Synthelis ©

Transporters

Protein Catalogue

UCP1 - Mitochondrial brown fat uncoupling protein 1

Product specification

Acronym: UCP1
Class: Transporter
Origin: Mitochondrial
Molecular weight: 33 kDa
Application: Screening & Display Technologies

Purity: >60%
Activity: Proven
Length: Full Length
TMD: 6
Biological function: Thermogenesis

Product description

UCP1 is a mitochondrial transporter protein that create proton leaks across the inner mitochondrial membrane, thus uncoupling oxidative phosphorylation from ATP synthesis. As a result, energy is dissipated in the form of heat.

Protein Source: UCP1 wild type protein

Fig.1: AA sequence of UCP1 protein

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        10         20         30         40         50
MGGLTASDVH PTLGVQLFSA GIAACLADVI TFPLDTAKVR LQVQGECPTS
        60         70         80         90        100
SVIRYKGVLG TITAVVKTEG RMKLYSGLPA GLQRQISSAS LRIGLYDTVQ
       110        120        130        140        150
EFLTAGKETA PSLGSKILAG LTTGGVAVFI GQPTEVVKVR LQAQSHLHGI
       160        170        180        190        200
KPRYTGTYNA YRIIATTEGL TGLWKGTTPN LMRSVIINCT ELVTYDLMKE
       210        220        230        240        250
AFVKNNILAD DVPCHLVSAL IAGFCATAMS SPVDVVKTRF INSPPGQYKS
       260        270        280        290        300
VPNCAMKVFT NEGPTAFFKG LVPSFLRLGS WNVIMFVCFE QLKRELSKSR

QTMDCAT
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Affinity Tag: Histidine tag fused to the N-terminal end of the protein.

Production conditions: UCP1 is expressed in a cell-free expression system in the presence of lipid vesicles. 100 µg can be produced and qualified in about 1 week.

Quality analysis

Purity: Typically >60% as determined by SDS-Page and Coomassie Blue staining.

Purification procedure: As standard, UCP1 proteoliposomes are purified on a sucrose gradient. Further purification steps can be added if required.

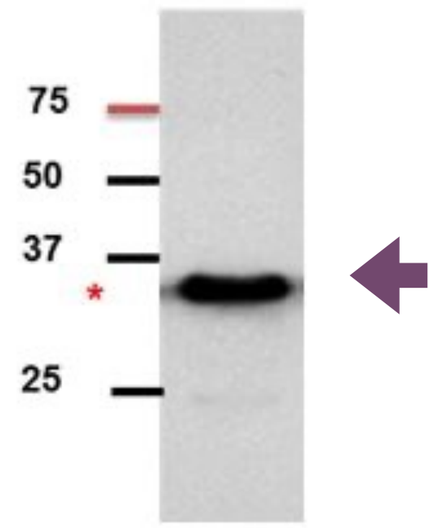

Fig.2: Proteoliposome UCP1 after purification (Western blot identification).

Assessment of functionality

Cell-free expression systems provide a real alternative for membrane protein expression, enabling the study of structure and function of membrane proteins.

Methods: SPR ATP binding assay

Results:

The binding properties of UCP1 proteoliposomes have been validated using Horiba Scientific SPR ATP binding assay. Small molecule were injected on a biochip grafted with UCP1 biotinylated proteoliposomes. We detected specific interactions between UCP1 proteoliposomes and different concentrations of small molecules. The signal was dose dependent. Different liposome composition were tested. A positive and dose dependant signal was observed with the liposome composition D and the K_D was estimated to 350 µM.

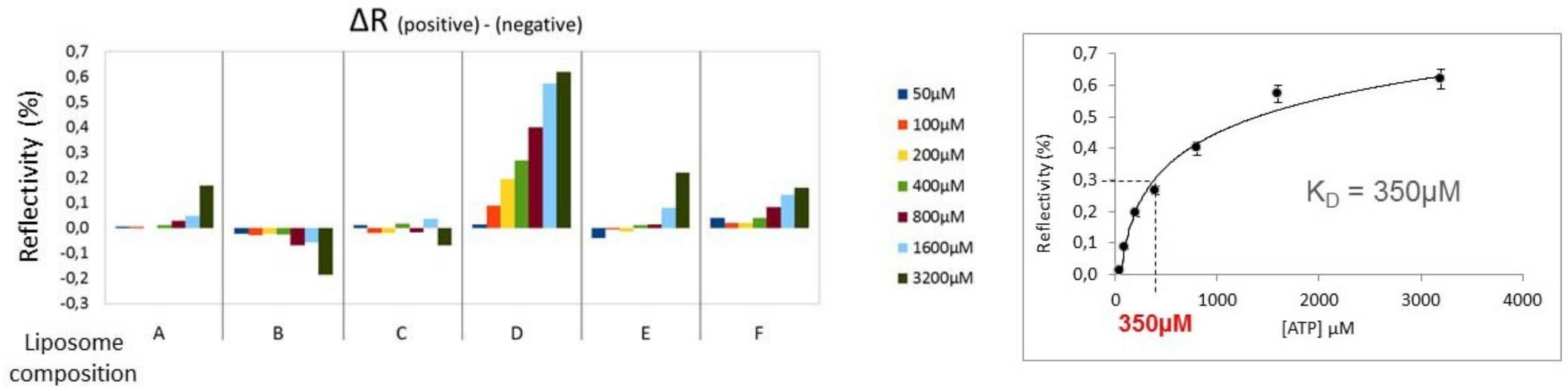

Fig.3: SPR results. A /Sensorgrams obtained at different concentrations of small molecules and with different liposome composition. B/ Variations of reflectivity obtained at steady state. B) Refelectivity after negative control substracting.

Formulation

Buffer: Available in Tris 50mM, pH 7.5. Other buffers or customized formulation can be provided upon request.

Customized Hydrophobic matrix: Customized formulation with specific lipids like PEGylated or biotinylaed lipids can be used upon request, as well as targeting molecules.

Storage/Stability: Store at +4°C for up to one week or several months at -80°C. Aliquot for storage. Do not freeze-thaw after aliquoting.

Use restrictions: For life science research use only.

Available sizes: 10µg, 20µg ,100 µg , 200 µg, 500 µg,bulk

Need a specific amount, a quote or any additional information? Contact-us

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