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α -Lipoic acid supplementation inhibits oxidative damage, accelerating chronic wound healing in patients undergoing hyperbaric oxygen therapy

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Hyperbaric oxygen (HBO) therapy is successfully used for the treatment of a variety of conditions. However, prolonged exposure to high concentrations of oxygen induces production of reactive oxygen species, causing damage to the cells. Thus, antioxidant supplementation has been proposed as an adjuvant to attenuate such deleterious secondary effects. We evaluated the effects of α -lipoic acid (LA) in patients affected by chronic wounds undergoing HBO treatment. LA supplementation efficiently reduces both the lipid and DNA oxidation induced by oxygen exposure. LA exerted its antioxidant activity by directly interacting with free radicals or by recycling vitamin E. An inhibitory effect of LA on the pro-inflammatory cytokine interleukin-6 was observed. Taken together, we demonstrated an adjuvant effect of LA in HBO therapy used for impaired wound healing treatment. We propose that LA may be used to further promote the beneficial effects of HBO therapy.