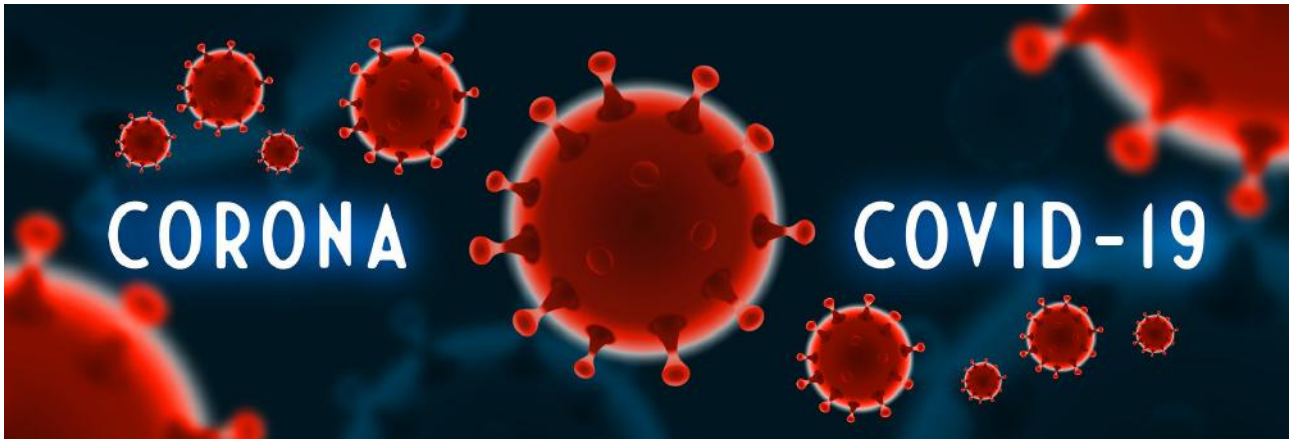


# Optimising Immune Function Against COVID-19

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## Why has COVID-19 gone pandemic?

This particular virus is new to humans, so the human immune system has not yet built up any form of resilience to it.

The virus' DNA is 79.5% bat, so it likely originated from bats but was passed to humans via an unknown intermediary animal, possibly a snake.

Coronavirus will now always be around and we are likely to see outbreaks every year but human immune systems will adapt its defence systems over the next year or so, building resilience just like it has to a myriad of infections over millennia.

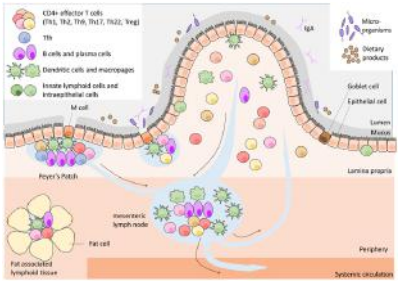
There is fairly detailed NHS advice available regarding what to do if you suspect you have the virus and of course it is imperative that we all follow the government guidelines to contain its spread.

The following information examines the most up-to-date clinical evidence to look at how to optimise immune function to reduce the risk of catching the virus; decrease severity if you do catch it, and how to look after yourself during the illness to minimise severity, the length of time symptoms last and the impact on future health.

## A brief understanding of the immune system

The immune system can be divided into two categories: ***Innate Immunity*** and ***Adaptive Immunity.***

**The innate immune system**



is generally inherited from our parents. It is always active in the body, delivering rapid response mechanisms as a first line of defence against the millions of foreign invaders we are exposed to every day, such as viruses, bacteria and other pathogenic microbes.

It is composed of physical barriers including the skin and mucus membranes of the respiratory and gastrointestinal tracts; chemical barriers (in the blood) including various leukocytes such as phagocytes, natural killer cells, dendritic cells and plasma proteins. And secretions such as mucus, bile, tears, gastric acid and sweat.

Whatever the invader, the innate immune system will attack it with the aim of preventing us becoming infected - it is therefore imperative that we maintain the function of our innate immunity in the fight against COVID-19.

