

DPYD (A-5): sc-376712

BACKGROUND

Dihydropyrimidine dehydrogenase (DPYD) catalyzes the first rate-limiting step of the NADPH-dependent catabolism of uracil and thymine to dihydrouracil and dihydrothymine; thus, a deficiency of DPYD leads to an accumulation of uracil and thymine. Abnormal concentrations of these metabolites in bodily fluids may be the cause of neurological disease and a contraindication for treatment of cancer patients with certain pyrimidine analogs. DPYD also catalyzes the anticancer agent 5-fluorouracil (5-FU) pathway and is involved in the efficacy and toxicity of 5-FU. Variations in DPYD concentration may arise from alterations at the transcriptional level of the dihydropyrimidine dehydrogenase gene. Specifically, hypermethylation of the DPYD promoter downregulates dihydropyrimidine dehydrogenase expression. Deficient DPYD alleles may constitute a risk factor for severe toxicity following treatment with 5-FU.

REFERENCES

- Godtel, R., et al. 1978. Puerperal psychoses (author's transl). *Geburtshilfe Frauenheilkd.* 38: 304-316.
- Tuchman, M., et al. 1989. Dihydropyrimidine dehydrogenase activity in human blood mononuclear cells. *Enzyme* 42: 15-24.
- van Gennip, A.H., et al. 1997. Inborn errors of pyrimidine degradation: clinical, biochemical and molecular aspects. *J. Inherit. Metab. Dis.* 20: 203-213.
- Johnson, M.R., et al. 1997. Semi-automated radioassay for determination of dihydropyrimidine dehydrogenase (DPD) activity. Screening cancer patients for DPD deficiency, a condition associated with 5-fluorouracil toxicity. *J. Chromatogr. B, Biomed. Sci. Appl.* 696: 183-191.

CHROMOSOMAL LOCATION

Genetic locus: DPYD (human) mapping to 1p21.3; Dpyd (mouse) mapping to 3 G1.

SOURCE

DPYD (A-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 957-989 near the C-terminus of DPYD of human origin.

PRODUCT

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

DPYD (A-5) is available conjugated to agarose (sc-376712 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376712 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376712 PE), fluorescein (sc-376712 FITC), Alexa Fluor® 488 (sc-376712 AF488), Alexa Fluor® 546 (sc-376712 AF546), Alexa Fluor® 594 (sc-376712 AF594) or Alexa Fluor® 647 (sc-376712 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376712 AF680) or Alexa Fluor® 790 (sc-376712 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-376712 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

DPYD (A-5) is recommended for detection of DPYD 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).

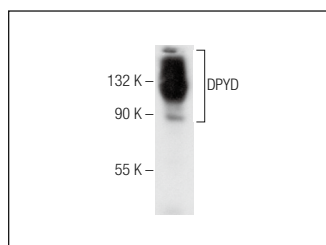
DPYD (A-5) is also recommended for detection of DPYD in additional species, including canine, bovine and porcine.

Suitable for use as control antibody for DPYD siRNA (h): sc-45326, DPYD siRNA (m): sc-45327, DPYD shRNA Plasmid (h): sc-45326-SH, DPYD shRNA Plasmid (m): sc-45327-SH, DPYD shRNA (h) Lentiviral Particles: sc-45326-V and DPYD shRNA (m) Lentiviral Particles: sc-45327-V.

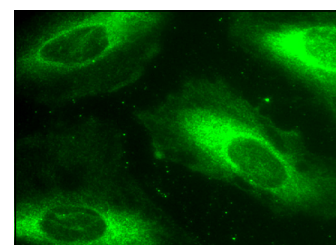
Molecular Weight of DPYD: 111 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, HL-60 whole cell lysate: sc-2209 or HeLa whole cell lysate: sc-2200.

DATA



DPYD (A-5): sc-376712. Western blot analysis of DPYD expression in HeLa whole cell lysate.



DPYD (A-5): sc-376712. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

- Ou, J., et al. 2019. ABHD5 blunts the sensitivity of colorectal cancer to fluorouracil via promoting autophagic uracil yield. *Nat. Commun.* 10: 1078.
- Kurasaka, C., et al. 2021. Molecular mechanisms and tumor biological aspects of 5-fluorouracil resistance in HCT116 human colorectal cancer cells. *Int. J. Mol. Sci.* 22: 2916.
- Kurasaka, C., et al. 2022. Trapping of 5-fluorodeoxyuridine monophosphate by thymidylate synthase confers resistance to 5-fluorouracil. *ACS Omega* 7: 6046-6052.

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.

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