

Trypsin (D-1): sc-137077

BACKGROUND

The human pancreas secretes three different isoforms of the inactive trypsinogen into the small intestine, namely cationic trypsinogen, anionic trypsinogen (the two major isoforms) and mesotrypsinogen (a minor isoform). In the small intestine, each isoform is cleaved by Enterokinase into its active form, Trypsin-1, Trypsin-2 and Trypsin-3, respectively. All trypsins are members of the serine protease Trypsin family. The activated trypsins go on to activate other protease zymogens and play a role in the autoactivation of trypsinogens. This suggests an important role for trypsins in digestion. Mutations in the gene encoding Trypsin-1 that stimulate its activity are associated with autosomal dominant hereditary pancreatitis (HCP), also known as chronic pancreatitis (CP), a disease characterized by persistent, severe abdominal pain due to calcifications of the parenchyma, pancreatic stones, cysts and pancreatic head enlargement. Trypsin-3 is expressed in the brain in addition to the pancreas.

CHROMOSOMAL LOCATION

Genetic locus: PRSS1 (human) mapping to 7q34; Prss1/Prss2/Prss3 (mouse) mapping to 6 B1.

SOURCE

Trypsin (D-1) is a mouse monoclonal antibody raised against amino acids 39-140 mapping near the N-terminus of Trypsin-1 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.

Trypsin (D-1) is available conjugated to agarose (sc-137077 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-137077 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-137077 PE), fluorescein (sc-137077 FITC), Alexa Fluor[®] 488 (sc-137077 AF488), Alexa Fluor[®] 546 (sc-137077 AF546), Alexa Fluor[®] 594 (sc-137077 AF594) or Alexa Fluor[®] 647 (sc-137077 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-137077 AF680) or Alexa Fluor[®] 790 (sc-137077 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

Trypsin (D-1) is recommended for detection of Trypsin-1, Trypsin-2 and Trypsin-3 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), 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).

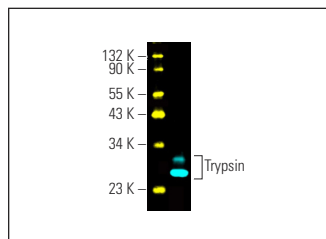
Molecular Weight of Trypsin-1/Trypsin-2/Trypsin-3: 23/26/32 kDa.

Positive Controls: rat pancreas extract: sc-364806.

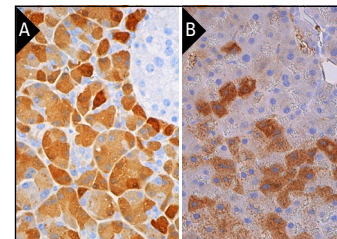
STORAGE

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

DATA



Trypsin (D-1) Alexa Fluor[®] 647: sc-137077 AF647. Direct fluorescent western blot analysis of Trypsin expression in rat pancreas tissue extract. Blocked with UltraCruz[®] Blocking Reagent: sc-516214. Cruz Marker[™] Molecular Weight Standards detected with Cruz Marker[™] MW Tag-Alexa Fluor[®] 488: sc-516790.



Trypsin (D-1) HRP: sc-137077 HRP. Direct immunoperoxidase staining of formalin fixed, paraffin-embedded human pancreas tissue showing cytoplasmic staining of exocrine glandular cells. Blocked with 0.25X UltraCruz[®] Blocking Reagent: sc-516214 (A). Trypsin (D-1): sc-137077. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse pancreas tissue showing cytoplasmic staining of subset of exocrine glandular cells (B).

SELECT PRODUCT CITATIONS

- Altshuler, A.E., et al. 2012. Protease activity increases in plasma, peritoneal fluid, and vital organs after hemorrhagic shock in rats. *PLoS ONE* 7: e32672.
- Altshuler, A.E., et al. 2013. Removal of luminal content protects the small intestine during hemorrhagic shock but is not sufficient to prevent lung injury. *Physiol. Rep.* 1: e00109.
- Altshuler, A.E., et al. 2014. Transmural intestinal wall permeability in severe ischemia after enteral protease inhibition. *PLoS ONE* 9: e96655.
- Muraro, M.J., et al. 2016. A single-cell transcriptome atlas of the human pancreas. *Cell Syst.* 3: 385-394.e3.
- Smith, M.D., et al. 2018. CCPG1 is a non-canonical autophagy cargo receptor essential for ER-phagy and pancreatic ER proteostasis. *Dev. Cell* 44: 217-232.e11.
- Yasuno, K., et al. 2019. Pathological examination of spontaneous vacuolation of pancreatic acinar cells in mice. *J. Toxicol. Pathol.* 32: 105-109.
- Shi, J.Y., et al. 2020. Expression of ectopic trypsin in atherosclerotic plaques and the effects of aprotinin on plaque stability. *Arch. Biochem. Biophys.* 690: 108460.
- Mareninova, O.A., et al. 2021. Dysregulation of mannose-6-phosphate dependent cholesterol homeostasis in acinar cells mediates pancreatitis. *J. Clin. Invest.* 131: e146870.
- Thiel, F., et al. 2022. A rare PRSS1 p.S127C mutation is associated with chronic pancreatitis and causes misfolding-induced ER-stress. *Pancreatol.* E-published.

RESEARCH USE

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