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Recommendations for Use of Supplements in the COVID-19 Pandemic

There is no research to support a regimen of taking single vs. multiple supplements. Consideration of using higher dosing and/or multiple agents should be based on individual factors (e.g., patient desire, pre-existing inflammation, multiple co-morbidities, higher risk, etc.) and/or when other therapeutic decision-making issues warrant such use.

Safe, inexpensive interventions which have a sound biological rationale should be prioritized for trial use in the current context of this pandemic for which there are no definitive measures to prevent or reduce the mortality of the disease.

The following list represents a *brief* summary, please read the full web page to gain more information. When available, follow links to the dedicated web page for each substance for more in-depth information on the individual substance. Many of these substances have individual web pages on *AccurateClinic.com* related to their potential pain benefits.

The substances here at standard dosages are suggested to potentially:

1. Inhibit viral replication and thereby limit simple viral colonization from progressing to development of illness.
2. Reduce severity of the COVID-19 disease by suppressing the inflammation that leads to severe outcomes.

When making a decision as to what supplement(s) to take, also consider:

1. Are there additional benefits to be gained, such as reduction of chronic pain?
2. Is it likely you may have a deficiency of this substance already

For those currently with no symptoms and assumed to not have COVID-19 infection:

Consider a regimen that includes multiple products with different mechanisms of action.

Zinc - Zinc may have antiviral properties and reduce symptoms of respiratory viral infections as demonstrated with cold virus infections. Zinc is not stored in the body so it must be ingested on a regular basis. It's rare for people in industrialized countries to be seriously deficient in zinc although is not uncommon to have slightly low levels of zinc. The NIH indicates that 20%–25% of older adults have inadequate zinc intakes.

Zinc dose: 30-50 mg/day

Vitamin C - Vitamin C has good evidence for its supportive role in immune function and is popularly thought to be protective against respiratory viral infections. Having a *deficiency* of Vitamin C is unlikely, BUT, having *optimal* blood levels of Vitamin C may *not* be likely if one's diet lacks adequate amounts of fruits and vegetables (you know who you are!). Vitamin C is not stored in the body so it must be ingested on a regular basis.

Vitamin C dose: 500 mg twice daily

Vitamin C has been shown to have beneficial effects in different types of viral infections including:

- (1) Inhibiting virus entry into cells
- (2) Inhibition of early stage viral replication
- (3) Interfering With DNA and RNA Polymerases
- (4) Reduction of inflammation

Quercetin - Quercetin, a natural compound widely distributed in the plant kingdom, is the most abundant of the flavonoid molecules and found in many foods, including vegetables, fruits, seeds, and nuts. Onions are the most important sources of quercetin, but other vegetables including broccoli, asparagus, green peppers, tomatoes and red leaf lettuce, are great sources of quercetin, especially in the summer. Apples, strawberry, red raspberry, blueberry, cranberry and black currants, green tea and wine are also considered abundant dietary sources of quercetin.

Quercetin dose: 250 mg daily Quercetin should be used with caution in patients with hypothyroidism

Quercetin has a broad range of antiviral properties which can potentially interfere with COVID-19 infection including suppression of virus entry into cells and virus replication. Quercetin also stabilizes mast cells and may reduce the inflammation associated with severe infection. The benefits of quercetin can be enhanced by the co-administration of vitamin C.

Vitamin D - Vitamin D benefits chronic pain, supports immune function and may reduce viral replication. Vitamin D deficiency is of epidemic proportion in this country and is more likely in the elderly, those of color, obese and those living > 45^o latitude. People with deficient levels of vitamin D have a greater risk of dying when infected with COVID-19.

Vitamin D3 Dose: 1000-3000 iu/day
Recommended Daily Allowance is 800-1000 iu/day. Vitamin D supplementation dose should be guided by blood levels when available.

Curcumin - Curcumin is the king of anti-inflammatories and has a great body of evidence for its effectiveness against inflammation and benefit in chronic arthritis pain.

Palmitoylethanolamide (PEA) - PEA has excellent evidence for benefit in chronic nerve pain and nerve inflammatory along with evidence that it may improve recovery from viral respiratory infections. Additionally, PEA stabilizes mast cells that are involved in the inflammatory process.

PEA dose: 600mg twice daily

Plant-based polyphenols (Resveratrol, Green Tea etc.) - These natural compounds all seem to offer similar mechanisms for reducing inflammation. While there are no optimal levels of dietary intake established for polyphenols, they are all found in fruits and vegetables. Supplementation with these substances is encouraged, especially in those who do not eat a lot of fruits and vegetables. Resveratrol may have the highest level of evidence.

