SANTA CRUZ BIOTECHNOLOGY, INC.

ESD (A-5): sc-514892

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

ESD (esterase D) is also known as S-formylglutathione hydrolase and is a 282 amino acid protein that is a member of the esterase D family. ESD is highly expressed in placenta, kidney, liver and erythrocytes, and is localized to the cytoplasm, as well as to cytoplasmic vesicles. The main function of ESD is to detoxify formaldehyde while providing energy. Formaldehyde is oxidized by ADH5 which yields S-formylglutathione. ESD then catalyzes the hydrolysis of S-formylglutathione to the reduced forms of formic acid and glutathione. In addition, ESD hydrolyzes a variety of different neutral ester substrates and can act as a carboxylesterase. ESD may also act as a cysteine hydrolase which is inactivated by thiol alkylating agents. ESD gene polymorphism can lead to reduced enzymatic activity which may cause susceptibility to many conditions, including toxic liver cirrhosis, retinoblastoma, obesity and autism.

REFERENCES

1. Harms, N., et al. 1996. S-formylglutathione hydrolase of *Paracoccus denitrificans* is homologous to human esterase D: a universal pathway for formaldehyde detoxification? J. Bacteriol. 178: 6296-6299.
2. McAuley, K.E., et al. 2003. Purification, crystallization and preliminary X-ray diffraction analysis of S-formylglutathione hydrolase from *Arabidopsis thaliana:* effects of pressure and selenomethionine substitution on space-group changes. Acta Crystallogr. D Biol. Crystallogr. 59: 2272-2274.
3. Yurimoto, H., et al. 2003. Physiological role of S-formylglutathione hydrolase in C1 metabolism of the methylotrophic yeast *Candida boidinii*. Microbiology 149: 1971-1979.
4. Yuasa, I., et al. 2004. Molecular basis of ESD*5 and ESD*7 and haplotype analysis with new polymorphisms in introns. Hum. Biol. 76: 479-488.

CHROMOSOMAL LOCATION

Genetic locus: ESD (human) mapping to 13q14.2; Esd (mouse) mapping to 14 D3.

SOURCE

ESD (A-5) is a mouse monoclonal antibody raised against amino acids 1-282 representing full length ESD of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

ESD (A-5) is available conjugated to agarose (sc-514892 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-514892 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514892 PE), fluorescein (sc-514892 FITC), Alexa Fluor® 488 (sc-514892 AF488), Alexa Fluor® 546 (sc-514892 AF546), Alexa Fluor® 594 (sc-514892 AF594) or Alexa Fluor® 647 (sc-514892 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514892 AF680) or Alexa Fluor® 790 (sc-514892 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

ESD (A-5) is recommended for detection of ESD of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for ESD siRNA (h): sc-105338, ESD siRNA (m): sc-144943, ESD shRNA Plasmid (h): sc-105338-SH, ESD shRNA Plasmid (m): sc-144943-SH, ESD shRNA (h) Lentiviral Particles: sc-105338-V and ESD shRNA (m) Lentiviral Particles: sc-144943-V.

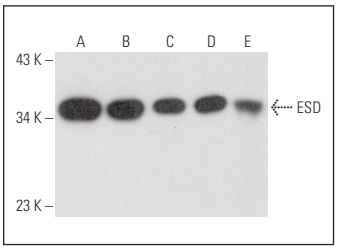
Molecular Weight of ESD: 31 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, K-562 whole cell lysate: sc-2203 or HeLa whole cell lysate: sc-2200.

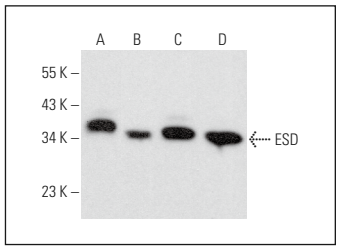
RECOMMENDED SUPPORT REAGENTS

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). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



ESD (A-5): sc-514892. Western blot analysis of ESD expression in Jurkat (**A**), K-562 (**B**), Caco-2 (**C**) and HeLa (**D**) whole cell lysates and human placenta tissue extract (**E**).



ESD (A-5): sc-514892. Western blot analysis of ESD expression in K-562 (**A**), RAW 264.7 (**B**), HL-60 (**C**) and MEG-01 (**D**) whole cell lysates.

STORAGE

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

RESEARCH USE

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

PROTOCOLS

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