CEL-BSA/Nε-(Carboxyethyl)lysine-BSA

Cat# CY-R2054

Lot No.
Sterile condition
200 µg (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), Nε-(Carboxymethyl)lysine (CML) and Nε-(Carboxyethyl)lysine (CEL) are two major stable, nonenzymatic chemical modifications of protein lysine residues resulting from glycation and oxidation reactions. CEL is a homolog of CML that is formed by the reaction of lysine residues in proteins with methylglyoxal as well as with triose phos-phates and other sugars (3). CML and CEL are two major nonenzymatic chemical modifications on tissue proteins that can serve as biomarkers of oxidative stress resulting from sugar and lipid oxidation. CEL was detected in human skin collagen at 5–10% of the concentration detected in lens proteins from donors of similar age, and its concentration was approx. 8-fold higher in a pool of skin collagen samples from old, compared with young, donors (3). These observations suggest that CEL, like CML, will be a useful biomarker of the chemical aging of tissue proteins (4, 5).

Product Description: Prepared according to the method described in Ahmed MU et al. (3). Approx. 20 mole of CEL/1 mole of BSA.

Product Size: 1 mg/mL x 200 µL

Formulation: Supplied frozen in a buffer containing 10 mM PBS (pH 7.2).

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 CEL-BSA to avoid repeated freezing and thawing.

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. MU Ahmed, E Brinkmann Frye, TP Degenhardt, SR Thorpe, and JW Baynes: *Biochem J*, 324: 565-70, 1997
4. Teerlink T, Barto R, Ten Brink HJ, Schalkwijk CG. Measurement of Nepsilon-(carboxymethyl)lysine and Nepsilon-(carboxyethyl)lysine in human plasma protein by stable-isotope-dilution tandem mass spectrometry. Clin Chem. 50(7):1222-8. 2004
5. Lieuw-A-Fa ML, van Hinsbergh VW, Teerlink T, Barto R, Twisk J, Stehouwer CD, Schalkwijk CG. Increased levels of N(epsilon)-(carboxymethyl)lysine and N(epsilon)-(carboxyethyl)lysine in type 1 diabetic patients with impaired renal function: correlation with markers of endothelial dysfunction. Nephrol Dial Transplant. 19(3):631-6, 2004

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