SANTA CRUZ BIOTECHNOLOGY, INC.

Ada (ADA-1): sc-53152

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Regulatory protein of adaptative response (Ada) is a monomeric, globular, 353 amino acid *E. coli* protein that functions in the repair of alkylated guanine in DNA. Ada has two alkylacceptor activities located in two nearly equally sized domains. Ada stoichiometrically accepts the alkyl group from the O-6 position of alkylguanine in DNA at cysteine residue 321 and from alkyl phosphotriester at cysteine residue 69. This reaction irreversibly inactivates the enzyme. Additionally, Ada can repair O-4-methylthymine. The N-terminus of Ada contains a region utilized in the activation of transcription of ALKA, ALKB, and AIDB.

REFERENCES

1. Karran, P., et al. 1979. Adaptive response to alkylating agents involves alteration *in situ* of O^6-methylguanine residues in DNA. Nature 280: 76-77.
2. Crone, T.M., et al. 1995. Mutations in the Ada O^6-alkylguanine-DNA alkyltransferase conferring sensitivity to inactivation by O^6-benzylguanine and 2,4-diamino-6-benzyloxy-5-nitrosopyrimidine. Carcinogenesis 16: 1687-1692.
3. Bhattacharyya, D., et al. 1998. Reversible folding of Ada protein (O^6-methylguanine-DNA methyltransferase) of *Escherichia coli.* Biochemistry 37: 1722-1730.
4. Verdemato, P.E., et al. 2000. DNA-binding mechanism of the *Escherichia coli* Ada O^6-alkylguanine-DNA alkyltransferase. Nucleic Acids Res. 28: 3710-3718.
5. Kleibl, K., et al. 2002. Molecular mechanisms of adaptive response to alkylating agents in *Escherichia coli* and some remarks on O^6-methylguanine DNA-methyltransferase in other organisms. Mutat. Res. 512: 67-84.
6. Sedgwick, B., et al. 2002. Recent progress on the Ada response for inducible repair of DNA alkylation damage. Oncogene 21: 8886-8894.
7. Takinowaki, H., et al. 2004. 1H, 13C and 15N resonance assignments of the N-terminal 16 kDa domain of *Escherichia coli* Ada protein. J. Biomol. NMR 29: 447-448.
8. Vasil'eva, S.V., et al. 2005. O^6-benzylguanine stimulates regulatory functions of the Ada protein in *Escherichia coli.* Genetika 41: 1462-1466.
9. Takinowaki, H., et al. 2006. The solution structure of the methylated form of the N-terminal 16-kDa domain of *Escherichia coli* Ada protein. Protein Sci. 15: 487-497.

SOURCE

Ada (ADA-1) is a mouse monoclonal antibody raised against ADA protein.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Ada (ADA-1) is available conjugated to agarose (sc-53152 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-53152 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-53152 PE), fluorescein (sc-53152 FITC), Alexa Fluor® 488 (sc-53152 AF488), Alexa Fluor® 546 (sc-53152 AF546), Alexa Fluor® 594 (sc-53152 AF594) or Alexa Fluor® 647 (sc-53152 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-53152 AF680) or Alexa Fluor® 790 (sc-53152 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Ada (ADA-1) is recommended for detection of Ada of *E. coli* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Molecular Weight of Ada: 39 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

SELECT PRODUCT CITATIONS

1. Thomas, E.N., et al. 2020. Alkylative damage of mRNA leads to ribosome stalling and rescue by *trans* translation in bacteria. Elife 9: e61984.

RESEARCH USE

For research use only, not for use in diagnostic procedures.