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Publicado por: Imprensa da Universidade de Coimbra

URL persistente: URI:http://hdl.handle.net/10316.2/44110

DOI: DOI:https://doi.org/10.14195/2182-7087_ex2018_47


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EFFECTS OF CAFFEINE SUPPLEMENTATION ON CYTOKINE RESPONSE TO A TREADMILL EXERCISE TEST

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KEYWORDS: exercise; caffeine; cytokines; IL-6; IL-10

Caffeine is commonly used by endurance athletes to improve performance (1). In addition to the ergogenic effects, it has been suggested that caffeine could influence the cytokine response to exercise (2). The aim of this study was to determine the effects of caffeine supplementation on plasma levels of cytokines, mainly IL-10 and IL-6, in response to exercise. 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. Blood samples were taken before exercise, immediately after finishing the exercise and two hours after finishing the exercise. Plasma concentrations of IL-10, IL-6, IL-1beta, IL-1ra, IL-4, IL-8, IL-12 and IFN-gamma were determined using commercially available ELISA kits. Plasma cortisol and cAMP levels were determined as well. Exercise test induced significant increases in IL-10, IL-6, IL-1beta, IL-1ra, IL-4, IL-8, IL-12 and IFN-gamma plasma levels. Caffeine supplementation influenced only IL-6 and IL-10 levels, with higher concentrations in response to exercise. Furthermore, after recovery, IL-10 levels in control participants returned to basal levels, but remained high in supplemented participants. Caffeine supplementation induced higher cortisol levels after exercise but did not influence plasma cAMP levels. Changes observed in IL-6 and IL-10 in response to exercise and caffeine supplementation are in agreement with previous results obtained during a simulated 15-km run competition (2). These results indicate a significant influence of caffeine supplementation.
tion on the response of two important cytokines such as IL-6, which has been proposed as the key factor in the response to exercise \(^{(3)}\), and IL-10, one of the main anti-inflammatory cytokines, to exercise. However, and in spite of a possible contribution of cortisol, mechanisms involved remain to be elucidated.

**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)

**REFERENCES**