SANTA CRUZ BIOTECHNOLOGY, INC.

DD (C-12): sc-166297

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Human liver contains isoforms of dihydrodiol dehydrogenase (DD1, DD2, DD3 and DD4), which belong to the aldo-oxo reductase/aldo-keto reductase (AKR) superfamily, have 20α- or 3α-hydroxysteroid dehydrogenase (HSD) activity. DD1 is also designated AKR1C1, DDH or DDH1, while DD2 also can be designated AKR1C2, dDD, BABP or DDH2. AKR1C3 and 3α-HSD are alternate designations for human DD3 (which is referred to as AKR1C18 in rodents), while DD4 also can be called AKR1C4, CD, CHDR or AKR1C6 (in rodents). DD1 and DD2 are 20α-HSDs, whereas DD3 and DD4 are the 3α-HSDs. The multiple human cytosolic dihydrodiol dehydrogenases are involved in the metabolism of xenobiotics, such as polycyclic aromatic hydrocarbons, pesticides and steroid hormones, and are responsible for the reduction of ketone-containing drugs by using NADH or NADPH as a cofactor. The 20α-HSD catalyzes the reaction of Progesterone to the inactive form 20α-hydroxy-progesterone. The 3α-HSD is a cytosolic, monomeric, NADPH-dependent oxidoreductase that reduces 3-keto-5-dihydrosteroids to their tetrahydro products. DD1 and DD2 are ubiquitously expressed, whereas DD4 mRNA is restricted to the liver. DD3 is a unique enzyme that can specifically catalyze the dehydrogenation of *trans*-benzenedihydrodiol and *trans*-naphthalenedihydrodiol.

CHROMOSOMAL LOCATION

Genetic locus: AKR1C1/AKR1C2/AKR1C3/AKR1C4 (human) mapping to 10p15.1; Akr1c6/Akr1c18 (mouse) mapping to 13 A1.

SOURCE

DD (C-12) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 11-45 near the N-terminus of DD3 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.

DD (C-12) is available conjugated to agarose (sc-166297 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166297 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166297 PE), fluorescein (sc-166297 FITC), Alexa Fluor® 488 (sc-166297 AF488), Alexa Fluor® 546 (sc-166297 AF546), Alexa Fluor® 594 (sc-166297 AF594) or Alexa Fluor® 647 (sc-166297 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166297 AF680) or Alexa Fluor® 790 (sc-166297 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-166297 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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.

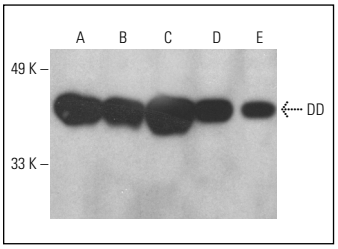
APPLICATIONS

DD (C-12) is recommended for detection of DD1-4 of human origin and Akr1c6 and Akr1c18 of mouse and rat 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

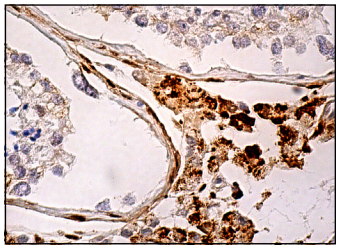
Molecular Weight of DD: 34-39 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, COLO 205 whole cell lysate: sc-364177 or A549 cell lysate: sc-2413.

DATA



DD (C-12) HRP: sc-166297 HRP. Direct western blot analysis of DD expression in AN3 CA (**A**), Hep G2 (**B**), A549 (**C**), COLO 205 (**D**) and Caki-1 (**E**) whole cell lysates.



DD (C-12): sc-166297. Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing cytoplasmic staining of Leydig and myoid cells.

SELECT PRODUCT CITATIONS

1. Wanichwatanadecha, P., et al. 2012. Transactivation activity of human papillomavirus type 16 E6*I on aldo-keto reductase genes enhances chemoresistance in cervical cancer cells. J. Gen. Virol. 93: 1081-1092.
2. Tao, S., et al. 2014. Oncogenic KRAS confers chemoresistance by upregulating Nrf2. Cancer Res. 74: 7430-7441.
3. Liu, P., et al. 2019. Non-covalent Nrf2 activation confers greater cellular protection than covalent activation. Cell Chem. Biol. 26: 1427-1435.e5.
4. Zhou, C., et al. 2020. Loss of AKR1C1 is a good prognostic factor in advanced NPC cases and increases chemosensitivity to cisplatin in NPC cells. J. Cell. Mol. Med. 24: 6438-6447.
5. Harada, K., et al. 2021. Mechanisms for establishment of GABA signaling in adrenal medullary chromaffin cells. J. Neurochem. 158: 153-168.
6. Shakya, A., et al. 2023. The NRF2-p97-NRF2 negative feedback loop. Redox Biol. 65: 102839.
7. Gao, C., et al. 2023. AKR1C1 overexpression leads to lenvatinib resistance in hepatocellular carcinoma. J. Gastrointest. Oncol. 14: 1412-1433.

PROTOCOLS

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