Revision 6

Store at -20C

#5684

EAAT1 (D44E2) XP® Rabbit mAb

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
IF-F, IF-IC	H M R	Endogenous	58	Rabbit IgG	#P43003	6507

Product Usage Information

Application	Dilution
Immunofluorescence (Frozen)	1:100
Immunofluorescence (Immunocytochemistry)	1:100 - 1:200

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

EAAT1 (D44E2) XP® Rabbit mAb recognizes endogenous levels of total EAAT1 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the amino terminus of human EAAT1 protein.

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. Beschorner, 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).

Applications Key

IF-F: Immunofluorescence (Frozen) **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat

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Limited Uses

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