CELL APPLICATIONS, INC.

Phospho-ACC1 (Ser79)/ACC2 (Ser221) Antibody

Cat. No. CG1001

Applications:	**WB, ELISA**
Detected MW:	**265 kDa**
Species & Reactivity:	**Human, Rat, Mouse**
Isotype:	**Rabbit IgG**

BACKGROUND

Acetyl-CoA carboxylase (ACC or ACC1) catalyzes the biotin-dependent carboxylation of acetyl-CoA to produce malonyl-CoA. This is the first and the committed step in the biosynthesis of long-chain fatty acids. The most important function of ACC is to provide the malonyl-CoA substrate for the biosynthesis of fatty acids. The activity of ACC can be controlled at the transcriptional level as well as by small molecule modulators and covalent modification.[1] A second isoform of ACC, ACC2, is associated with the mitochondrial membrane and produces malonyl-CoA that regulates fatty acid oxidation by potently inhibiting the carnitine palmitoyltransferases (CPT-Is). Mice that are deficient in ACC2 have elevated fatty acid oxidation and reduced body fat content and body weight, despite consuming more food.[2] Therefore, inhibitors against ACCs might be efficacious for the treatment of obesity and diabetes (metabolic syndrome). The activity of the enzyme is also controlled by reversible phosphorylation. The enzyme is inhibited if phosphorylated; the phosphorylation can result when the hormones glucagon or epinephrine bind to their receptors, but the main cause of phosphorylation is due to a rise in AMP levels when the energy status of the cell is low, leading to the activation of the AMPK.[3]

The amino acid sequences of ACC1 and ACC2 had about 60 and 80% identity, respectively. Ser78 and Ser80, which were found to be critical for the phosphorylation and subsequent inactivation of rat ACC (Ser77 and Ser79 of rat ACC1), are conserved in ACC2 and are represented as Ser219 and Ser221, respectively. On the other hand, Ser1201, which is also a phosphorylation site in rat ACC1 (Ser1200 of rat ACC1), is not conserved in ACC2. AMPK phosphorylates ACC1 at multiple residues, although phosphorylation at a single serine Ser-80 in ACC1 accounts for the resulting inactivation. AMPK also inactivates ACC2 via phosphorylation at the site equivalent to Ser-80 on ACC1 (Ser-221 in human ACC2)[4].

References:

1. Tong L: Cell. Mol. Life Sci. 62:1784-1803, 2005.
2. Choi CS et al.: Proc. Natl. Acad. Sci. USA, 104: 16480-16485, 2007.
3. Janovska A et al.: Mol. and Cell. Endocrinol. 284:1-10, 2008.
4. Hadad, S.M. et al: BMC Cancer 9:307, 2007

TECHNICAL INFORMATION

Source:
Phospho-ACC2 (Ser221) Antibody is a rabbit antibody raised against a short peptide from human ACC2 sequence surrounding and containing phospho-Ser221.

Specificity and Sensitivity:
This antibody detects endogenous levels of phospho-ACC2 (Ser221) proteins in normal cell lysates. This antibody cross-reacts with phospho-ACC1 (Ser79) proteins.

Storage Buffer: Rabbit IgG in phosphate buffered saline (without Mg2+ and Ca2+), pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.

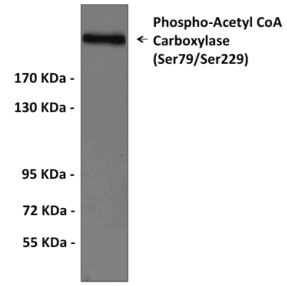
Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

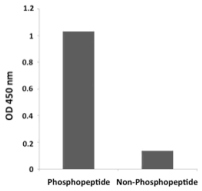
APPLICATIONS

Application:	*Dilution:
WB	1:500-1:1000
IP	n/d
IHC	n/d
ICC	n/d
ELISA	1:1000

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

QUALITY CONTROL DATA





Top: Western blot analysis of extracts from HEK 293 cells treated with 200 ng/mL EGF for 5 minutes.
Bottom: ELISA for Immunogen Phosphopeptide (left) and Non-Phosphopeptide (right).