SLC31A1 Protein, Human (Cell-Free, His-SUMO)

Cat. No.:	HY-P72011
Synonyms:	Copper transport 1 homolog; Copper transporter 1; COPT1; COPT1_HUMAN; CTR1; hCTR1; High affinity copper uptake protein 1; SLC31A1; solute carrier family 31 copper tansporters; member 1; Solute carrier family 31 member 1
Species:	Human
Source:	E. coli Cell-free
Accession:	O15431 (M1-H190)
Gene ID:	1317
Molecular Weight:	Approximately 40 kDa & 80 kDa.It is speculated that the protein forms a dimeric structure 80 kDa.

PROPERTIES

AA Sequence	M D H S H H M G M S Y M D S N S T M Q P S H H H P T T S A S H S H G G G D S S M M M M P M T F Y F G F K N V E L L F S G L V I N T A G E M A G A F V A V F L L A M F Y E G L K I A R E S L L R K S Q V S I R Y N S M P V P G P N G T I L M E T H K T V G Q Q M L S F P H L L Q T V L H I I Q V V I S Y F L M L I F M T Y N G Y L C I A V A A G A G T G Y F L F S W K K A V V V D I T E H C H
Biological Activity	Measured by its binding ability in a functional ELISA. Immobilized SLC31A1 at 0.5 μg/well can bind human LGALS8 at7.6293-1000000 ng/mL, the EC_{50} of human LGALS8 is 14.063-30.957 μg/mL.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 μm sterile filtered PBS,0.05% Brij-78,6% Trehalose, pH 7.4.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US;may vary elsewhere.

DESCRIPTION

Background	SLC31A1, a critical uniporter, orchestrates the transport of copper(1+) from the extracellular space into the cytoplasm, traversing the plasma membrane. This transport is facilitated with remarkable specificity, as SLC31A1 directly delivers copper(1+) to specialized chaperones like ATOX1 through a copper(1+)-mediated transient interaction within its C-terminal domain. This intricate process serves as a regulatory mechanism, tightly controlling intracellular copper(1+) levels. Beyond its canonical role, SLC31A1 exhibits versatility by potentially participating in copper(1+) import from the apical membrane,

suggesting a role in intestinal copper absorption. The transport mechanism is sodium-independent, highly-affinity driven, and saturable. Furthermore, SLC31A1 mediates the uptake of silver(1+), and its involvement in the influx of platinum-containing chemotherapeutic agents suggests a potential impact on therapeutic responses. In vitro studies demonstrate SLC31A1's ability to transport cadmium(2+) into cells. Remarkably, SLC31A1 acts not only as a copper transporter but also as a redox sensor, promoting angiogenesis in endothelial cells by transmitting VEGF-induced ROS signals. This process involves sulfenylation at Cys-189, leading to disulfide bond formation between SLC31A1 and KDR, facilitating sustained VEGFR2 signaling. The SLC31A1-KDR complex is co-internalized into early endosomes, contributing to prolonged VEGFR2 signaling. Additionally, SLC31A1 mobilizes copper(1+) out of the endosomal compartment, facilitating its availability for export out of cells. These diverse functions underscore the multifaceted nature of SLC31A1 in cellular copper homeostasis and signaling pathways.

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