

## **Increase of pro-oxidants with no evidence of lipid peroxidation in exhaled breath condensate after a 10-km race in non-athletes.**

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### **Abstract**

It is a well-established fact that exercise increases pro-oxidants and favors oxidative stress; however, this phenomenon has been poorly studied in human lungs. Pro-oxidative generation ( $H_2O_2$ ,  $NO_2^-$ ), lipid peroxidation markers (MDA), and inflammation (pH) in exhaled breath condensate (EBC) have been determined through data from 10 active subjects who ran 10 km; samples were obtained immediately before, at 20, and at 80 min post-exertion. In EBC, the concentration of  $H_2O_2$  at 80 min post-exertion was increased.  $NO_2^-$  concentration showed a tendency to increase at 80 min post-exertion, with no variations in MDA and pH. No variations of  $NO_2^-$  were found in plasma, while there was an increase of  $NO_2^-$  at 80 min post-exertion in the relation between EBC and plasma.  $NO_2^-$  in EBC did not correlate to plasmatic  $NO_2^-$ , while it did correlate directly with  $H_2O_2$  in EBC, suggesting a localized origin for the exercise-related  $NO_2^-$  increase in EBC. MDA in plasma did not increase nor correlate with MDA in EBC. In conclusion, high-intensity exercise increases lung-originated pro-oxidants in non-athlete subjects with no evidence of early lipid peroxidation and changes in the pH value in EBC.