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Publicado por: Imprensa da Universidade de Coimbra

URL persistente: URI:<http://hdl.handle.net/10316.2/44116>

DOI: DOI:https://doi.org/10.14195/2182-7087_ex2018_53

Accessed : 26-Apr-2023 13:26:22

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EFFECTS OF CAFFEINE SUPPLEMENTATION ON LPS-INDUCED EX VIVO CYTOKINE PRODUCTION FOLLOWING EXERCISE

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KEYWORDS: exercise; caffeine; LPS; cytokines

The capacity of leukocytes to produce cytokines upon adequate challenge is highly likely to reflect the capacity of an individual to defend itself against intruding microorganisms⁽¹⁾. Because immune cells are one of the targets of caffeine⁽²⁾, the aim of this study was to determine the effects of caffeine supplementation and exercise on the capacity of whole blood cultures to produce cytokines in response to endotoxin (LPS). In a randomized, double-blinded study design, thirteen healthy well-trained recreational male athletes performed, on two different occasions, a treadmill exercise test (60 minutes at 70% of maximal oxygen uptake) 60 minutes after ingesting 6 mg/kg body mass of caffeine or placebo. EDTA blood samples were taken before exercise, immediately after finishing the exercise and, also, two hours after finishing the exercise test. Whole blood was incubated with or without LPS for 24 h, and cytokine concentrations (IL-10, IL-6, IL-8, IL-1ra and TNF-alfa) were determined in the culture supernatants using commercially available ELISA kits. Monocyte numbers were used to normalize cytokine production (difference between cytokine concentration in stimulated and unstimulated cultures) in a per cell basis ⁽¹⁾. Exercise influenced cytokine culture concentrations, with non-significant increases in IL-10, IL-6 and IL-8 after exercise. However, when the normalized to monocyte number values were considered, no effect of exercise was observed. IL-1ra culture concentration increased after exercise, with higher values after recovery. However, IL-1ra production increased significantly only after recovery. Nor TNF-alfa concentration neither its production was affected by exercise. No sig-

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nificant effects of caffeine supplementation were observed throughout the study. In conclusion, exercise test performed induced a modest influence on endotoxin induced cytokine production in whole blood cultures, with slight increases after exercise. Supplementation with 6 mg/kg body mass of caffeine did not influence the stimulated production of cytokines considered.

ACKNOWLEDGEMENTS

This work has been granted by the Agencia Estatal de Investigación (AEI) and the Fondo Europeo de Desarrollo Regional (FEDER) (DEP2013-45966-P, AEI/FEDER, UE)

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