

The Case for a Nutrient Based Approach to Building Immunity in Fighting Coronaviruses: A Poly Vagal Perspective.

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Coronaviruses such as COVID -19, SARS, and MERS, are aggressive and deadly in human populations.

Coronaviruses are known to originate, evolve, and incubate in bat populations. Coronavirus mortality in other mammals, such as humans, is much higher than that of bats. A bat's Poly Vagal system is likely much more robust than other mammal's due to the evolutionary characteristics associated with their ability to use echo location. This ability uses muscle contractions, and activation of motor neurons within the Poly Vagal system, specifically those of the middle ear, larynx, and nasal passages¹.

Bats have a higher vagal tone due to the effects of their nervous system being attenuated by their practice of echo location. Vagal tone can be increased by activation of the motor neurons of the vagal branches associated with auditory and laryngeal muscle contractions². This higher vagal tone results in significantly lower inflammation levels that facilitate the process of coronaviruses, and viruses like Ebola, to rapidly replicate and achieve more virulence in their evolution. Moreover, even with the high metabolism that bats have, this evolutionary feature allows them to live exponentially longer than other mammals their size, possibly due to their immune and nervous systems continuously suppressing inflammation. When viruses that originate in bats, jump into human populations, they are met with less robust immune systems, comparatively; immune systems with more inflammation and less vagal tone, causing high mortality rates and aggressive transmission of pandemic proportion.³

By increasing vagal tone in human populations, we may be able to control the mortality rates and transmission of coronaviruses through society. We must find methods that increase vagal tone, promote a healthy level of immune activation, and continuously decrease in inflammation levels through the course of infection with coronavirus in a human host. I propose ways that this may be achieved such as:

Lifestyle Changes⁴:

- ◆ Being in a continuous state of Gratitude, through a Gratitude practice that is given attention several times per day. Make a list and take it out when you are feeling times of fear or panic.
 - “When we are in a state of Gratitude, we are bathed in cues of safety.” - Dr. Stephen Porges
- ◆ Group Singing
- ◆ Rhythmic breathing exercises, focusing on extending the out breath (only if not actively in acute respiratory infection phase).

Supplementation:

- ◆ Increase dopamine to bolster Ventral Vagal tone in thorax to decrease inflammation.
 - Vitamin C ⁵(Taken 30 min before food preventative: 1000 mg per day, acute infection:1000 mg 3x per day)
- ◆ Increasing ability to produce and replace Myelin to help bolster the Ventral Vagal circuit, helping reduce inflammation in the thorax and system wide.
 - Adequate levels of:
 - Vitamin B12 ⁶ (recommend 2.5g methylcobalamin inter muscular injection for preventative and acute infection for people with very low levels of B12; 2.5 mg oral per day thereafter)
 - L-Serine ⁷ (preventative 500 mg per day during times of stress; acute infection 500 mg 2x per day)
 - Vitamins D⁸ (1k -5k IU for prevention in winter months, depending on need, 10K IU per day for

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- acute infection for 2-3 weeks, monitor for hypercalcemia) taken with ghee or coconut oil
- Vitamin A (10k once a week for prevention; carefully monitor and increase for active infection) taken with ghee or coconut oil
- Vitamin K^{9 10} (90 mcg) taken with ghee or coconut oil
- ◆ Decreasing mast cell activation and cytokine storm.
 - Cimetidine/ Tagamet¹¹ – Acts on H2 histamine receptors to curb mast cell degranulation. Recommended for acute infection.
 - Silymarin/Milk Thistle^{12 13} – Helps with liver cell regeneration and mast cell inflammatory response.
 - Quercetin¹⁴ (Taken 30 min before food, Preventative: 500 mg per day; acute Infection: 500 mg 2x per day)
- ◆ Increase the resilience of the Autonomic nervous system in lungs and thorax by decreasing inflammation and increasing lung function.¹⁵
 - NAC^{16 17 18} (N- Acetyl Cysteine (preventative 600 mg, 2x per day; acute therapy: 1200 mg, 3x per day)
- ◆ Increase Acetylcholine (ACH) to help decrease neuroinflammatory response.
 - Ginseng^{19 20} - (preventative: 500 mg per day; acute infection: 500 mg 2-3x per day)
 - Another option: Gotu Kola²¹ - (preventative: 700 mg per day; acute infection: 700 mg 2x per day)
 - Note: Monitor patient for adverse reaction after several days of supplementation, and decrease if experiencing dizziness, upset stomach, digestive problems, sleep disturbance, GERD symptoms, any other vagal mediated adverse reactions. ACH has a “sweet spot” and often the symptoms of low ACH are very similar to high ACH.²²
- ◆ Throat Spray with Echinacea and propolis.

Possibly Effective Therapeutic Interventions:

- ◆ Visceral and Neural manipulations that affect the Poly Vagal system. Experience of the practitioner and familiarity with Autonomic nervous system regulation, and Poly Vagal Theory, is critical for efficacy.
 - Visceral Manipulation of the:
 - Bronchus, Lungs, Liver, Spleen, Upper Cardiac area, and Thymus.
 - Fascial Release of the clavicular area to allow for lymph flow from the cranium.
 - Neural manipulation and Cranial Osteopathic techniques to affect the:
 - Brain Stem C1-C4, Medulla, Hypothalamic Nuclei, Pineal, Pituitary, Carotid sheath, Vagus nerve from cranium to Esophagus, and Stellate Ganglion.
 - Safe and Sound Listening Protocol (SSP), Developed by Dr. Stephen Porges.

Note: Although Selenium is a powerful antioxidant that has a beneficial effect on the nervous system, it is not recommended in this paper, because I feel it is very easy to take too much and go into a state of toxicity. Selenium can best be taken in from food such as broccoli or blending garlic cloves with the skin on. All vitamin and supplement recommendations should be implemented with the knowledge of your

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