

# The use of a Complementary and Alternative Medicine Protocol to Treat Symptomatic Traumatic Brain Injury.

Mark L. Gordon, M.D., and Alison M. Gordon, MND, Millennium Health Centers, Inc. 2021. Encino, California. USA.

(Key Words: Cytokines, Fractalkine, neurosteroids, neuroactive steroids, N-Acetylcysteine, tocopherols, eicosanoids, pyrroloquinoline quinone, ubiquinone, thiamine, riboflavin, methylcobalamin, docosahexaenoic acid, ascorbic palmitate, epigallocatechin gallate, neuroinflammation, microglia (M0, M1 and M2) phenotypes, reactive oxygen species (ROS), nitric oxide (NO), and peroxyinitrite.)

**Abstract:** The prevalence of traumatic brain injury (TBI) continues to rise on an annual basis regardless of education and the implementation of newer safety measures and equipment. According to the CDC, nearly 2.87 million incidents occurred in 2017 with a calculated 40+ million individuals living in the United States with one form or another of TBI. Important in this group is the number that developed debilitating neuropsychiatric and cognitive functioning which affected their livelihood and family unity. Depression and anxiety are rampant with the number of suicides rising within both the military and civilian communities. In 2017, TBI contributed to 61,131 deaths in the United States, representing 2.2% of approximately 2.8 million deaths that year. From 2015 to 2017, 44% of TBI-related deaths were categorized as intentional injuries (i.e., homicides or suicides). The use of a standardized approach for treatment with psychotropic medication and psychotherapy is not working as noted by the TBI-related suicide deaths among whites, from 5.9 per 100,000 during 2006–2008 to 7.8 during 2015–2017(a). The failure to control the progressive changes in one's mental health after a TBI or concussion, has allowed for the refocusing of research from treatment to causation. What has been found in trauma of any degree, singular or multiple, with or without loss of consciousness, and over an acute or protracted time period is the progression of symptoms that are commonly observed. The symptomatic complex referred to as post-traumatic stress syndrome (PTSS or PTSD) can be tied to a chemokine(fractalkine) produced by the brain's immune cells (microglia) which regulate the release of inflammatory chemicals (cytokines) that can interrupt the regulatory functions of the brain leading to neurodegeneration and the onset of brain aging and neuropsychiatric conditions.

## Introduction.

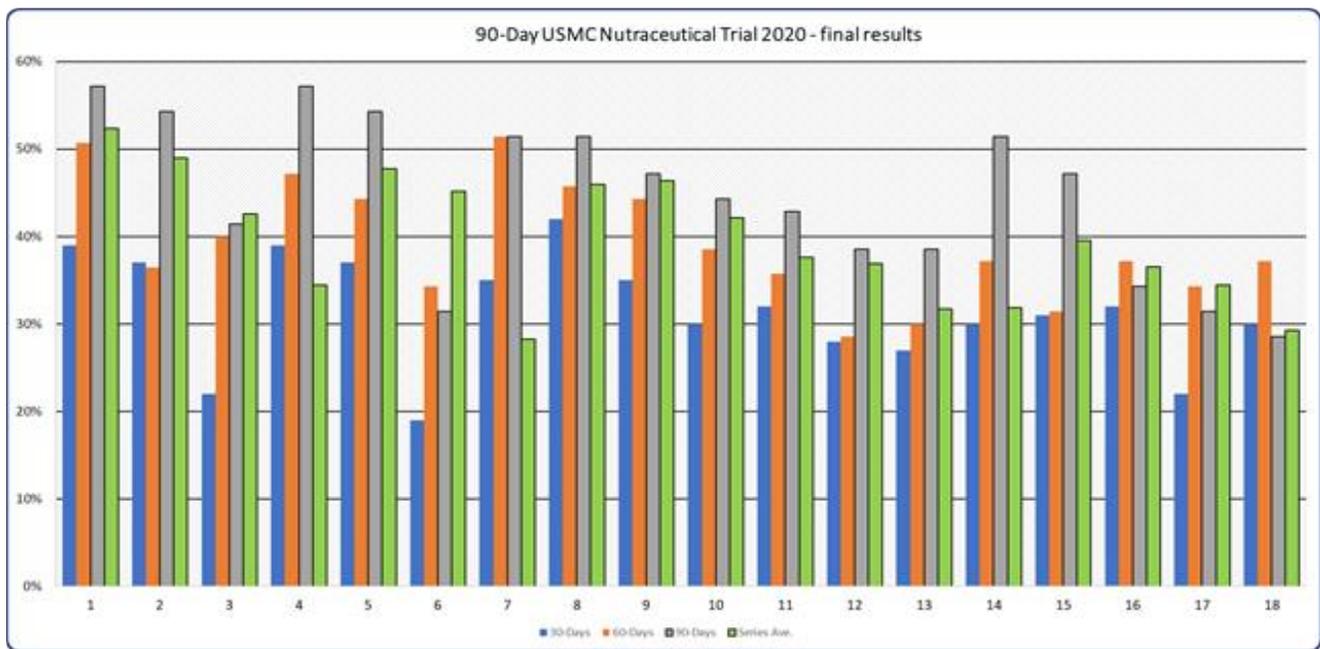
Since battles have been fought in foreign and domestic engagements, under military or recreational circumstances, traumatic injuries of the body, with or without physical contact, can precipitate a cascade of immunological processes leading to the production and release of inflammatory cytokines (1). These cytokines (IL-1, IL-1b, IL-6, and TNF-alpha) have been associated with an increased oxidative load in the brain (2), disruption of biochemical and molecular chemical processes (3), BBB breakdown, (4) inhibition of neurotransmitters (5), disruption of the hypothalamic-pituitary regulation of neurosteroids (6), impairment of cognition (7) and the development of a number of neuropsychiatric conditions (8).

This article will address the known mechanisms precipitated by social stressors and physical traumas that create the biochemical scenario for alter mental health. Additionally, the science supporting the application of a group of nutraceutical products that address inflammation and mitochondrial functioning will be discussed in relation to a recently performed military pilot study assessing the efficacy of these nutraceutical products.

the Tri-Pak

**The Pilot Study:** To evaluate the efficacy of a nutraceutical protocol to reduce the symptomatology associated with combat related traumas.

**Outcome Graph 1:** Participant were started on the Tri-Pak Protocol and asked to rate 18 key factors relative to psychological, physical, and physiological functioning after 30, 60 and 90-days. Seven areas; increased mental energy, improved sleep, improved emotional stability, improved memory, increased sense of well-being, reduced anxiety, and reduced joint aches and pain had improved by at least 50% during 90 days of their program. Migraines improved by an average of 28%, Libido by 43%, more physical energy by 45%, and improved strength during exercise by 42%.



1. **I have noticed an increase in mental energy.**
2. **My sleep has improved.**
3. I am sleeping less and waking up feeling more refreshed.
4. **My over-all emotional state has improved.**
5. **My over-all memory has improved.**
6. My libido (sex drive) has improved.
7. **I have an increased sense of well-being.**
8. **I feel calmer under stress, less anxiety.**
9. I have generally more physical energy to do more things.

10. When I exercise, I have more energy and feel stronger.
11. I can perform physically longer without the expected fatigue.
12. My athletic performance has improved over-all.
13. I recover faster after exercise.
14. **Joint Aches and pains are less.**
15. Facial texture has improved.
16. Wrinkles have decreased
17. Skin thickness has increased.
- 18: **My Migraines have improved.**

In continued use of the Tri-Pak beyond 90-days, further improvements were attained.

Draft report..

**Mark L. Gordon, MD**