

BACKGROUND

Calbindin D belongs to the EF-hand family of calcium binding proteins and binds calcium ion with a fast association rate. It is widely expressed in Ca²⁺ transporting tissues such as epithelial-absorptive cells of the intestine and the distal tubular epithelial cells of the kidney. Calbindin-D was also found in the nervous system and it was suggested to co-localize with plasma membrane Ca²⁺ pumps. The function of Calbindin-D is dependent on the intracellular Ca²⁺ concentrations and it was shown that Ca²⁺ binding to calbindin-D induced local structure changes around aromatic residues while no significant secondary structural changes were observed. In addition, Calbindin-D-containing neurons are thought to be related with memory, learning and long-term potentiation.¹ It has been well known that Ca²⁺ plays a critical role in the light-mediated resetting of the circadian clock. Calbindin D influences Ca²⁺ buffering capacity of a cell, alters spatio-temporal aspects of intracellular Ca²⁺ signaling, and hence alters transmission of light information to the circadian clock in neurons of the suprachiasmatic nuclei (SCN).² Moreover, Calbindin-D was also implicated in Parkinson's disease (PD) since it was found that the dopaminergic neurons of the *substantia nigra pars compacta* (A9) expressing calbindin-D were more resistant to cell death than the neurons that do not express Calbindin-D in PD and in animal. In addition, alpha-Synuclein is a natively unfolded protein aggregation which is implicated in the pathogenesis of PD and several other neurodegenerative diseases, is known to interact with a great number of unrelated proteins. Some of these proteins, such as beta-synuclein and DJ-1, were shown to inhibit alpha-synuclein aggregation *in vitro* and *in vivo* therefore acting as chaperones. It was shown that Calbindin-D is also able to interact and co-aggregate with alpha-synuclein, significantly inhibiting alpha-synuclein fibrillation. Therefore, calbindin-D28K can act as a chaperone, efficiently suppressing the process of alpha-synuclein fibril formation.³

References:

1. Lee, C.H. et al: Cell. Mol. Neurobiol. 29:665-72, 2009
2. Stadler, F. et al: Chronobiol. Int. 27:68-82, 2010
3. Zhou, W. et al: Cent. Eur. J. Biol. • 5: 11-20, 2010

TECHNICAL INFORMATION

Source:

Calbindin D_{28k} Antibody is a mouse monoclonal antibody raised against a short peptide from human Calbindin D_{28k} sequence.

Specificity and Sensitivity:

This antibody detects endogenous levels of Calbindin D_{28k} proteins without cross-reactivity with other related proteins.

Storage Buffer: PBS and 30% glycerol

Storage:

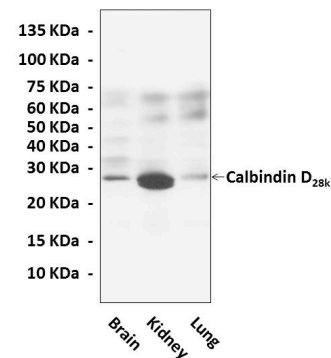
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	1:50-200
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

QUALITY CONTROL DATA



Western Blot detection of Calbindin D_{28k} proteins in various rat tissue lysates using Calbindin D_{28k} Antibody.

