

Glucose-AGE-BSA

Cat# CY-R2056

Sterile condition

Lot No.

(1 mg/mL x 200 µL)

Background: Reducing sugars react with protein amino groups to form a diverse group of protein-bound moieties with fluorescent and cross-linking properties. These compounds, called advanced glycosylation end products (AGEs), have been implicated in the structural and functional alterations of proteins that occur during aging and long-term diabetes. Although several AGE structures have been reported (1, 2), N^ε-(Carboxymethyl)lysine (CML) and N^ε-(carboxyethyl)lysine (CEL) are two major stable, nonenzymatic chemical modifications of protein lysine residues resulting from glycation and oxidation reactions. However it has been proposed that AGE are not only created from glucose per se, but also from dicarbonyl compounds derived from glycation, sugar autoxidation, and sugar metabolism. It was demonstrated that various types of AGE, non-enzymatically glycosylated protein derivatives formed at an accelerated rate in diabetes (3), not only inhibit DNA synthesis but also induce apoptotic cell death in human mesangial cells (4).

Product Description: glucose-AGE-BSA was prepared according to the method described in Ikeda K et al. (1).

Product Size: 200 µL x 1 mg/mL glucose-AGE-BSA

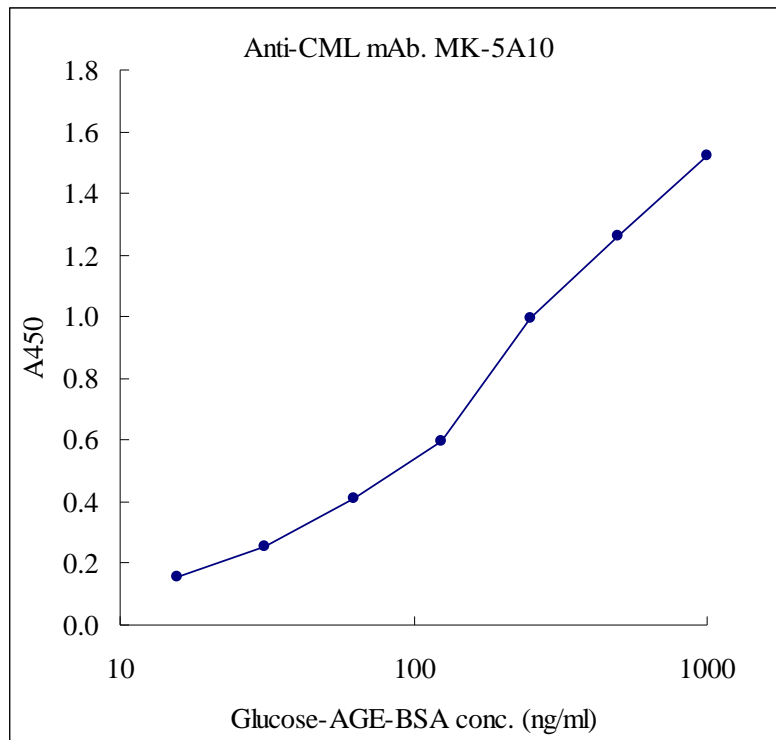
Formulation: The glucose-AGE-BSA is supplied frozen in a buffer containing 10mM PBS (pH 7.2).

Specificity: glucose-AGE-BSA can be detected by N^ε-(Carboxymethyl)lysine antibody (Cat# CY-M1028 Anti-CML /N^ε-(Carboxymethyl)lysine Monoclonal Antibody, MK-5A10).

Recommended concentration: Coating microtiter plate for competitive ELISA: 200-800 ng/mL.

Storage and Stability: Stable for 12 months at -20°C from date of shipment. For maximum recovery of product, centrifuge the original vial after thawing and prior to removing the cap. Aliquot glucose-AGE-BSA to avoid repeated freezing and thawing.

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Fig.1 Direct ELISA for testing the reactivity of Anti-CML /N^ε-(Carboxymethyl)lysine Monoclonal Antibody MK-5A10 (CY-M1028) against CML-adduct in glucose-AGE-BSA (CY-R2056).**Direct ELISA Protocol:****Solutions and Reagents**

Note: Prepare solutions with Milli-Q or equivalently purified water.

Coating Buffer: 25 mM Sodium carbonate buffer (pH 9.0)

Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20

Blocking Buffer: 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk; for 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).

10X TBS (Tris-buffered saline): To prepare 1 liter of 10X TBS: 24.2 g Tris base, 80 g NaCl; adjust pH to 7.0 with HCl (use at 1X).

