



Ultrasensitive analysis of mitochondrial respiration and glycolysis STAN 3718

Description

The service provides real-time measurement of the oxygen consumption rate (mitochondrial respiration - Mito Stress) and extracellular acidification (glycolysis - Glyco Stress) using Seahorse XFp technology (Agilent) to analyze globally the bioenergetic state of a cellular system under study. Oxidative phosphorylation and glycolysis are the two main energy-producing metabolic pathways in cells. The cells have the ability to make a "switch" between the two pathways adapting to changes in the environment and/or to particular metabolic demands.

In this way, using minimum amounts of sample (derived from patients or others from animal models), it is possible to obtain the metabolic parameters of interest. The services can be of two types in different modalities as agreed with the client:

. Mito Stress service

With the data resulting from a Mito Stress test, it is possible to assess oxidative phosphorylation and mitochondrial functionality.

. Glico Stress service

With the data resulting from a Glico Stress test, it is possible to determine the extracellular acidification rate and to assess the parameters of the glycolytic flow. The services are carried out meeting the client's needs, the technical feasibility and the bibliographic background are evaluated, and the experimental run is designed. Technical adjustments are made to the equipment and to the samples provided by the customer. Once the trial runs are performed, a report is delivered including the results in Excel spreadsheet format and a "template" for the user to perform the necessary calculations to obtain the metabolic parameters. The results are delivered the day the experimental run is made.

Equipment

Extracellular flux analyzer (XFp Seahorse)* in 8-well microplate format XFp Seahorse (Agilent) 102745-100 2015

(*) the equipment works with a UPS to guarantee its operation against possible power cuts.

Applications

The fields of application are mainly in IMMUNOLOGY and CANCER. They study the "metabolic switch" in the different cell populations (control vs. cancerous; control vs. infected). The services are applied and of interest in the pharmaceutical industry, which has lines of development in drug design and wants to evaluate mitochondrial toxicity, or improve mitochondrial functionality. In situ respirometry can be used as another parameter to evaluate the toxicity of drugs or natural compounds in a cellular model.

Advantages

Currently, Seahorse technology is the only one developed to perform in situ respirometries using cells in culture. This technique has advantages over conventional respirometry:

- . Evaluates metabolic parameters in the context of a cell culture, maintaining the biological environment;
- . Uses a very small number of cells; simultaneous case-control comparisons can be made; compounds of interest can be injected during the run and their impact at the metabolic level can be evaluated;
- . Once the run is completed, immunohistochemical techniques on post-respirometry cells can be performed.
- . The available equipment is unique in the country.