**The adaptive immune system** comes into play when innate immunity has failed to prevent infection (may be 1-2 weeks later), so it responds to *specific* pathogens by producing T-lymphocytes and B-lymphocytes. This adaptive system can remember specific pathogens it has encountered previously, so that future contact with the same pathogen can be dealt with quickly and effectively. We *acquire* immunity to the various microbes that infect us throughout our lives.

If COVID-19 gets past our innate immune system, it is essential for the adaptive immune system to be functioning optimally.

## Supporting our immune systems naturally

Neither our innate or adaptive immune systems have encountered COVID-19 before, so our ability to fight this virus and the severity of the symptoms experienced is dependant on the *individual's* immune health.

The body consists of trillions of cells that make up our various organs and systems. Every cell requires a specific array of nutrients for it, and therefore the organ or system it is part of, to function optimally. Inadequate nutrition and certain negative lifestyle factors can significantly deplete immune function, so we are now going to look at how you can build a resilient immune system that can rise appropriately to challenge. This can prevent infection from taking hold but if we do get infected, it may be for a shorter time with fewer and less severe symptoms.

COVID-19 senses the surfaces it can fuse with and wants to find its way to deep lung tissue via the alveoli (tiny air sacs in the lungs). Before this happens it has to get past the mucosal barriers of the innate immune system. These barriers include the lining of all the respiratory tract and gastrointestinal tract, and is known as the epithelium.

The epithelium (lining) of the gastrointestinal tract is roughly the size of a tennis court. It is of single cell thickness and all of these cells (the whole tennis court) are replaced every 3-5 days - this lining is a physical barrier to pathogens trying to enter the body.

**Approximately 80% of the entire human immune system is situated within the gut, in and below the epithelium.**

**Gut health is therefore key to optimal immune function!**

The respiratory epithelium (the lining of the airways) consists of ciliated columnar cells that, as well as acting as a physical barrier to inhaled pathogens, it also regulates both innate and adaptive immunity responses through the production of various antiviral substances.

## General dietary guidelines

*The following information is based on the most up-to-date clinical evidence but should not be construed as medical advice. If you have any health issues or you are taking medication you should speak to your health professional regarding any concerns about dietary or lifestyle interventions, or the introduction of nutritional supplements.*

Note: my patients should continue to follow their personal therapeutic dietary protocols.

## Ten Top tips for Healthy Immune Function

1. Ditch the junk! Avoid processed foods and ready meals. Eat a wide variety of fresh whole foods that you prepare yourself from scratch.
2. Avoid sugar! ALL carbohydrates convert to sugar. Avoid refined carbs such as white bread, pasta and rice, cakes, biscuits pastries, breakfast cereals, potatoes etc. Choose whole grains such as brown rice, quinoa, buckwheat, rye bread, oats and lentil pasta in **small amounts** - ***they will still convert to sugar***, just more slowly.

*Note: all infections love sugar. People suffering with Diabetes (type I and II), Metabolic Syndrome (pre-diabetes) and Insulin Resistance (typically fat around the middle, high blood pressure and high triglycerides) are all at higher risk of contracting COVID-19, so ditch the carbs NOW!!*

3. Eat a rainbow of fresh or frozen vegetables every day! Vegetables will provide slow-releasing complex sugars for sustained energy and a myriad of *essential* vitamins, minerals and phytonutrients. Each colour will vary in nutrient values, so you are aiming for 7, *yes seven*, teacups of brightly coloured vegetables daily.
4. Use herbs and spices liberally.