For those with symptoms/expectation they have current COVID-19 infection

OR

For those with recent exposure to someone testing positive for COVID-19

Continue the same regimen as above, but for advanced protection add treatment directed specifically at reducing the potential for overwhelming inflammation of the lungs associated with severe COVID-19 infections:

(1) Antihistamine Therapy:

Many of the severe cases and deaths in COVID-19 arise from pulmonary failure related to “cytokine storm,” a condition of overwhelming inflammation largely caused by the massive release of histamines and other active peptides from immune cells called mast cells. Mast cells are widely distributed in blood vessels, lungs, heart and other organs. In the case of COVID-19, using antihistamines early on may block the impact of histamines and may reduce the likelihood of serious illness, particularly related to overwhelming lung dysfunction.

Antihistamines are most commonly of two types: *H1 antihistamines* and *H2 antihistamines*:

H1 antihistamines are typically used to treat allergic symptoms including hives and itching. Common H1 antihistamines include Benadryl (diphenhydramine), Zyrtec (cetirizine) and Xyzal (levocetirizine).

H2 antihistamines are used to treat heartburn, gastric reflux (GERD), gastritis and ulcers. Common H2 antihistamines include Pepcid® (famotidine), Axid (Nizatidine) and Tagamet (cimetidine).

Dual-histamine Receptor Blockade

The combined use of both H1 and H2 antihistamines, or “dual-histamine receptor blockade,” is recommended for advanced protection.

Recommended antihistamine combination:

Zyrtec® (cetirizine) OTC - 10 mg twice a day; *plus*
Pepcid® (famotidine) OTC - 20 mg twice a day

Other H1 antihistamines include:

Xyzal (levocetirizine) OTC - 2.5-5mg once a day;
Benadryl (diphenhydramine) OTC - 25-50mg 2-4 times/day;
(Atarax/Vistaril (hydroxyzine) Rx - 25-50mg 2-4 times/day;

Side effects may include: dry mouth, fatigue, drowsiness, sedation and dizziness. Difficulty urinating may occur in those with enlarged prostate.

Other H2 antihistamines include:

- (a) Axid (Nizatidine)
- (b) Tagamet (cimetidine)

Side effects potentially associated with H2 antihistamines include:
Headache, constipation, or diarrhea

(2) Mast Cell Stabilization:

In addition to blocking the effects of histamines released by mast cells, it is also suggested to stabilize mast cells by suppressing their release of histamines and other pro-inflammatory compounds. This may be achieved with the use of prescription medications such as Cromolyn and their use should be discussed with your physician.

A number of natural compounds are known to stabilize mast cells including:

Quercetin with Vitamin C

Combining quercetin with vitamin C may be especially protective and is highly recommended.
Proposed dosing:

Prophylaxis and mildly symptomatic cases of COVID-19:

Quercetin (quercetin aglycone): 250-500 mg Twice a day

Vitamin C (either D- or L-ascorbate but not dehydroascorbate): 500 mg Twice a day

Severely symptomatic cases of COVID-19:

Quercetin (quercetin aglycone): 500 mg Twice a day

Vitamin C (either D- or L-ascorbate but not dehydroascorbate): 3000 mg 4x/day a day

Palmitoylethanolamide (PEA) - PEA has been shown to reduce inflammation, including suppressing the NLRP3 inflammasome, a compound associated with the cytokine storm of COVID-19 triggered by the release of multiple inflammatory compounds from mast cells.

Dosing: 600 mg 2-3 times a day

(3) Other considerations:

Elderberry - There is evidence that Elderberry extracts (Sambucol®) reduce the symptoms and time course of viral respiratory infections. Although the evidence of benefit is weak, it is promising nevertheless and its use should be considered by those with symptoms of upper respiratory infection, COVID or non-COVID.

Sambucol Dosing:

2 tsp (10ml) once a day for preventative management

1 tbsp (15ml) four times daily for treatment of influenza-like symptoms

Maintaining mental health and the avoiding the misinformation pandemic

(Taken from "EVMS Critical Care COVID-19 Protocol")

"Misinformation on the Coronavirus might be the most contagious thing about it"

- Dr. Tedros, WHO Director General

The Panic and misinformation spread by Social Media travels faster than the pandemic itself.

What you can do?

1. Read news/information from reliable sources
2. Avoid social media as much as possible; excess social media exposure increases the likelihood of anxiety and depression
3. People share false claims about COVID-19 partly because they simply fail to think sufficiently about whether or not the content is accurate when deciding what to share.
4. Identify positive influencers and stay connected to positive people (Remotely!)
5. Limit contact with "worriers"
6. Have a plan for staying in touch with family and friends - Isolation can cause rumination and anxiety
7. Maintain a sense of *hope, humanity and kindness toward others*
8. Seek professional help if anxiety is overwhelming