UCP1 - Mitochondrial brown fat uncoupling protein 1 # PL047

Product specification

Acronym: UCP1
Synonyms: Synonyms
Origin species : Mitochondrial
Protein reference : P25874 (UniProtKB)
NP_068605.1 (GenBank)
Family: Transporter

Expression system: E.coli based CFPS
Format: Proteoliposomes
Protein sequence: Met1 – Thr307
Tag : 6xHis tag (N-terminal)
Cleavage site: Factor Xa
Product MW: 35.1 kDa
Application: Drug screening & discovery, antibody development, structural biology

Product description

UCP1 is a mitochondrial transporter protein that creates proton leaks across the inner mitochondrial membrane, thus uncoupling oxidative phosphorylation from ATP synthesis. As a result, energy is converted into heat.

Recombinant protein sequence

His tag – factor X cleavage site –
MGGLTASDVHPTLGVQLFSAGIAACLADVITFPLDTAKVRLQVQGECPTSSVIRYKGVLGTITAVVKTEGRMKLYSGLPAGLQRQISS
ASLRIGLYDTVQEFLTAGKETAPSLGSKILAGLTTGGVAVFIGQPTEVVKVRLQAQSHLHGIKPRYTGTYNAYRIIATTEGLTGLWKG
TTPNLMRSVIINCTELVTYDLMKEAFVKNNILADDVPCHLVSALIAGFCATAMSSPVDVVKTRFINSPPGQYKSVPNCAMKVFTNE
GPTAFFKGLVPSFLRLGSWNVIMFVCFEQLKRELSKSRQTMDCAT

Quality analysis

Purity: >60% (determined by Coomassie Blue stained SDS-PAGE)

Liposomes are directly incorporated into the Cell-Free reaction, thus, some impurities from the *E.coli* lysate might be present in the proteoliposomes.
A negative control (proteoliposomes without the protein of interest) can be provided (useful for screening, immunization…).
The purity can be improved by protein expression in detergent and relipidation after purification step(s).

Purification procedure: UCP1 proteoliposomes are purified on a sucrose gradient.

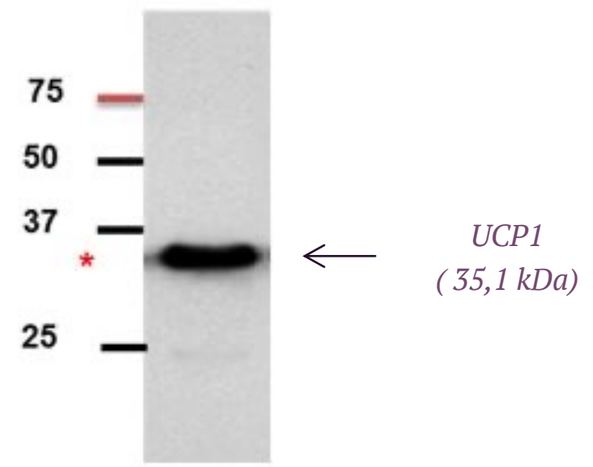

Fig.1: *Identification of UCP1 in proteoliposomes by Western Blot using an anti-6xHis antibody.*

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 molecules 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 compositions were tested. A positive and dose dependent signal was observed with the liposome composition D and the K_D was estimated to 350 µM.

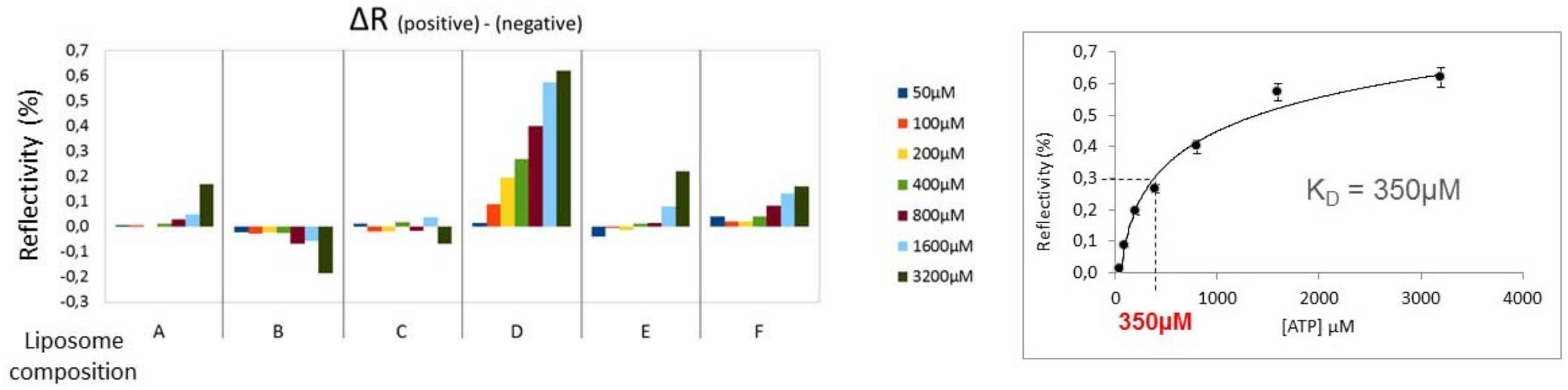

Fig.2: *SPR results. A /Sensorgrams obtained at different concentrations of small molecules and with different liposome compositions. B/ Variations of reflectivity obtained at steady state. B) Reflectivity after negative control subtracting.*

Formulation

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

Customized Hydrophobic matrix: Customized formulation with specific lipids like PEGylated or biotinylated 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: 10 µg, 50 µg, 100 µg, customized quantity on request.

Need a specific amount, a quote or any additional information?
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