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Product Information

Anti-UCP-1
produced in rabbit, affinity isolated antibody

Catalog Number **U6382**

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Synonym: Anti-Uncoupling Protein 1

Product Description
Anti- UCP-1 is produced in rabbit using a synthetic peptide corresponding to amino acids 145-159 of human UCP-1 with N-terminal cysteine added, conjugated to KLH. The corresponding sequence is identical in rat and mouse UCP-1. The antibody is affinity-purified using the immunogen peptide immobilized on agarose.

Anti-UCP-1 specifically recognizes human, mouse and rat UCP-1 by immunoblotting (~32 kDa). Additional weak bands may be detected in some preparations of brown adipose tissue (BAT) extracts by immunoblotting. Staining of the UCP-1 band is specifically inhibited with the immunizing peptide. The product is also useful for the detection of UCP-1 by immunohistochemistry. The epitopes recognized are compatible with routine formalin-fixation and paraffin-embedding.

Mitochondrial oxidative phosphorylation makes ATP synthesis possible using the energy available from substrate oxidation at the respiratory chain. These processes are coupled through the proton electrochemical potential gradient generated during the transfer of electrons from the substrate to oxygen. The uncoupling proteins (UCPs) are mitochondrial inner membrane proteins that are considered to be transporters functioning as enzymatic uncouplers of oxidative phosphorylation. They are capable of returning protons pumped by the respiratory chain to the mitochondrial matrix.[1-3] Uncoupling proteins currently comprise UCP-1, -2, -3, -4, and -5. UCP-1 is a 32 kDa protein that is active as a proton channel-forming dimer. It can bind purine nucleotides and is capable of being stimulated by fatty acids. Proton transport by UCP-1 has been shown to depend on CoQ (ubiquinone) as an obligatory co-factor.[4-7]

UCP-1 is exclusively expressed in BAT in rodents and in neonates where it is regulated by norepinephrine and thyroid hormones.[8] Stimulated BAT is able to dissipate energy as heat via uncoupled mitochondrial respiration. The liberated heat can serve several physiological functions, e.g., for body heating during emergence from hibernation or during cold exposure, for burning body fat and consequently for body weight regulation.

Reagent
Supplied as a 1.0-1.5 mg/ml solution in 0.01 M phosphate buffered saline, pH 7.4, containing 1% BSA, and 15 mM sodium azide.

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices**.**

Storage/Stability
For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at –20 °C. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile
Immunoblotting: a minimum working antibody dilution of 1:1,000 is determined using an extract of rat brown adipose tissue mitochondria.

Immunohistochemistry: a minimum working antibody dilution of 1:500 is determined using protease-digested, formalin-fixed, paraffin-embedded sections of mouse brown adipose tissue.

Note: In order to obtain the best results in various techniques and preparations, we recommend determining optimal working dilutions by titration.

References

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