

**Acetyl-CoA Carboxylase-1 (ACC-1) Antibodies**

Cat. # ACC11-S	Rabbit Anti-Human ACC-1, antiserum #1	<b>SIZE:</b> 100 ul
Cat. # ACC11-A	Rabbit Anti-Human ACC-1 IgG # 1 (Affinity pure)	<b>SIZE:</b> 100 ug
Cat. # ACC11-P	Human ACC-1 Control/blocking peptide	<b>SIZE:</b> 100 ug

In cells, excess of metabolic fuel is converted into fatty acids in cytosol and oxidized later in mitochondria to generate ATP and acetyl-CoA. In fatty acid synthesis, catalytic formation of malonyl-CoA (precursor for long-chain fatty acyl-CoA, LCFA-CoA) from acetyl-CoA by **Acetyl-CoA carboxylase (ACC-1)** is the rate limiting step. The translocation of LCFA-CoA from cytosol to mitochondria is catalyzed by two **carnitine palmitoyl transferases (CPT-1 & CPT-2)** and regulated by **ACC-2**, the rate limiting step of mitochondrial fatty acid  $\beta$ -oxidation. Activities of ACC-1 and 2 are regulated by their phosphorylation by 5'-AMP-activated protein kinase (**AMPK**). Diabetes deranges AMPK master-switch and represses the ACC-1 gene-expression and stimulates excessive fatty acid oxidation which in turn interferes with glucose metabolism.

**ACC1** (rat 2345-aa, human 2345-aa, ~265 kDa, chromosome 17q21) is also known as **ACC-alpha** is a cytosolic enzyme, enriched in liver, adipose and lactating mammary tissues. ACC-1 from rat, human, chicken are over 90% identical. ACC1 catalyzes the carboxylation of acetyl-CoA to form malonyl-CoA, the rate-limiting step in the biogenesis of LCFA-CoA. ACC1 carries three functions: biotin carboxyl carrier protein, biotin carboxylase, and carboxyltransferase (catalytic activity). Two variants of ACC-1 have been described: one with 8 additional amino acids commencing at Pro-1196, and the other which is 59 aa shorter than the predominant fat and liver isoform exist in mammals. The presence of 8 additional amino acids inhibits the in vitro phosphorylation of the Ser1200 by camp-dependent kinase. The two ACC1 isoform are differentially regulated in a tissue specific manner and under different physiological conditions. The activity of ACC1 is finely regulated by hormone dependent phosphorylation and dephosphorylation.

**Source of Antigen and Antibodies**

<b>Antigen</b>	15aa peptide of Human ACC-1 (gene accession # Q13085); <b>Designated (ACC11-P)</b> conjugated to KLH. Epitope location ~ N-terminus
<b>Ab Host/type</b>	Rabbit, polyclonal Unpurified serum (cat# ACC11-S) Aff pure IgG ( <b>cat #ACC11-A</b> ) purified over antigen-agarose column
<b>2-ab</b>	<b>Goat Anti-rabbit IgG-HRP</b> cat # 20320 (AP, biotin, FITC conjugates also available)
<b>-ve control</b>	<b># 20009-1, Rabbit (non-immune) IgG, purified, suitable for ELISA, Western, IHC as -ve control</b>

**Form & Storage of Antibodies/Peptide Control**

**Antiserum (unpurified)**  
100ul solution lyophilized powder  
Supplied in Buffer: 0.05% azide  
**Reconstitute** powder in 100 ul PBS

**Affinity pure IgG**

100 ug/100ul solution lyophilized powder  
Supplied in **Buffer:** PBS+0.1% BSA  
**Reconstitute powder** in PBS at 1mg/ml

**Control/blocking peptide**

100 ug/100 ul solution lyophilized powder  
Supplied in Buffer: PBS pH 7.5,  
**Reconstitute powder in PBS at 1 mg/ml.**

**Storage**

**Short-term:** unopened, undiluted liquid vials at -20OC and powder at 4oC or -20oC..

**Long-term:** at -20C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

**Stability:** 6-12 months at -20oC or below.

**Shipping:** 4oC for solutions and room temp for powder

**Recommended Usage**

**Western Blotting** (1:1K-5K for neat serum and 1-10 ug/ml for affinity pure using Chemiluminescence technique).

**ELISA** (1:10K-1:100K; using 50-100 ng of control peptide/well).

**Histochemistry & Immunofluorescence:** not tested. We recommend the use of affinity pure antibody at 2-20 ug/ml.

**Specificity & Cross-reactivity**

The ACC11-P peptide is 100% conserved in mouse, rat, human, bovine, pig, ovine and 86% in chicken ACC-1. No significant sequence homology of ACC11-P is seen with ACC-2 or any other protein. Antibody reactivity in various species is not known. The ACC11-P control peptide, because of its low mol. Wt (<3 kDa), is not suitable for Western. It should be used for ELISA or antibody blocking experiments (use 5-10 ug control peptide per 1 ug of aff pure IgG or 1 ul antiserum) to confirm antibody specificity (see detailed protocol at web site).

**General References:** (1) Munday MR et al (1988) Eur. J. Biochem. 175, 331; Abu-Elheiga et al. (2000) PNAS 97, 1444; Lee et al. (2001) J. Biol. Chem 276, 2576; Abu-Elheiga et al. (1997) J. Biol. Chem. 272, 10699; Hoppel et al. (2001) ABB 392,321; Fraser & Zammit (1998) Biochem. J. 329, 225. Stapleton et al. (1996) J. Biol. Chem. 271, 611; Mitchelhill et al. (1997) J. Biol. Chem. 272, 24475

*\*This product is for In vitro research use only.*

**Related materials available from ADI**

Antibodies: ACC-1, ACC2, CPT-1 and CPT2, AMPK1 & 2.

ACC11-S-A 70626A

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