

PRODUCT INFORMATION



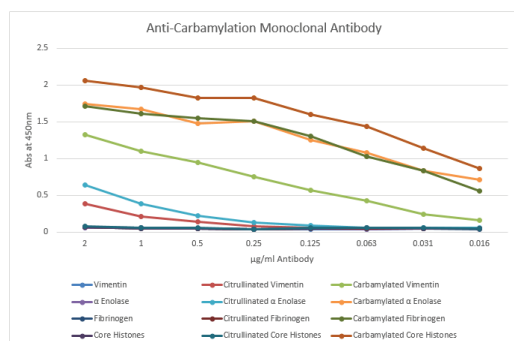
Anti-Carbamylation (Homocitrulline) Monoclonal Antibody

Item No. 23203

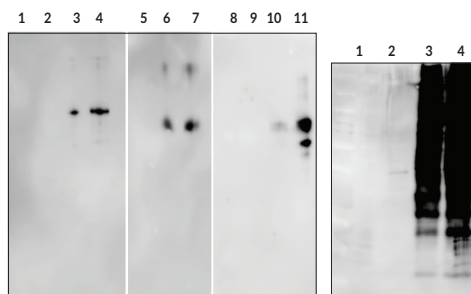
Overview and Properties

Contents: This vial contains 100 µg protein G-purified antibody.
Immunogen: Carbamylated protein
Cross Reactivity: (-) Unmodified or citrullinated proteins
Species Reactivity: (+) Species independent
Form: Liquid
Storage: -20°C (as supplied)
Stability: ≥1 year
Storage Buffer: PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide
Clone: 1C6
Host: Mouse
Isotype: IgG1
Applications: ELISA, Immunoprecipitation (IP), and Western blot (WB); the recommended starting dilution for ELISA and WB is 1:1,000 and 5 µg of antibody per IP test. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images



ELISA detection of the Anti-Carbamylation Monoclonal Antibody against carbamylated and unmodified proteins.



Western blot detection of carbamylated proteins.

Lane 1: Unmodified α-Enolase (100 ng)
Lane 2: Citrullinated α-Enolase (100 ng)
Lane 3: Carbamylated α-Enolase (5 ng)
Lane 4: Carbamylated α-Enolase (25 ng)
Lane 5: Unmodified BSA (100 ng)
Lane 6: Carbamylated BSA (5 ng)
Lane 7: Carbamylated BSA (25 ng)
Lane 8: Unmodified Fibrinogen (100 ng)
Lane 9: Citrullinated Fibrinogen (100 ng)
Lane 10: Carbamylated Fibrinogen (5 ng)
Lane 11: Carbamylated Fibrinogen (25 ng)

Western blot detection of the Anti-Carbamylation Monoclonal Antibody in carbamylated HeLa cell lysates.

Lane 1: HeLa Cell Lysate (10 µg)
Lane 2: Citrullinated HeLa Cell Lysate (10 µg)
Lane 3: Carbamylated HeLa Cell Lysate (5 µg)
Lane 4: Carbamylated HeLa Cell Lysate (10 µg)

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Carbamylation is a non-enzymatic and irreversible post-translational protein modification whereby cyanate/isocyanic acid adds a carbamoyl group to the ϵ -amino of lysine side chains, converting lysine to the non-standard amino acid homocitrulline.^{1,2} Cyanate is formed primarily from the breakdown of urea but can also be formed from the oxidation of thiocyanate by myeloperoxidase in the presence of hydrogen peroxide at sites of inflammation, such as atherosclerotic tissues.¹⁻³ LDL can be carbamylated and has atherogenic properties, disrupting LDL receptor binding and increasing vascular smooth muscle cell proliferation and endothelial cell death.^{3,4} Protein carbamylation and carbamylated LDL levels are increased in the plasma of patients with disorders resulting in high levels of urea, such as chronic and end-stage renal diseases.^{2,4} Furthermore, the levels of plasma protein-bound homocitrulline positively correlate with the frequency of, and mortality from, major adverse cardiac events and predict cardiovascular disease risk.³ Carbamylated proteins can also induce an immune response leading to the production of anti-homocitrulline autoantibodies, which have been found at higher levels in individuals with rheumatoid arthritis and are positively associated with the degree of joint damage.⁵ Cayman's Anti-Carbamylation (Homocitrulline) Monoclonal Antibody can be used for ELISA, immunoprecipitation (IP), and Western blot (WB) applications. The antibody recognizes carbamylated proteins and does not detect the unmodified or citrullinated counterparts.

References

1. Stark, G.R., Stein, W.H., and Moore, S. Reactions of cyanate present in aqueous urea with amino acids and proteins. *J. Biol. Chem.* **235(11)**, 3177-3181 (1960).
2. Long, J., Vela Parada, X., and Kalim, S. Protein carbamylation in chronic kidney disease and dialysis. *Adv. Clin. Chem.* **87**, 37-67 (2018).
3. Wang, Z., Nicholls, S.J., Rodriguez, E.R., *et al.* Protein carbamylation links inflammation, smoking, uremia and atherogenesis. *Nat. Med.* **13(1)**, 1176-1184 (2007).
4. Ok, E., Basnakian, A.G., Apostolov, E.O., *et al.* Carbamylated low-density lipoprotein induces death of endothelial cells: A link to atherosclerosis in patients with kidney disease. *Kidney Int.* **68(1)**, 173-178 (2005).
5. Shi, J., Knevel, R., Suwannalai, P., *et al.* Autoantibodies recognizing carbamylated proteins are present in sera of patients with rheumatoid arthritis and predict joint damage. *Proc. Natl. Acad. Sci. USA* **108(42)**, 17372-17377 (2011).

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