

**Effects of Pressurized Oxygen in Acute Brain Insult** <sup>1/3</sup>

- Reduces cerebral edema & ICP
- Limits the ischemic cascade
- Reduces CNS lactate peak in hypoxia
- Neutralizes toxic amines
- Deaggregation of platelets
- Increases Phagocytic activity of PMN cells (white blood cells)

**Effects of Pressurized Oxygen in Acute Brain Insult** <sup>2/3</sup>

- Reduces Adhesiveness of WBCs to endothelium
- Perfuses all tissue spaces
- Life sustaining O<sub>2</sub> available via retrograde perfusion in absence of a trickle phenomena
- Delivers metabolically available O<sub>2</sub> without chemical energy transfer — *Enough to sustain life without blood*

**Effects of Pressurized Oxygen in Acute Brain Insult** <sup>3/3</sup>

- Under pressure O<sub>2</sub> adheres to all the gas laws of physics
- Displaces all other gases in the body: N<sub>2</sub>, CO
- Follows the Law of Mass Action
- Completely saturates hemoglobin
- Increases plasma O<sub>2</sub> by 2000%
- Dissolves in cerebrospinal fluid, lymph, bone, and urine

**Effects of Pressurized Oxygen in Chronic Brain Insult** <sup>1/3</sup>

- Reactivates idling neurons
- Enhances plasticity
- Efficiently elevates diffusional driving force for O<sub>2</sub> thereby increasing tissue oxygen availability
- Promotes phagocytosis (internal debridement)
- Ameliorates multiple biochemical changes

**Effects of Pressurized Oxygen in Chronic Brain Insult** <sup>2/3</sup>

- Restores the integrity of the blood brain barrier and cell membranes
- Improves cell respiration, Reduces cell byproducts — cytokines
- Promotes Neovascularization
- Promotes Epithelization

**Effects of Pressurized Oxygen in Chronic Brain Insult** <sup>3/3</sup>

- Acts as scavenger of free radicals
- Bacteriostatic effects, synergizes with certain antibiotics
- Neutralizes certain Toxins: Clostridium, anaerobes
- Stimulates the adaptive immune system, especially in elderly (mice)