STANDARDIZATION OF THE ASSESSMENT PROTOCOL OF MITOCHONDRIAL RESPIRATION IN HUMAN PLATELETS

Rațiu D. Corina¹, Petruș T. Alexandra¹,³, Lighezan Rodica²,³, Oana M. Duicu¹,³, Muntean M. Danina¹,³

¹Victor Babeș University of Medicine and Pharmacy, Department of Pathophysiology, Timișoara, Romania  
²Victor Babeș University of Medicine and Pharmacy, Department of Parasitology, Timișoara, Romania  
³Victor Babeș University of Medicine and Pharmacy Center for Translational Research and Systems Medicine, Timișoara, Romania

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OBJECTIVES AND BACKGROUND

The purpose of this study was to standardize the methodology for platelet isolation and measurement of oxygen consumption using high-resolution respirometry.

MATERIALS AND METHODS

The platelet isolation protocol consisted of two consecutive centrifugations of 12 mL blood probes collected from healthy adult females (n = 10) yielding a platelet-rich plasma sample. Respiration was measured at 37°C using the Oxygraph-2k, according to a substrate-uncoupler-inhibitor-titration protocol. Platelets permeabilized with digitonin were allowed to respire in the presence of complex I (glutamate and malate) and II (succinate) substrates.

RESULTS

We obtained a respiratory control ratio of 2.77 ± 3.65 that indicates a good oxidative phosphorylation coupling efficiency.

CONCLUSIONS

In vitro measurement of platelet respiration is a reliable method that can be used to evaluate the human bioenergetic profile. The standardized technique will be used to assess the occurrence of mitochondrial dysfunction in the peripheral blood in the setting of non-communicable diseases.

REFERENCES