Primary Antibody Dilution Buffer: 1X TBS, 0.1% Tween-20, 0.05% NaN₃ with 2% BSA; for 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 0.4 g BSA and mix well. While stirring, add 20 µl Tween-20 (100%) and 100 µl of 10% NaN₃.

Secondary Antibody Dilution Buffer: 1X TBS, with 2% BSA; for 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 0.4 g BSA and mix well.

Secondary Antibody: anti-mouse IgG antibody conjugated to horseradish peroxidase (HRP).

HRP Detection: 1 mM 3, 3', 5, 5'-tetramethylbenzidine 2HCl/TMB (KPL, Inc.) and 10 mM H₂O₂ in 20 mM Sodium citrate buffer (pH 5.5).

Stop Solution: 0.5 N H₂SO₄

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ELISA Procedure

1. Make serial dilutions of glucose-AGE-BSA, CY-R2056 (12.5 to 1000 ng/ml) or sample.
2. Add 100 µl of diluted sample to each well in 96-well microtiter plate and incubate overnight at 4°C.
3. Wash 2 times with Wash Buffer.
4. Add 200 µl of Blocking Buffer to each well and incubate for 1.5 h at 37°C or overnight at 4°C.
5. Wash 4 times with Wash Buffer.
6. Add 100 µl of 100-200 ng/ml anti-N^ε-(Carboxymethyl)lysine /CML monoclonal antibody MK-5A10 and incubate for 1 hr at room temperature.
7. Wash wells five times with Wash Buffer making sure each well is filled completely. Remove residual Wash Buffer by gentle tapping or aspiration.
8. Add 100 µl of anti-mouse IgG antibody conjugated to horseradish peroxidase (HRP) and incubate for 1 hr at room temperature.
9. Wash wells five times with Wash Buffer making sure each well is filled completely. Remove residual Wash Buffer by gentle tapping or aspiration.
10. Add 100 µL of Substrate Reagent to each well and incubate at room temperature for 5–15 minutes.
11. Add 100 µL of Stop Solution to each well in the same order as the previously added Substrate Reagent.
12. Measure absorbance in each well using a spectrophotometric plate reader at dual wavelengths of 450/540 nm. Dual wavelengths of 450/550 or 450/595 nm can also be used. Read the plate at 450 nm if only a single wavelength can be used. Wells must be read within 30 minutes of adding the Stop Solution.

References:

1. Ikeda K, Higashi T, Sano H, Jinnouchi Y, Yoshida M, Araki T, Ueda S, Horiuchi S: *Biochemistry* **35**: 8075 –8083,1996
2. Reddy S, Bichler J, Wells-Knecht KJ, Thorpe SR, Baynes JW: *Biochemistry* **34**: 10872 –10878,1995
3. Takeuchi, M., Bucala, R., Suzuki, T., Ohkubo, T., Yamazaki, M., Koike, T., Kameda, Y., and Makita, Z. (2000) *J. Neuropathol. Exp. Neurol.* 59, 1094-1105
4. Yamagishi S, Inagaki Y, Okamoto T, Amano S, Koga K, Takeuchi M, Makita Z. Advanced glycation end product-induced apoptosis and overexpression of vascular endothelial growth factor and monocyte chemoattractant protein-1 in human-cultured mesangial cells. *J Biol Chem.* 277(23):20309-15, 2002

Related Products

- * CML-BSA/N^ε-(carboxymethyl)lysine-BSA: Cat# CY-R2052
- * CML-OVA/N^ε-(carboxymethyl)lysine-OVA: Cat# CY-R2053
- * CEL-BSA/N^ε-(carboxyethyl)lysine-BSA: Cat# CY-R2054
- * CEL-OVA/N^ε-(carboxyethyl)lysine-OVA: Cat# CY-R2055
- * Glucose-AGE-BSA: Cat# CY-R2056
- * Glucose-AGE-OVA: Cat# CY-R2057
- * Glyceraldehyde-AGE-BSA: Cat# CY-R2058
- * Glyceraldehyde-AGE-OVA: Cat# CY-R2059
- * Glycolaldehyde-AGE-BSA: Cat# CY-R2060
- * Glycolaldehyde-AGE-OVA: Cat# CY-R2061
- * Methylglyoxal-AGE-BSA: Cat# CY-R2062
- * Methylglyoxal-AGE-OVA: Cat# CY-R2063
- * Glyoxal-AGE-BSA: Cat# CY-R2064
- * Glyoxal-AGE-OVA: Cat# CY-R2065
- * CML-HSA/N^ε-(carboxymethyl)lysine-HSA: Cat# CY-R2066
- * CEL-HSA/N^ε-(carboxyethyl)lysine-HSA: Cat# CY-R2067

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