

Mouse UCP-1 Quantification in Brown Adipose Tissue

in University of Fribourg, Inst. of biochemistry



■ Context

Our research group is working on circadian rhythms and biological clock, especially on their regulations at the molecular level. In this field, Mouse Uncoupling Protein 1 (UCP-1) is a mitochondrial transmembrane channel protein involved in thermogenesis and only found in brown adipose tissue. This study compares UCP-1 quantity between control mice (that are at room temperature during experiment) and mice that are exposed to cold (4°C) during a couple of hours.

■ Material

- Precellys®24
- Precellys® kit CK28 (big ceramic beads)
- Sample : brown adipose tissue (between 30-50mg)
- Buffer : 25mM TrisHCl – 1mM EDTA – 1% Triton X-100
0.5% Na-deoxycholate : 500µl



*30mg of Brown Adipose
Tissue from a 3 month-
old wild type female*

■ Protocol / Parameters

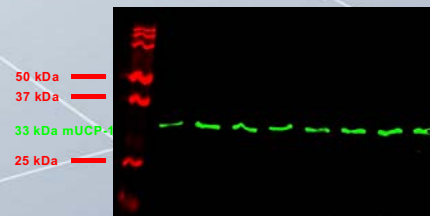
1. Precellys®24 parameters : 5000 rpm, 2 x 50 sec (break 5 sec)
2. Western blot against mouse UCP-1
 - 1st antibody: rabbit anti-UCP-1
 - 2nd antibody: infrared (IR)-labeled anti-rabbit
3. Detection of bands with Odyssey Infrared Imaging System

■ Results

The lanes correspond to 8 different concentrations of total protein in order to control the resolution by using the infrared imaging system. UCP-1 quantification studies enable us to get more informations about body temperature regulation. Results between control and cold-exposed mice remain confidential

■ Conclusion

Precellys is well adapted for the homogenization of adipose tissue and transmembrane proteins can be easily extracted. Sample preparation is now easy. An important gain of time and a protein collection of 100% are the main benefits of the Precellys.



Detection of lanes with Odyssey Infrared Imaging System by using IR-labeled 2nd antibodies. The lanes correspond to 10-30-50-70-20-40-60-80 mg concentrations of total protein.