

#4166 Store at -20°C

EAAT1 Antibody


Cell Signaling
TECHNOLOGY®

Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source:	UniProt ID:	Entrez-Gene Id:
WB	H M R	Endogenous	58	Rabbit	#P43003	6507

Product Usage Information

Application

Western Blotting

Dilution

1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

EAAT1 Antibody detects endogenous levels of total EAAT1 protein.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to human EAAT1. Antibodies are purified by peptide affinity chromatography.

Background

Glutamate is the major excitatory neurotransmitter in the mammalian central nervous system. During neurotransmission, glutamate is released from vesicles of the pre-synaptic cell, and glutamate receptors (e.g., NMDA Receptor, AMPA Receptor) bind glutamate for activation at the opposing post-synaptic cell. Excitatory amino acid transporters (EAATs) regulate and maintain extracellular glutamate concentrations below excitotoxic levels. In addition, glutamate transporters may limit the duration of synaptic excitation by an electrogenic process in which the transmitter is cotransported with three sodium ions and one proton, followed by countertransport of a potassium ion. Five EAATs (EAAT1-5) are characterized: EAAT2 (GLT-1) is primarily expressed in astrocytes but is also expressed in neurons of the retina and during fetal development (1). Homozygous EAAT2 knockout mice have spontaneous, lethal seizures and an increased predisposition to acute cortical injury (2). PKC phosphorylates Ser113 of EAAT2 and coincides with glutamate transport (3).

EAAT2 accounts for up to 90% of the total glutamate transport in brain while EAAT1 contributes the remaining 5-10% (4). The contribution of EAAT1 in neurotransmission is unclear since EAAT2 is much more abundant. However, EAAT1 expression is upregulated by increasing concentrations of glutamate in the media of cultured primary astrocytes, potentially giving this glutamate transporter additional importance (5). EAAT1 has neuroprotective potential following ischemia since reactive astrocytes and activated microglia express EAAT1 but not EAAT2 (6).

Background References

1. Amara, S.G. and Fontana, A.C. (2002) *Neurochem Int* 41, 313-8.
2. Tanaka, K. et al. (1997) *Science* 276, 1699-702.
3. Casado, M. et al. (1993) *J Biol Chem* 268, 27313-7.
4. Hediger, M.A. (1999) *Am J Physiol* 277, F487-92.
5. Gegelashvili, G. et al. (1996) *Neuroreport* 8, 261-5.
6. Beschoner, R. et al. (2007) *Histopathology* 50, 897-910.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster
X: Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse
GP: Guinea Pig **Rab:** rabbit **All:** all species expected

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