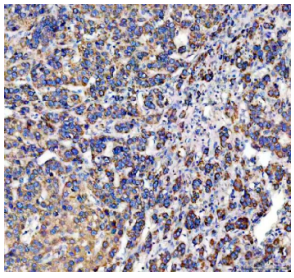
DCI Antibody / Dodecenoyl-CoA Delta Isomerase / ECI1 (R30856)

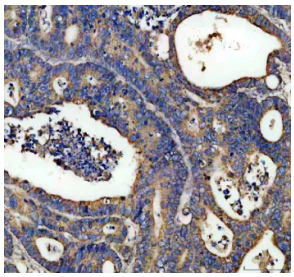
Catalog No.	Formulation	Size
R30856	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

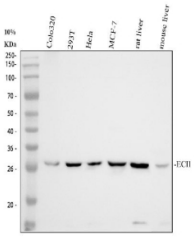
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	P42126
Localization	Cytoplasm (Mitochondria)
Applications	Western Blot : 0.5-1ug/ml Immunohistochemistry (FFPE) : 2-5ug/ml Flow Cytometry : 1-3ug/million cells
Limitations	This DCI antibody is available for research use only.



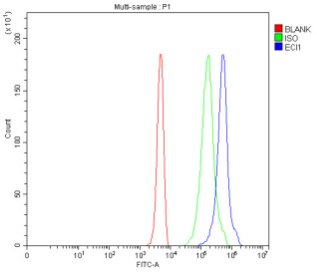
IHC analysis of DCI Antibody / Dodecenoyl-CoA delta isomerase (ECI1). ECI1 expression was examined in a paraffin-embedded section of human liver cancer tissue. Following heat-mediated antigen retrieval in EDTA buffer (pH 8.0), tissue sections were blocked with goat serum and incubated with a rabbit anti-ECI1 antibody. Immunoreactivity was visualized using an HRP-based detection system with DAB chromogen. Strong cytoplasmic staining is observed in tumor cells, consistent with the expected mitochondrial localization of ECI1 in metabolically active hepatic tissue.



IHC analysis of DCI Antibody / Dodecenoyl-CoA delta isomerase (ECI1). ECI1 expression was examined in a paraffin-embedded section of human colon cancer tissue. Following heat-mediated antigen retrieval in EDTA buffer (pH 8.0), tissue sections were blocked with goat serum and incubated with a rabbit anti-ECI1 antibody. Immunoreactivity was visualized using an HRP-based detection system with DAB chromogen. Cytoplasmic staining is observed in tumor epithelial cells, consistent with the mitochondrial localization of ECI1, while surrounding stromal areas show lower background signal.



Western blot analysis of DCI Antibody / Dodecenoyl-CoA delta isomerase (ECI1). Proteins were separated by 10% SDS-PAGE and transferred to a nitrocellulose membrane for immunodetection. Lane 1: human COLO320 whole cell lysates; Lane 2: human 293T whole cell lysates; Lane 3: human HeLa whole cell lysates; Lane 4: human MCF-7 whole cell lysates; Lane 5: rat liver tissue lysates; Lane 6: mouse liver tissue lysates. A single predominant band corresponding to ECI1 is detected at approximately 28 kDa across multiple samples. Although the predicted molecular weight of ECI1 based on amino acid sequence is approximately 33 kDa, mitochondrial matrix enzymes such as ECI1 are well documented to migrate at a lower apparent molecular weight on SDS-PAGE. This behavior is commonly attributed to compact protein folding, limited glycosylation, and sequence-specific electrophoretic properties rather than truncation. The observed banding pattern is consistent with published reports of endogenous ECI1 detected in metabolically active tissues.



Flow cytometry analysis of fixed and permeabilized human 293T cells with DCI antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= DCI antibody.

Description

DCI Antibody targets Dodecenoyl-CoA delta isomerase, encoded by the ECI1 gene. Dodecenoyl-CoA delta isomerase is a mitochondrial enzyme that plays a critical role in the beta-oxidation of unsaturated fatty acids. This enzyme catalyzes the isomerization of cis- or trans-unsaturated enoyl-CoA intermediates, enabling their continued processing through the mitochondrial fatty acid degradation pathway. As such, Dodecenoyl-CoA delta isomerase serves as an essential auxiliary enzyme that ensures efficient energy production from dietary and stored lipids.

Functionally, Dodecenoyl-CoA delta isomerase acts downstream of acyl-CoA dehydrogenases and enoyl-CoA hydratases, converting specific unsaturated fatty acyl-CoA substrates into configurations compatible with the core beta-oxidation machinery. Without this isomerization step, certain unsaturated fatty acids would accumulate as metabolic dead ends, reducing overall oxidative capacity. A DCI Antibody is therefore useful for studying mitochondrial lipid metabolism, energy homeostasis, and the regulation of fatty acid utilization under physiological and stress conditions.

Expression of Dodecenoyl-CoA delta isomerase is observed in many metabolically active tissues, including liver, muscle, heart, and kidney, reflecting the widespread requirement for fatty acid oxidation. Subcellular localization is predominantly mitochondrial, consistent with its enzymatic role within the beta-oxidation pathway. The protein contains a conserved catalytic domain characteristic of enoyl-CoA isomerases, supporting substrate binding and stereochemical conversion of fatty acyl-CoA intermediates. Studies often examine ECI1 localization and abundance to better understand mitochondrial function and metabolic flexibility.

From a disease relevance perspective, alterations in mitochondrial fatty acid oxidation pathways have been linked to

metabolic disorders, insulin resistance, and inherited defects of lipid metabolism. While ECI1 is not among the most frequently mutated beta-oxidation enzymes, changes in its expression or activity may contribute to broader mitochondrial dysfunction and impaired lipid handling. Dodecenoyl-CoA delta isomerase has also been examined in the context of cancer metabolism, where reprogramming of fatty acid oxidation can support tumor growth and survival under nutrient-limited conditions.

At the molecular level, Dodecenoyl-CoA delta isomerase functions as a soluble mitochondrial matrix protein, interacting indirectly with other beta-oxidation enzymes through coordinated metabolic flux rather than stable protein complexes. Antibody-based detection of Dodecenoyl-CoA delta isomerase supports research into mitochondrial biology, lipid metabolism, and metabolic disease mechanisms. NSJ Bioreagents provides reagents intended for research use to support investigations involving ECI1 expression and mitochondrial fatty acid oxidation pathways.

Application Notes

The stated application concentrations are suggested starting amounts. Titration of the DCI antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

An amino acid sequence from the C-terminus of human DCI (ADVQNFVSFISKDSIQKSL) was used as the immunogen for this DCI antibody.

Storage

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