Bader N, Bosy-Westphal A, Koch A, Mueller MJ. Influence of vitamin C and E supplementation on oxidative stress induced by hyperbaric oxygen in healthy men. Ann. Nutr. Metab. 2006;50(3):173-6. Epub 2006 Jan 10.

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AIM: To investigate the effect of a 4-week vitamin C and E supplementation on oxidative stress induced by hyperbaric oxygen (HBO). METHODS: 19 healthy men were exposed to 3 sequential protocols, i.e. HBO (100% O2, 2.4 bar, 131 min) before (T1) and after 4 weeks of daily supplementation with 500 mg slow-release vitamin C and 272 IU vitamin E (T2). A normoatmospheric protocol (21% O2, 1.0 bar, 131 min) served as control treatment (nonexposed). Blood samples were taken before (B) and immediately after (A) treatment. Plasma levels of vitamin A, C, E, beta-carotene, reduced glutathione and malondialdehyde were measured by HPLC. Antioxidative capacity and lipid peroxides in plasma were analyzed by ELISA. RESULTS: HBO decreased vitamin C and antioxidative capacity (T1). At T1, Delta A - B of vitamin C and lipid peroxides was different from nonexposed. Vitamin supplementation increased plasma levels of vitamin C and E by 28 and 37%, respectively. Vitamin supplementation led to decreased concentrations of lipid peroxides and reduced glutathione. After supplementation, HBO decreased vitamin C and reduced glutathione. At T2, Delta A - B of vitamin C and lipid peroxides was significantly different from nonexposed. CONCLUSION: In humans, oxidative stress decreased plasma levels of vitamin C and antioxidative capacity and increased plasma lipid peroxides. Supplementation with vitamin C and E did not prevent these effects. 

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