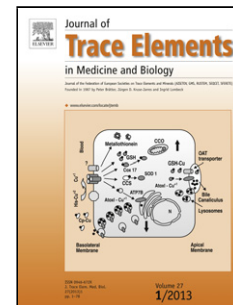


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Influence of an exercise until exhaustion in serum and urinary concentrations of toxic minerals among professional athletes, a preliminary approach.

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Abstract

The aim of the present survey was to determine differences in the serum and urinary concentrations of several toxic trace elements (As, Be, Cd, Cs and Pb) between long distance runners and non-sportmen living in the same area of Extremadura (Spain) in basal conditions as well as after the performance of a maximal effort test until exhaustion.

21 Spanish national long-distance runners were recruited before the start of their training season and 26 untrained students. All of them had similar ages. The effort test consisted in running on a treadmill incrementally in stages, until exhaustion. Serum and urine analysis of trace metals was performed by inductively coupled plasma mass spectrometry (ICP-MS).

In the statistics the urine and blood basal concentrations was analyzed first using Student T test. Then the differences between the pre and post-test values were analyzed using Wilcoxon test. The serum concentrations of Be ($p < 0.001$), Cd ($p < 0.01$), Cs ($p < 0.001$) and Pb ($p < 0.001$) were higher in the athletes than the control groups in basal conditions. In relation to the exercise, the results showed that there were lower serum concentrations of Be, Cd and Pb after the test, but without statistically significance, in both groups. Cs ($p < 0.001$) concentrations were statistically lower after the exercise tests in both groups, but if the parameters were corrected in relation to hematocrit and hemoglobin concentrations the differences were significant only among the athletes.

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