5. Keep fruit to a maximum of 3 apple-sized portions daily (fruit contains sugar!). Berries and stewed apple are particularly supportive to the immune system.
6. Eat some quality protein with every meal - protein is essential for all growth and repair. Choose grass-fed meats, free-range pork, game and poultry, fish, eggs, pulses, nuts and seeds, sprouted seeds and beans, tempeh and natto. Choose sheep, goat or buffalo dairy in preference to cow's milk products.
7. Add healthy fats to every meal. Fats are essential for life! You just need to choose the right fats. Avoid hydrogenated fats (liquid oils that have been turned into solids such as margarine-type spreads.) For high temperature cooking choose virgin coconut oil or ghee. For baking: coconut oil or butter. Olive oil and rapeseed oil can cope up to 180°C before they produce carcinogenic trans fats. All other oils must be cold-pressed and only used in dressings or for drizzling. Also choose raw nuts and seeds, and nut or seed butters.
8. Make sure you consume anti-inflammatory omega 3 fats regularly - oily fish 2-3 times a week (wild salmon, mackerel, trout, herring, sardines, pilchards, anchovies). **Plus** omega 3-rich seeds or their cold-pressed oils daily (flaxseed, chia seed, hemp seed, pumpkin seeds). If you don't eat fish you should take an omega 3 supplement, the seeds/oils alone will not suffice.
9. Drink plenty of fresh water every day - at least 1.5 litres. You can count herb teas but not black tea or coffee in this total.
10. Try not to snack - give your body a rest from digestion and time to build new cells and resilience instead.

I mentioned earlier that gut health is key to optimal immune function - this is a huge area to explore and specific to the individual, so I recommend you seek an appointment (remotely at the moment of course) with a functional medicine practitioner or clinical nutritionist if you have any gut health issues.

It is essential however to mention that it is a primary role of our gut microbiome (the multitude of viruses, bacteria and fungi that lives in our gut) to modulate our immune systems. Therefore it is extremely important for us to maintain a balance between friendly, health-promoting microorganisms and pathogenic, disease-causing microbes.

Note: If you have taken antibiotics recently (within the last 6 months) your immune system will have been weakened. Antibiotics kill both good and bad bacteria but not yeasts, so these yeasts proliferate causing dysbiosis (imbalanced gut flora) that can significantly affect immune function.

Note: The vitamin C solution described later will help kill unwanted microbes in the gut.

**Natural foods containing probiotic (friendly) organisms that you could regularly consume to improve the gut microbiome include:**

- Fermented vegetables such as live sauerkraut or kimchi (it must contain live organisms, if it comes off a shelf it has been pasteurised)
- Natural unsweetened live yogurt
- Milk or water kefir (I have plenty of water kefir granules and will provide instructions if you want to make your own - it's really easy!)
- Kombucha

**Prebiotic foods provide the substrates for probiotics to feed on and grow. These are foods high in resistant starch and include:**

- Oats soaked overnight (not cooked)
- Legumes: beans, lentils, chickpeas, peas (remember baked beans contain added sugars)
- Pasta made from any beans or lentils
- Potatoes, cooked and eaten cold
- Brown rice, cooked and eaten cold
- Green bananas

***For optimal gut health you need to be emptying your bowels daily and fully. If you have trouble doing this try the following:***

**Constipation Mousse**

*You can eat this mousse once or twice a day - begin with one at breakfast; add a second with the evening meal until bowel movements are regulated - can be used long-term*

1. Put 2 heaped dessertspoons of ground linseeds in a small dish
2. Cover with half a cup-(ish) of prune juice
3. Leave to soak for several hours (or overnight) in the fridge
4. Eat with a spoon

*Remember - dehydration causes **constipation**, headaches, lethargy, fatigue, brain fog, joint pain, gastric ulcers, asthma and much more =- so drink plenty of water!*

## Specific foods and nutrients to support immune resilience

*Note: supplementation of these nutrients will be discussed later*

### Vitamin A

Is integral to both the innate and adaptive immune responses. Very few foods contain vitamin A (retinol), they include liver, eggs, fish and cheese, so vegetarians, and especially vegans may be deficient.

Yellow, orange and red vegetables and fruits contain various carotenoids that we convert to vitamin A but even if you think you eat plenty of these, a very high percentage of us have certain genetic mutations that mean we cannot make this conversion effectively - I personally have 100% inefficiency.

