

Dietary cocoa flavanols boosts NAD⁺ metabolism and stimulates mitochondrial biogenesis in skeletal muscle from mice.

F. Daussin¹, A. Cuillerier², J. Tournon³, S. Bensaïd¹, B. Melo⁴, A. Al Rewashdy², K. Menzies², ME. Harper², E. Heyman¹, Y. Burelle².

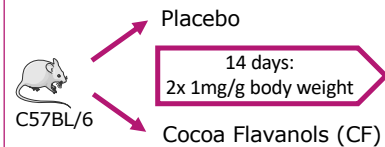
¹ URpSSS, University of Lille, France ; ² Interdisciplinary School of Health Sciences and Faculty of Health Sciences, University of Ottawa, Canada ; ³ Université Clermont Auvergne, INRAE, UMR1019, Unité de Nutrition Humaine (UNH), équipe ASMS, Clermont-Ferrand, France ; ⁴ University Federal of Minas Gerais, UFMG, Brasil.

Introduction

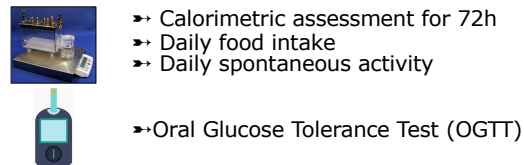
Mitochondrial dysfunctions are widely reported in various diseases and participate in their pathogenesis. Among the natural compounds, cocoa flavanols (CF) are considered as a promising compound to improve mitochondrial function and their consumption has been shown to improve a variety of health indicators such as cardiovascular mortality, insulin resistance or immune function. We assessed the effect of CF supplementation on mitochondrial function and on whole metabolism and we explored whether the NAD metabolism is involved or not.

Methods

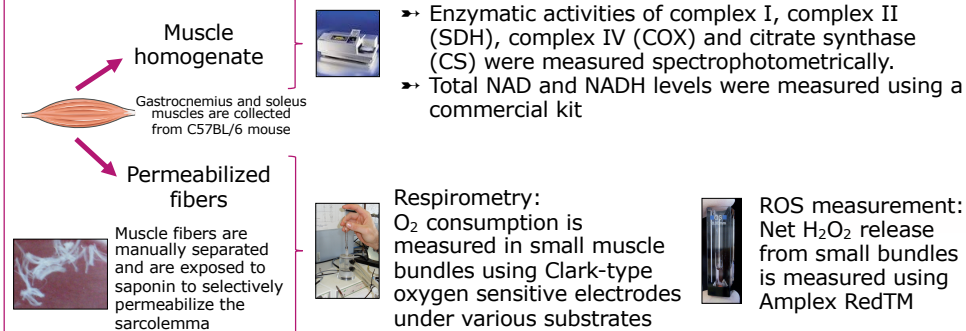
Study design



Whole body metabolism assessment

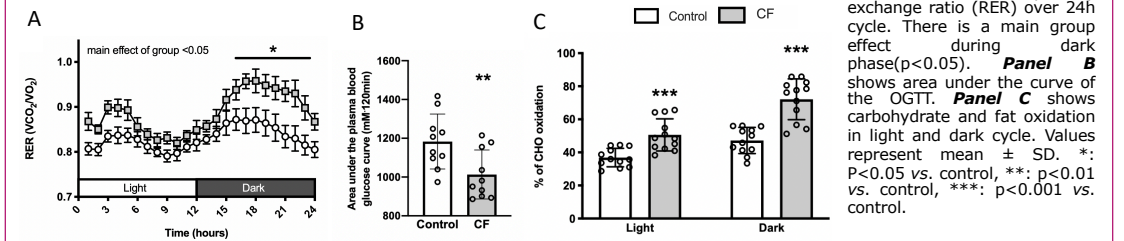


Mitochondrial function and NAD metabolism assessment

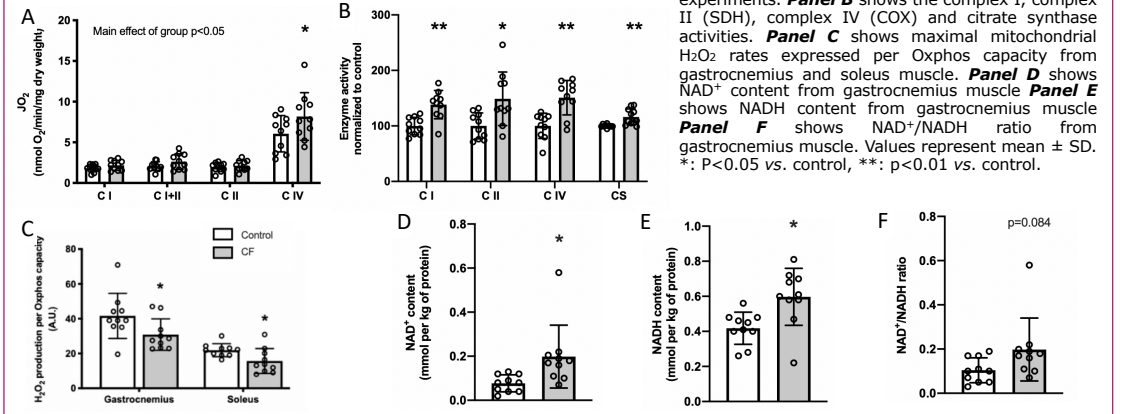


Results

Whole body metabolism



Mitochondrial function and NAD metabolism



Conclusion

CF supplementation boosted the NAD metabolism and improved mitochondrial function which probably contributed to the whole-body metabolism adaptation with a greater ability to use CHO. Future studies should evaluate the interest of CF supplementation strategy in human.