**The physiologic influences of hyperbaric oxygen therapy with lower pressure and oxygen concentration than previous method in dogs**

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**Abstract:** To verify the influences of hyperbaric oxygen therapy with lower pressure and concentration oxygen than previous method (L-HBOT) to physiological mechanism in dogs, we investigated blood gas parameters, heart-rate variability, stress-related hormones, skin conductance (SC) and glutathione peroxidase (GPx) activity in four clinically normal Beagle dogs detained catheters in their carotid arteries and veins, when they were quiet, after running (2 m/sec, 10 min), after taken L-HBOT (30% oxygen concentration, 1.3 atmosphere absolute, 30 min) or not taken L-HBOT (room air, 30 min in the chamber). L-HBOT was performed by a hyperbaric oxygen chamber for animal use (O2-Support 01, Live Aid Co., Ltd., Ishikawa, Japan). Differences of quiet, running, taken HBOT and not taken L-HBOT of each measurement indicators were tested by analyses of variance and Dunnett’s tests. Values of P < 0.05 were considered significant in all analyses performed by Statcel 3 (OMS publications, Saitama, Japan). As a result, there was no change in blood gas parameters, catecholamine levels and heart rate variability after L-HBOT. Cortisol level and SC was significantly lower, and GPx activity in erythrocyte was higher in dogs that were taken L-HBOT. In addition, GPx isozymes were separated and semi-quantitative analyzed. Then, there was no difference in the kinds and quantities of GPx isozymes between before and after L-HBOT. These results suggested that the L-HBOT may have small influence to oxygenation dynamics, control stress response system. Moreover, L-HBOT may activate antioxidant enzymes such as GPx through changing the structure or intra-environment of erythrocyte in dogs.

O2-Support 01, the hyperbaric oxygen chamber for animal use, and the skin conductance measuring instrument for dogs were supplied by Live Aid Co., Ltd., Ishikawa, Japan.