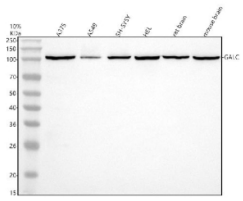
GALC Antibody / Galactocerebrosidase (FY13064)

Catalog No.	Formulation	Size
FY13064	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	P54803
Applications	Western Blot : 0.25-0.5ug/ml
Limitations	This GALC antibody is available for research use only.



Western blot analysis of GALC using anti-GALC antibody. Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human whole cell lysates, Lane 2: human whole cell lysates, Lane 3: human SH-SY5Y whole cell lysates, Lane 4: human HEL whole cell lysates, Lane 5: rat brain tissue lysates, Lane 6: mouse brain tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-GALC antibody at 1:1000 overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A single major band is detected at approximately 100 kDa, higher than the predicted molecular weight of 77 kDa. This upward shift is well documented for GALC and reflects its heavily N-glycosylated precursor form. The enzyme is synthesized as a ~100 kDa glycoprotein that is subsequently cleaved within lysosomes into smaller subunits, although only the full-length precursor is prominent in whole-cell lysates.

Description

GALC antibody detects galactocerebrosidase, a lysosomal enzyme that catalyzes the hydrolysis of galactosylceramide

and psychosine, both critical for normal myelin turnover. The UniProt recommended name is Galactocerebrosidase (GALC). This enzyme removes the galactose moiety from specific sphingolipids, supporting lipid recycling and the stability of central and peripheral nervous system myelin.

Functionally, GALC antibody recognizes a precursor glycoprotein that is proteolytically processed into 50 kDa and 30 kDa subunits forming the active heterodimeric enzyme within lysosomes. Galactocerebrosidase is essential for degrading galactolipids, and mutations in the GALC gene lead to Krabbe disease (globoid cell leukodystrophy), characterized by psychosine accumulation, oligodendrocyte death, and severe demyelination. The enzymeÃ¯Â¿Â½s deficiency disrupts lipid metabolism, resulting in neuroinflammation and white matter loss.

The GALC gene, located on chromosome 14q31.3, encodes a lysosomal hydrolase expressed in oligodendrocytes, Schwann cells, and various other tissues involved in lipid degradation. The proteinÃ¯Â¿Â½s N-linked glycosylation and mannose-6-phosphate tagging ensure proper lysosomal trafficking. GALC activity is tightly regulated by substrate availability and cellular differentiation state, making it a key player in neuronal lipid homeostasis.

Pathologically, GALC dysfunction is the molecular hallmark of Krabbe disease, but altered expression has also been linked to other neurodegenerative and demyelinating disorders. Research using GALC antibody helps elucidate disease mechanisms and assess therapeutic strategies such as enzyme replacement or gene therapy. Immunodetection of GALC in cells or tissues serves as a biomarker for lysosomal integrity and treatment response.

GALC antibody is suitable for western blotting, immunocytochemistry, and immunohistochemistry to visualize lysosomal distribution and measure enzyme levels in normal and pathological tissues. It supports investigations into lysosomal storage disorders, lipid catabolism, and neuronal repair. NSJ Bioreagents provides GALC antibody reagents validated for lysosomal enzyme and myelin biology research.

Structurally, galactocerebrosidase contains a (beta/alpha)8-barrel catalytic core typical of glycosidases. Disease-causing mutations cluster around active-site residues or disrupt domain folding, leading to reduced stability or mislocalization. Studies using this antibody contribute to understanding GALC's enzymology, trafficking, and role in myelin preservation.

Application Notes

Optimal dilution of the GALC antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the N-terminus of human GALC was used as the immunogen for the GALC antibody.

Storage

After reconstitution, the GALC antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.