# HADHA Antibody / Hydroxyacyl-CoA dehydrogenase trifunctional multienzyme complex subunit alpha (FY12953)

| Catalog No. | Formulation | Size |
|---|---|---|
| FY12953 | Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml | 100 ug |

**Bulk quote request**

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| **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** | P40939 |
| **Applications** | ELISA : 0.1-0.5ug/ml<br>Flow Cytometry : 1-3ug/million cells<br>Immunofluorescence : 5ug/ml<br>Immunohistochemistry : 2-5ug/ml<br>Immunocytochemistry : 5ug/ml<br>Western Blot : 0.25-0.5ug/ml |
| **Limitations** | This HADHA antibody is available for research use only. |

## Description

HADHA antibody detects Hydroxyacyl-CoA dehydrogenase trifunctional multienzyme complex subunit alpha, a mitochondrial enzyme essential for fatty acid beta-oxidation. The UniProt recommended name is Trifunctional enzyme subunit alpha, mitochondrial (HADHA), which functions as part of the mitochondrial trifunctional protein (MTP) complex. This alpha subunit possesses both long-chain enoyl-CoA hydratase and long-chain 3-hydroxyacyl-CoA dehydrogenase activities, while its partner, HADHB, provides 3-ketoacyl-CoA thiolase activity.

Functionally, HADHA antibody recognizes a 79 kDa protein localized to the inner mitochondrial membrane, where it catalyzes key reactions in the beta-oxidation pathway of long-chain fatty acids. HADHA converts long-chain enoyl-CoA substrates to hydroxyacyl-CoA and subsequently to 3-ketoacyl-CoA intermediates, producing NADH and acetyl-CoA for energy generation. This process is vital for sustaining ATP production in tissues with high oxidative energy requirements, including heart, skeletal muscle, and liver. Disruption of HADHA function impairs mitochondrial fatty acid oxidation,

leading to metabolic imbalance and accumulation of toxic lipid intermediates.

The HADHA gene is located on chromosome 2p23.3 and encodes one of the two subunits forming the hetero-octameric mitochondrial trifunctional protein complex. HADHA and HADHB assemble into four alpha-beta dimers that operate cooperatively in fatty acid oxidation. The enzyme's activity is critical during fasting and prolonged exercise when fatty acids serve as the major energy source. Mutations in HADHA result in long-chain 3-hydroxyacyl-CoA dehydrogenase deficiency (LCHAD deficiency), a metabolic disorder characterized by hypoglycemia, hepatic dysfunction, and cardiomyopathy.

HADHA antibody is used to investigate mitochondrial metabolism, lipid oxidation, and energy regulation. It is particularly valuable in studies of metabolic disorders, mitochondrial dysfunction, and lipid-associated diseases. In cellular research, HADHA serves as a mitochondrial marker and is often co-stained with oxidative phosphorylation proteins to assess organelle function. Reduced HADHA expression is associated with defective energy metabolism in diabetes, fatty liver disease, and heart failure. Conversely, upregulation may indicate compensatory enhancement of fatty acid catabolism under stress.

Structurally, HADHA contains an N-terminal enoyl-CoA hydratase domain and a C-terminal 3-hydroxyacyl-CoA dehydrogenase domain, both dependent on NAD+ for catalytic turnover. Post-translational regulation of HADHA involves acetylation, phosphorylation, and interactions with acyl-CoA binding proteins that modulate substrate specificity. Its proper function is essential for maintaining mitochondrial redox balance and preventing lipid-induced oxidative stress.

NSJ Bioreagents provides HADHA antibody reagents validated for research use in mitochondrial biology, energy metabolism, and metabolic disease models. These antibodies enable high-specificity detection in western blotting, immunohistochemistry, and confocal imaging applications.

## Application Notes

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

## Immunogen

E.coli-derived human HADHA recombinant protein (Position: R20-N758) was used as the immunogen for the HADHA antibody.

## Storage

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