Objective.-This study investigated the effects of 2 potentially "oxygen promoting" dietary supplements on hypoxia and oxidative stress at a simulated altitude of 4600 m.

Methods.-Fifteen volunteers (ages 20-33) received 3 separate 60-minute hypoxic exposures by breathing 13.6% oxygen at an ambient barometric pressure of 633 mm Hg (simulating the partial pressure of oxygen at 4600 m elevation). Each subject received, in random order, treatments of a 7-day supply of placebo, Rhodiola rosea, and an acute dose of stabilized oxygen dissolved in water. Arterialized capillary blood oxygen samples (PcO2) were measured at baseline and at 30 and 60 minutes of exposure. Pulse oximeter oxyhemoglobin saturation (SaO(2)) was measured at baseline and at every 10 minutes of hypoxic exposure. Oxidative stress markers measured included baseline and 60-minute exposure serum lipid peroxides (LPO) and urine malondialdehyde (MDA).

Results.-For each treatment group, PcO2 decreased by approximately 38% from baseline to 60-minute hypoxic exposure. Similarly, SaO(2) also decreased among groups from approximately 97 to 81%. Serum lipid peroxides increased significantly in the placebo group and decreased significantly from baseline in response to the stabilized oxygen treatment (P = .02); there was a trend for decreased LPO with the Rhodiola treatment (P = .10). There were no significant changes for MDA among groups.

Conclusions.-The 2 dietary supplements investigated did not have a significant effect on blood oxygenation after 60 minutes of sedentary hypoxic exposure. Hypoxia-induced oxidative stress was observed in the control group only. Both supplements appeared not to increase oxidative stress and may decrease free radical formation after hypoxic exposure compared with the control.