CAC#KMU-MA03 (1B10)
CAC#KMU-MA04 (2E5)

Anti-S-guanylation

Background

8-Nitroguanosine is a nitrated nucleic acid which is formed from the reactions of guanosine with peroxynitrite, myeloperoxidase, nitrite, and peroxide. It is known that the nitration of guanine is enhanced in virus infection[1, 2], bacterial infection[3, 4], inflammatory disease[5] , cancers[5] , and diseases associated with smoking[6] . 8-Nitroguanosine is thought to be one of the makers of DNA damage caused by oxidative stress. Cyclic GMP (cGMP) is a second messenger that activates protein kinase G. 8-Nitro-cGMP (nitrated cGMP) has been identified as a nitrated cGMP formed in vivo[3] . 8-Nitro-cGMP can act as a unique second messenger distinct from cGMP to induce antioxidative adaptive responses[3, 7-9]. Mode of actions of 8-nitro-cGMP mainly relies on its adduction to protein cysteine residues called “protein S-guanylation”, as a posttranslational modification.

Product type	Primary Antibody
Immunogen	Bovine serum albumin of which cysteine residues are S-guanylated by 8-nitro-cGMP
Raised in	Mouse
Clone number	1B10, 2E5
Isotype	IgG1
Source	Ascites
Purification	Ion-Exchange Chromatography
Buffer	Phosphate buffered saline (no preservatives added)
Concentration	0.5 mg/mL
Volume	50 ug
Label	Unlabeled
Specificity	Protein cysteine residues that are S-guanylated by 8-nitro-cGMP
Storage	Store at -70℃ Aliquot to avoid cycles of freeze/thaw.

Recommended Dilutions	Western blotting（1 : 3,000） Other applications have not been tested or not reactive. Optimal dilutions/concentrations should be determined by the end user.

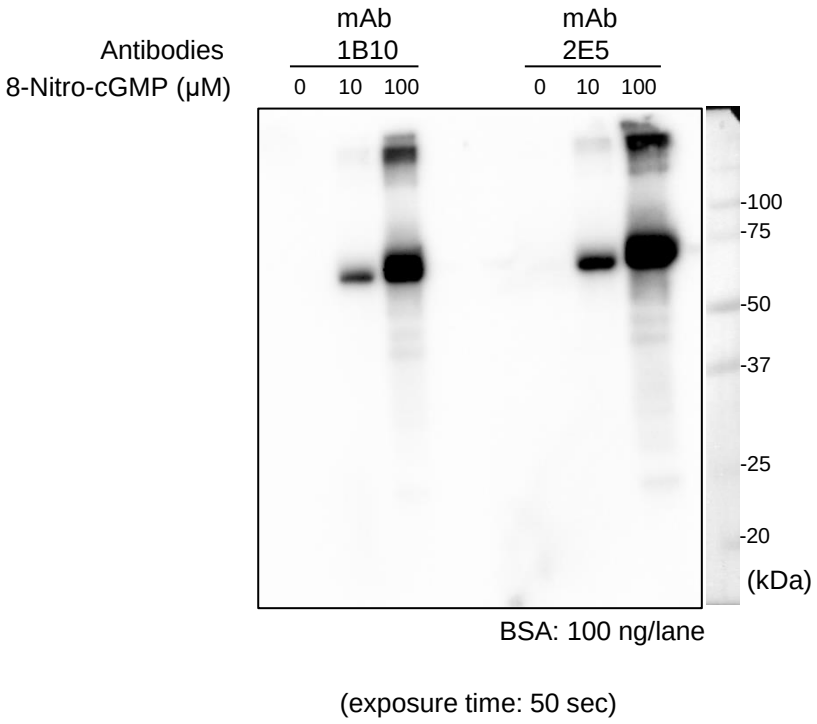

Fig 1. Western blot analysis for protein S-guanylation.
Bovine serum albumin (BSA) was reduced by dithiothreitol to introduce free cysteine residues. Protein S-guanlyation was then induced by reacting reduced BSA with 8-nitro-cGMP at indicated concentrations at 37 °C for 20 hrs. Protein bands were clearly detected upon protein S-guanylation, whereas no band was detected for negative control without 8-nitro-cGMP treatment.
Block membrane in 5% skim milk/Tris-saline (150 mM NaCl/10 mM Tris-HCl, pH 7.6)
Primary antibody dilution buffer : 5% skim milk/Tris-saline (150 mM NaCl/10 mM Tris-HCl, pH 7.6)
Secondary antibody dilution buffer : 5% skim milk/Tris-saline (150 mM NaCl/10 mM Tris-HCl, pH 7.6)

References:
1) T. Akaike, S. Okamoto, T. Sawa, J. Yoshitake, F. Tamura, K. Ichimori, K. Miyazaki, K. Sasamoto and H. Maeda, 8-nitroguanosine formation in viral pneumonia and its implication for pathogenesis, Proc. Natl. Acad. Sci. USA, 100, 685-690 (2003).
2) J. Yoshitake, T. Akaike, T. Akuta, F. Tamura, T. Ogura, H. Esumi, and H. Maeda, Nitric oxide as an endogenous mutagen for Sendai virus without antiviral activity, J. Virol., 78, 8709-8719 (2004).
3) T. Sawa, M. H. Zaki, T. Okamoto, T. Akuta, Y. Tokutomi, S. Kim-Mitsuyama, H. Ihara, A. Kobayashi, M. Yamamoto, S. Fujii, H. Arimoto, and T. Akaike, Protein S-guanylation by the biological signal 8-nitroguanosine 3',5'-cyclic monophosphate, Nat. Chem. Biol., 3, 727-735 (2007).
4) M. H.Zaki, S. Fujii, T. Okamoto, S. Islam, S. Khan, K. A. Ahmed, T. Sawa, and T. Akaike, Cytoprotective function of heme oxygenase 1 induced by a nitrated cyclic nucleotide formed during murine salmonellosis, J. Immunol., 182, 3746-3756 (2009).
5) Y. Terasaki, T. Akuta, M. Terasaki, T. Sawa, T. Mori, T. Okamoto, M. Ozaki, M. Takeya and T. Akaike, Guanine nitration in idiopathic pulmonary fibrosis and its implication for carcinogenesis, Am. J. Respir. Crit. Care. Med., 174, 665-673 (2006).
6) M. Feelisch, Nitrated cyclic GMP as a new cellular signal, Nat. Chem. Biol., 3, 687-688 (2007).
7) K. A. Ahmed, T. Sawa, T. Akaike, Protein cysteine S-guanylation and electrophilic signal transduction by endogeneous nitro-nucleotides, Amino Acids, 41, 123-130 (2011).
8) T. Sawa, H. Arimoto and T. Akaike, Regulation of redox signaling involving chemical conjugation of protein thiols by nitric oxide and electrophiles, Bioconjugate Chem., 21, 1121-1129 (2010).

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COSMO BIO CO., LTD.
【JAPAN】
TOYO EKIMAE BLDG. 2-20, TOYO 2-CHOME,
KOTO-KU. TOKYO 135-0016, JAPAN
Phone: +81-3-5632-9610
FAX: +81-3-5632-9619
URL: https://www.cosmobio.co.jp/

COSMO BIO USA
【Outside Japan】
2792 Loker Ave West, Suite 101
Carlsbad, CA 92010, USA
email: info@cosmobiousa.com
Phone/FAX: (+1) 760-431-4600
URL: www.cosmobiousa.com