

Lung oxidative stress as related to exercise and altitude. Lipid peroxidation evidence in exhaled breath condensate: A possible predictor of acute mountain sickness

Araneda, O. F.

García, C.

Lagos, N.

Quiroga, G.

Cajigal, J.

Salazar, M. P.

Behn, C.

Lung oxidative stress (OS) was explored in resting and in exercising subjects exposed to moderate and high altitude. Exhaled breath condensate (EBC) was collected under field conditions in male high-competition mountain bikers performing a maximal cycloergometric exercise at 670 m and at 2,160 m, as well as, in male soldiers climbing up to 6,125 m in Northern Chile. Malondialdehyde concentration [MDA] was measured by high-performance liquid chromatography in EBC and in serum samples. Hydrogen peroxide concentration [H₂O₂] was analysed in EBC according to the spectrophotometric FOX2 assay. [MDA] in EBC of bikers did not change while exercising at 670 m, but increased from 30.0 ± 8.0 to 50.0 ± 11.0 nmol l⁻¹ ($P < 0.05$) at 2,160 m. Concomitantly, [MDA] in serum and [H₂O₂] in EBC remained constant. On the other hand, in mountaineering soldiers, [H₂O₂] in EBC under resting conditions increased from 0.30 ± 0.12 μ mol l⁻¹ at 670 m to 1.14 ± 0.29 μ mol l⁻¹ immediately on return from the mountain.