of α-glucosidase (Ref Code E-TSAGS; SKU: 700004243).
3. Incubate overnight (~16 hours) at 50°C.
4. Proceed from Step 2 of Method B. MEASUREMENT OF α-GLUCAN

Calculation of the Total Glucan content:

$$\text{Total Glucan } (\%\, w/w) = \Delta\text{A} \times \text{F} \times \frac{100}{2} \times \frac{100}{0.1} \times \frac{1}{1000} \times \frac{100}{\text{W}} \times \frac{162}{180} \times \text{HCF}$$

$$\text{Total Glucan } (\%\, w/w) = \Delta\text{A} \times \frac{\text{F}}{\text{W}} \times 4500 \times 1.05$$

Where:

ΔA	= sample absorbance – blank absorbance.
F	= a factor to convert absorbance to μg of D-glucose.
	$= \frac{100\ (\mu\text{g of glucose})}{\text{Absorbance for } 100\ \mu\text{g of glucose} - \text{blank absorbance}}$
100/2	= extraction volume correction factor (2 mL out of 100 mL of extracted gummy was analysed).
100/0.1	= volume correction factor (0.1 mL out of 100 mL was analysed for GOPOD measurement).
1/1000	= conversion from micrograms to milligrams
100/W	= extraction volume and mass of sample extracted (i.e. 100 mg / 5000 mg)
W	= mass of sample extracted in milligrams (i.e. 5000 mg).
162/180	= a factor to convert from free D-glucose, as determined, to anhydroglucose, as occurs in β-glucan.
HCF	= Hydrolysis Correction Factor
	= 1.05 or experimentally determined value

Calculation of the α-Glucan content:

$$\alpha\ \text{Glucan}\ (\%\ w/w) = \ \Delta\text{A}\ \times\ \text{F}\ \times \frac{100}{0.25} \times \frac{11.1}{0.1} \times \frac{1}{1000} \times \frac{100}{\text{W}} \times \frac{162}{180} \times\ \text{Df}$$

$$\alpha\ \text{Glucan}\ (\%\ w/w) = \ \Delta\text{A}\ \times \frac{\text{F}}{\text{W}} \times\ 3996\ \times\ \text{Df}$$

Where:

ΔA	= sample absorbance – blank absorbance.
F	= a factor to convert absorbance to μg of D-glucose.
	$= \frac{100\ (\mu\text{g of glucose})}{\text{Absorbance for } 100\ \mu\text{g of glucose} - \text{blank absorbance}}$
100/0.25	= extraction volume correction factor (2 mL out of 100 mL of extracted gummy was analysed).
11.1/0.1	= volume correction factor (0.1 mL out of 10.5 mL was analysed).
1/1000	= conversion from micrograms to milligrams.
100/W	= conversion back to 100 mg of sample (i.e. 100 mg / 5000 mg)
W	= mass of sample extracted in milligrams. (i.e. 5000 mg).
162/180	= a factor to convert from free D-glucose, as determined, to anhydroglucose, as occurs in β-glucan.
Df	= further dilution of the extract (1 or 10)

Calculation of the β-Glucan content (%, *w/w*)

$$\beta\ \text{Glucan}\ (\%\ w/w) = \ \text{Total Glucan}\ (\%) - \alpha\ \text{Glucan}\ (\%)$$

SERVICES AND TECHNICAL SUPPORT

Please reach out to your local sales representative should you require any assistance, particularly in relation to:

- Troubleshooting
- Data analysis
- Additional matrix testing

Supporting documents can be found in the product page:

- MegaCalc™
- Safety Data Sheets (SDS)
- Certificates Of Analysis (COA)
- Validation Report

Contact us for more information: neogen.com/contact

Without guarantee

The information contained in this assay protocol is, to the best of our knowledge, true and accurate, but since the conditions of use are beyond our control, no warranty is given or is implied in respect of any recommendation or suggestions which may be made or that any use will not infringe any patents.

User Responsibility:

- Users are responsible for familiarizing themselves with product instructions and information. Visit our website at neogen.com, or contact your local Neogen® representative or authorized distributor for more information.
- When selecting a test method, it is important to recognize that external factors such as sampling methods, testing protocols, sample preparation, handling, laboratory technique and the sample itself may influence results.
- It is the user's responsibility in selecting any test method or product to evaluate a sufficient number of samples with the appropriate matrices and challenges to satisfy the user that the chosen test method meets the user's criteria.
- It is also the user's responsibility to determine that any test methods and results meet its customers' and suppliers' requirements.
- As with any test method, results obtained do not constitute a guarantee of the quality of the matrices or processes tested.

Terms and Conditions:

Neogen's full terms and conditions are available online.