EFFECTS OF SHORT-TERM PREDNISOLONE INTAKE DURING SUBMAXIMAL EXERCISE
Alexandre Arlettaz¹, Hugues Portier¹, Anne Marie Lecoq², Nathalie Rieth¹, Jacques de Ceaurriz³, Katia Collomp¹
(University of Orleans¹, CHR Orleans², département des analyses, AFLD³, France)

EFFECTS OF SHORT-TERM PREDNISOLONE INTAKE DURING SUBMAXIMAL EXERCISE
A. Arlettaz(1), H. Portier(1), A-M. Lecoq(1,2), N. Rieth(1), J. De Ceaurriz(3), K. Collomp(1,3)
(1)Laboratoire Activité Physique, Santé et Performance, UFR STAPS Orléans, 45, Orléans ;
(2)Service « Physiopathologie de l’exercice », CHR La Source, 45 Orléans, France.
(3)Département des Analyses, AFLD, 92 Chatenay-Malabry

The anti-inflammatory effect of corticosteroids is one of the main reasons for their wide use in medicine. However, it is now clear that glucocorticoids are also employed as ergogenic agents. Indeed, for example, they have been shown to induce CNS excitation and euphoria at rest (1) and to increase blood glucose and energy store mobilization (2), inducing the ban of this pharmacological class by the World Antidoping Agency (WADA) after systemic administration. Limited data are, however, available on the direct effect of corticosteroids on athletic performance in healthy athletes. Regarding the results of these studies, it appears that the acute use of neither ACTH (3) or prednisolone (4) does affect performance during maximal or intense submaximal exercise. Only one study has focused on the effects of short-term corticosteroid intake (4.5 days) (5) during maximal exercise without demonstrating any ergogenic effect of the treatment. Moreover, no published information on endurance performance and on eventual hormone and/or metabolism corticosteroid interaction(s) is available for submaximal exercise after short-term systemic administration. The purpose of this study is therefore to examine the prednisolone’s ergogenic and metabolic effects during submaximal exercise.

Ten recreational male athletes completed two cycling trials at 70-75% peak O2 consumption until exhaustion after either placebo (Pla, lactose) or oral prednisolone (Pred, 60mg/day for 1 wk) treatment, according to a double-blind and randomized protocol. Blood samples were collected at rest, during exercise and recovery to determine ACTH, growth hormone (GH), prolactin (PRL), DHEA, insulin, blood glucose and lactate values.

Time of cycling was significantly increased after chronic Pred treatment. Pred intake significantly lowered basal, exercise and recovery ACTH, DHEA and PRL concentrations whereas GH concentrations appeared significantly lowered by Pred after 30 min of exercise. Blood glucose and insulin were significantly (P<0.05) increased by Pred respectively during the whole experiment and until 30 min of exercise. Blood lactate concentrations were higher after Pred vs Pla at 10 min of exercise until 10 min of recovery (P<0.05).

From these data, short-term prednisolone intake did appear to significantly improve performance during submaximal exercise with concomitant alteration in hormonal and metabolic responses. Further studies will be necessary to elucidate the mechanisms of these hormonal and metabolic changes and to determine whether the changes may be associated with the marked performance improvement obtained.

REFERENCES

Keywords: Doping, Corticosteroids