Being deficient in vitamin A can significantly impair immune function because it is essential to all aspects of immune defence.

### Vitamin D

Is essential to all cells; there are clear associations with deficiency and depleted immune function. It is impossible in the Western Hemisphere to obtain sufficient vitamin D via sunlight during the winter months and it is thought that this is an underlying cause of the ‘Flu Season’.

Many of us cannot store adequate vitamin D to last out this period, so it is likely in our interest to take a regular vitamin D supplement (more later). Your GP may test vitamin D levels if you are concerned, or private testing is easily done at home at a reasonable cost.

Note: vitamin D activation requires ample magnesium to be available.

**Vitamin C**

Essential for immune modulation vitamin C also has powerful antiviral effects, so levels should be maintained for immune maintenance and increased during viral infections. Foods rich in vitamin C include:

- Yellow, red and orange peppers
- Dark green leafy vegetables
- Broccoli
- Berries (any kind)
- Kiwi fruit
- Citrus fruits
- Tomatoes

**B Vitamins**

Riboflavin, vitamin B6 and vitamin B12 are especially essential for immune health but if they are to be supplemented it should be in the form of a complete B-complex.

A diet of fresh whole foods as previously described will provide an array of B vitamins but please note that vitamin B12 is only derived from animal products, so most vegetarians and *ALL* vegans should supplement this essential nutrient.

**Zinc**

Modulates T helper cell functions that coordinate all adaptive immune responses.

Foods rich in zinc include:

- Shellfish
- Meat, especially red meats
- Eggs
- Cheese
- Legumes (anything that comes out of a pod such as beans, lentils, chickpeas and peas)
- Nuts
- Seeds
- Dark chocolate (minimum 70% cocoa solids)

**Selenium**

An essential micronutrient that can help optimise both innate and adaptive immune responses.

Brazil nuts were thought to be the best food source of selenium but a GP friend of mine recently had Brazil nuts tested and there was zero selenium. This is due to farming methods and the depletion of soils. Other sources include fish, meat and poultry, eggs, legumes, sunflower seeds, mushrooms, spinach and oatmeal.

**Beta-glucans**

The most effective group of natural compounds proven to enhance innate immune function. Consumption of beta 1-3/1-6 glucan has the most beneficial effect on the immune system. This is derived from Saccharomyces Cerevisiae (Brewers Yeast) or found in mushrooms, especially shiitake and mitake varieties, although all mushrooms will contain beta-glucans.

While eating mushrooms will provide some immune support, beta-glucans can be supplemented for maximum benefits.

**Turmeric**

Turmeric is a spice that contains a constituent called curcumin. Curcumin has very powerful anti-inflammatory, antibiotic, antimicrobial and antioxidant properties. Try keeping freshly grated turmeric root in the freezer to make teas.

Curcumin is only soluble in fat, so is best taken in the form of a paste to which fats or oils have been added. Piperine found in black pepper, aids the absorption of curcumin, hence its addition to the paste.

Please note that supplement companies often remove curcumin then sell the turmeric back to spice companies, so it is important to confirm that any turmeric powder you buy has not had the curcumin removed. The website: www.buywholefoodsonline.co.uk sells double-strength turmeric with high curcumin.

**How to *make* the paste**

**Ingredients**

125g turmeric powder

250ml fresh water (more may be required)

1.5 tsps ground black pepper

70g cold-pressed coconut oil ***or*** 70ml extra-virgin olive oil

**Method**

- Place turmeric and water in pan and stir over a gentle heat until you have a thick paste. This may take 5 - 10 minutes and you may need to add additional water if it gets too thick, or a little more turmeric if it looks watery (it's not too important).
- Add the pepper and oil at the end of cooking. Whisk vigorously to incorporate the oil and allow to cool.
- Store in a sterilised glass jar in the fridge.

