Methylglyoxal (MG) Content Determination Kit

Cat. No. KITG-035 **Lot. No.** (See product label)

SPECIFICATION

Product Overview	
Description	Methylglyoxal (MG), also known as pyruvaldehyde, is a byproduct produced by several metabolic pathways and is a common toxic aldehyde compound produced when plants are subjected to environmental stress. High concentrations of MG are a cellular toxin, while low concentrations of MG act as a signaling molecule, regulating various physiological processes such as cell metabolism, seed germination, plant growth, development, and reproduction, as well as the acquisition of stress tolerance. Therefore, MG has a dual role. Methylglyoxal (MG) and 1,2-diaminobenzene react to form a product with a maximum absorption peak at 336 nm. By detecting the absorbance value at 336 nm, the content of methylglyoxal (MG) in the sample can be calculated.
Form	Colorimetric Assay Kit (UV Spectrophotometry)
Applications	Determination of methylglyoxal (MG) content in tissue samples, liquid samples, and bacteria/cell samples. For research use only. Not for use in diagnostic or therapeutic procedures.
Notes	Kit Components: Extraction Buffer: Liquid 50 mL × 1 bottle, store at 4°C. Reagent I: Powder × 5 bottles, store at 4°C. Before use, shake to make all powder fall to the bottom of the bottle, add 8 mL distilled water to each bottle, mix well for use (should be colorless; if discolored, discard). Standard Solution: Liquid 1 mL × 1 vial, store at 4°C. If a new standard curve is needed, use this reagent. Materials Required: UV spectrophotometer, 1 mL quartz cuvette (path length 1 cm), adjustable pipette,

Tel: 1-631-559-9269 1-516-512-3133
Email: info@creative-biomart.com Fax: 1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA

mortar, distilled water. Sample Preparation: 1. Tissue Sample: Weigh 0.1 g sample, add 1 mL extraction buffer, homogenize on ice, centrifuge at 12000 rpm, 4°C for 10 min. Transfer the supernatant to a new EP tube, centrifuge again at 12000 rpm, 4°C for 10 min, and collect all supernatant for detection. Note: If increasing sample volume, extract according to the ratio of tissue mass (g): extraction buffer volume (mL) = 1:5-10. 2. Liquid Sample: Clear liquid samples can be detected directly. If turbid, centrifuge at 12000 rpm, room temperature for 10 min, and collect the supernatant for use. 3. Bacteria/Cell Sample: First collect bacteria or cells into a centrifuge tube, discard the supernatant after centrifugation; take approximately 5 million bacteria or cells, add 1 mL extraction buffer, sonicate to break bacteria or cells (on ice, power 200 W, sonication 3 s, interval 10 s, repeat 30 times); centrifuge at 12000 rpm, 4°C for 10 min, collect the supernatant, and place on ice for detection. Note 1: If increasing sample volume, extract according to the ratio of bacteria/cell number (10^4): extraction buffer (mL) = 500-1000:1. Assay Procedure: 1. Preheat the UV spectrophotometer for more than 20 min, adjust the wavelength to 336 nm, and zero with distilled water. 2. Add the following reagents sequentially into an EP tube: Test Tube (μL): - Reagent I: 720 - Sample: 80 Control Tube (μL): - Reagent I: — - Distilled water: 720 - Sample: 80 Mix well, let stand at room temperature for 30 min, then transfer all liquid to a 1 mL quartz cuvette (path length 1 cm), and read the absorbance at 336 nm. ΔA = A_Test – A_Control (each sample should have its own control). Note: This operation procedure is suitable for the vast majority of routine sample detection. Experimental conditions can be moderately adjusted according to the actual sample status. For special types of samples, technical support can provide exclusive optimization suggestions. Calculations: 1. Standard curve equation: y = 0.7098x – 0.003, where x is standard concentration (μmol/mL), y is absorbance ΔA. 2. Calculated by sample weight: Methylglyoxal (MG) content (μmol/g weight) = [(ΔA + 0.003) ÷ 0.7098 × V1] ÷ (W × V1 ÷ V) × D = 1.41 × (ΔA + 0.003) ÷ W × D 3. Calculated by liquid volume: Methylglyoxal (MG) content (μmol/mL) = (ΔA + 0.003) ÷ 0.7098 × D = 1.41 × (ΔA + 0.003) × D 4. Calculated by

Tel: 1-631-559-9269 1-516-512-3133
Email: info@creative-biomart.com Fax: 1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA

	cell number: Methylglyoxal (MG) content (μmol/10^4 cell) = [(ΔA + 0.003) ÷ 0.7098 × V1] ÷ (500 × V1 ÷ V) × D = 1.41 × (ΔA + 0.003) ÷ 500 × D Where: V — Total volume of sample extraction solution, 1 mL; V1 — Volume of sample taken for detection, 0.08 mL; W — Sample weight, g; 500 — Cell number, 10^4; D — Self-dilution factor, 1 if not diluted. Precautions: 1. It is recommended to select 2 samples for pre-assay before formal experiments to understand the batch sample situation, familiarize with experimental procedures, and avoid wasting samples and reagents. 2. For research use only. Not for use in diagnostic or therapeutic procedures.
Storage	Store at 4°C.
Shipping	Shipped at ambient temperature on blue ice.
Reaction conditions	Room temperature, 30 min incubation; detection at 336 nm
Storage Buffer	Extraction Buffer (4°C)
Usage	For research use only. Not for use in diagnostic or therapeutic procedures.

Tel: 1-631-559-9269 1-516-512-3133
Email: info@creative-biomart.com Fax: 1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA