SANTA CRUZ BIOTECHNOLOGY, INC.

COQ2 (2B4): sc-517107

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

COQ2 is a 374 amino acid protein encoded by the mouse gene Coq2. Co-enzyme Q (COQ) is an isoprenoid quinine that functions as an electron carrier in the mitochondrial respiratory chain in eukaryotes. COQ proteins having shorter isoprenoid chains, especially COQ1 and COQ2, selectively inhibit the *in vitro* activity of eukaryotic DNA polymerase (pol) γ, which is a mitochondrial pol. These compounds do not influence the activities of nuclear DNA replicative pols such as α, δ and ε, and nuclear DNA repair-related pols such as β, ι, κ and λ. COQ may also inhibit DNA topoisomerase II (Topo II) activity, although the enzymatic characteristics, including modes of action, amino acid sequences and three-dimensional structures, are markedly different from those of pol γ. These compounds do not inhibit the activities of prokaryotic pols such as *Escherichia coli* pol I, and other DNA metabolic enzymes such as HIV reverse transcriptase, T7 RNA polymerase and bovine deoxyribonuclease I. COQ1, which has the shortest isoprenoid chains, has the strongest inhibitory effect on pol γ and Topo II activities among COQ1-COQ10, with 50% inhibitory concentration (IC50) values of 12.2 and 15.5 microM, respectively. COQ1 has been shown to prevent the growth of human promyelocytic leukemia cells, HL-60.

REFERENCES

1. Forsgren, M., et al. 2004. Isolation and functional expression of human COQ2, a gene encoding a polyprenyl transferase involved in the synthesis of COQ. Biochem. J. 382: 519-526.
2. Esaka, Y., et al. 2005. Coenzyme Q_2 induced p53-dependent apoptosis. Biochim. Biophys. Acta 1724: 49-58.
3. Yonezawa, Y., et al. 2006. Inhibitory effect of coenzyme Q on eukaryotic DNA polymerase γ and DNA topoisomerase II activities on the growth of a human cancer cell line. Cancer Sci. 97: 716-723.
4. Quinzii, C., et al. 2006. A mutation in para-hydroxybenzoate-polyprenyl transferase (COQ2) causes primary coenzyme Q_{10} deficiency. Am. J. Hum. Genet. 78: 345-349.
5. Montero, R., et al. 2006. Muscle coenzyme Q_{10} concentrations in patients with probable and definite diagnosis of respiratory chain disorders. Biofactors 25: 109-115.

CHROMOSOMAL LOCATION

Genetic locus: COQ2 (human) mapping to 4q21.23.

SOURCE

COQ2 (2B4) is a mouse monoclonal antibody raised against amino acids 84-132 representing partial length COQ2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

COQ2 (2B4) is recommended for detection of COQ2 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for COQ2 siRNA (h): sc-62144, COQ2 shRNA Plasmid (h): sc-62144-SH and COQ2 shRNA (h) Lentiviral Particles: sc-62144-V.

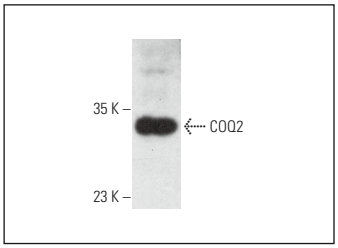
Molecular Weight of COQ2 isoforms: 45/40/35 kDa.

Positive Controls: human skeletal muscle extract: sc-363776.

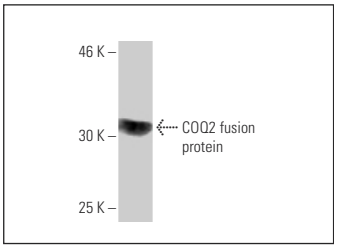
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



COQ2 (2B4): sc-517107. Western blot analysis of COQ2 expression in human skeletal muscle tissue extract.



COQ2 (2B4): sc-517107. Western blot analysis of human recombinant COQ2 fusion protein.

SELECT PRODUCT CITATIONS

1. Mao, C., et al. 2021. DHODH-mediated ferroptosis defence is a targetable vulnerability in cancer. Nature 593: 586-590.
2. Wu, S., et al. 2022. A ferroptosis defense mechanism mediated by glycerol-3-phosphate dehydrogenase 2 in mitochondria. Proc. Natl. Acad. Sci. USA 119: e2121987119.
3. Lu, Y., et al. 2023. Gongying-Jiedu-Xiji recipe promotes the healing of venous ulcers by inhibiting ferroptosis via the CoQ-FSP1 axis. Front. Pharmacol. 14: 1291099.
4. Mao, C., et al. 2024. Unraveling ETC complex I function in ferroptosis reveals a potential ferroptosis-inducing therapeutic strategy for LKB1-deficient cancers. Mol. Cell 84: 1964-1979.e6.

RESEARCH USE

For research use only, not for use in diagnostic procedures.