The paste will keep for up to four weeks refrigerated, and freezes for up to 3 months.

**How to *take* the paste**

- Make golden milk by adding a teaspoon of turmeric paste to a mug of warm, goat's or non-dairy milk and adding a teaspoon of honey or maple syrup. Adding nutmeg, ginger or cinnamon is also delicious. Try using *coconut milk* for a really luxurious treat.
- Make golden yogurt by adding a teaspoon of turmeric paste to natural yogurt, along with a teaspoon of honey or maple syrup, and have it for breakfast with stewed apple and some chopped or ground nuts or seeds.
- Make golden tea by adding a teaspoon of turmeric paste to freshly boiled water - add honey if desired.
- Add a teaspoon to smoothies.
- Add to *any* savoury dish to spice it up.

*Please note that if you make water kefir, add 2tbs to the cooled turmeric paste and leave at room temperature overnight to ferment, then store in the fridge as usual. The fermentation significantly increases the health benefits.*

**Nucleotides**

Are the basic building blocks of DNA and RNA. They are in especially high demand when the immune system is upregulated. Our body can make nucleotides but if the demand becomes too great, such as during infections (like COVID-19) or high stress we need to get nucleotides from food sources. Unfortunately the best sources are found in organ meats and offal, not commonly enjoyed anymore. They can also be found in fermented foods like tempeh and natto. So to ensure a good supply during these immune-challenging times it may be best to supplement nucleotides.

## Lifestyle interventions to support healthy immune function

**Exercise**

Exercise is incredibly immune-modulating, so do whatever you can to keep active.

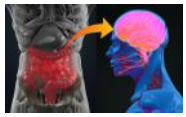
Exercising outside in particular can bring down inflammation, especially where there are trees because the microbes found in the mulches at this time of year help bring our own microbiome into balance - so do walk, jog, cycle, practice yoga or whatever is your 'thing' outside if you are able to do so safely within the current government social distancing guidelines.


*Note: If you fast (drink lots of water but eat no food) for at least 10 hours, then exercise before you eat, your body will produce lots of Lactoferrin - this is the only anti-inflammatory immunoglobulin (antibody) produced by the body that is extremely beneficial to immune function.*

Try fasting from a balanced evening meal through to lunch the next day and exercising during the morning.

Fasting also encourages ***autophagy***, the process of 'spring cleaning' cells that helps them function better and reduces the ageing process.

**Stress**



Stress, fear and anxiety are all dreadful for the immune system. All stress is triggered in the brain - the "Gut-Brain Axis" is a communication route between the brain and the gut which means the gut will also recognise every stressful thought - remember 80% of your immune system is in your gut.

Stress messages from the brain trigger the adrenal glands to produce stress hormones that also have an impact on immune function, depleting it when stress becomes unrelenting.

All stress messages are carried by the sympathetic nervous system (SNS), while the parasympathetic nervous system (PNS) calms everything down. At times like this we can be 'sympathetically dominant' so we need to regularly practice activities that activate the PNS such as mindfulness, meditation, breathing exercises, Tai Chi, Yoga Nidra etc. Try downloading guided meditations - they'll talk you through the process. My favourite app is this one: https://apps.apple.com/gb/app/yoga-nidra-deep-relaxation/id430531216

The media is full of COVID-19 news at the moment that will trigger your SNS every time you see or hear this information, so make a pledge that you will listen in once a day for the headlines.

This is time for a pause - to reflect on our lives.

Do happy things and laugh a lot - all stimulating of the PNS.

Eat a diet that keeps your blood sugar stable and provides all the nutrients your body needs at times like this. It's the best thing you can do to support adrenal function (see the guidelines above).

## What to do if you get COVID-19

If the virus gets past the innate immune system barriers and you have full-scale viral replication, the adaptive immune system gets to work and you will get symptoms such as a cough, fever, respiratory distress, headaches, muscle pain etc.

Some people have no symptoms, others are more severe but not life-threatening and there is no need for hospitalisation.

It is key that you do not deliberately suppress these symptoms - it is your adaptive immune system fighting the virus to get you through it. Fever (high temperature) is an ancient adaptive mechanism that remains with us because it still works! There are very few reasons to suppress a high temperature.

**Fever is totally crucial to recovery**

Your immune system will increase your temperature to kill the virus.

It will suppress your appetite.

Your liver, being the primary organ of detoxification will be working hard to convert the toxic molecules formed as a result of the fight against the virus into water soluble substances that can be easily eliminated.

Your kidneys and gastrointestinal tract will be toiling to eliminate and excrete the waste products produced in the fight against this invader.

So try not to bung up your liver by taking unnecessary antipyretic (fever reducing) drugs. Ibuprofen is toxic to the kidneys and can contribute to cardiovascular disease as well as causing gastrointestinal problems. It was at first thought ibuprofen may be contraindicated with COVID-19; the evidence for this is insubstantial but the NHS is still suggesting you do not take it.

Paracetamol has to be metabolised by the liver and is known to deplete glutathione, the body's primary antioxidant that is crucial at this time.

*To summarise: only take medications such as paracetamol to ease your pain and distress. Do not take painkillers just to reduce temperature or because you think it is a good idea - it's not.*

**What you *should* do is:**

- Go to bed and get as much sleep as possible
- Drink lots of fluids
- Do not eat unless you are starving
- Open a window
- Keep the room temperature between 15 - 18°C ( you can wear as many socks, hats, pyjamas and jumpers, duvets and dogs as you like but it's important to keep the air temperature lower and circulating)
- Allow your body the time and rest it needs to kill and flush out the virus
- Take paracetamol only to relieve distress not as an antipyretic

**If your symptoms become severe you MUST seek medical advice immediately!**

## Taking Supplements

I have previously mentioned a number of nutrients that specifically support optimal immune function. It may be a good idea at this time to make sure you are getting sufficient amounts of these by taking supplements.

I am going to start with an ***anti-viral protection protocol*** that aims to reduce the risk of infection both from the inside - out, and the outside - in.

It is cheap to maintain and the components very well documented using just vitamin C, iodine and coconut oil.

## Anti-Viral Protection Protocol

**Vitamin C** is a broad-spectrum antimicrobial and antioxidant that is completely safe to use in extremely high doses with no known toxicity. In a very recent study 50 COVID-19 patients were given vitamin C intravenously - there were no fatalities and all 50 were released from hospital earlier than expected.

**Iodine** kills all pathogens within about 30 seconds, including viruses, bacteria, yeasts and fungi. That's why it is still used by surgeons to swab areas of incision.

**Coconut oil** has antimicrobial properties and provides a nourishing, skin-protecting base.

### Take vitamin C throughout the day

Add 5g (5000mg) of ascorbic acid powder (easily available on Amazon for delivery) to one litre of water and sip throughout the day.

Note: we all have a different tolerance level for vitamin C but this is most likely to be around double this dose. However, if you get foul-smelling wind or diarrhoea you have reached your tolerance level and should reduce the dose by 500mg a day until you find the acceptable level.

*Important: Drink your vitamin C solution through a straw to avoid contact with tooth enamel as it may erode it over time.*

**Essential Note: if you suffer with haemochromatosis ( An inherited condition where iron levels build up in the body) you should NOT take this vitamin C solution without discussing it with your health professional. Vitamin C aids iron absorption, so levels may increase.**

If you do contract COVID-19 you should increase your vitamin C intake to bowel tolerance or up to 10g (10,000mg) a day.

### Make an anti-viral protective balm

Melt 100ml coconut oil gently (it only has to just be melted, not hot)

Add 10ml Lugol's 5% or 7% strength iodine (available from Amazon)

Mix well, pour into a jar and allow to solidify

***Usage***

Can be used as necessary but especially when leaving the house to go shopping, for exercise or medical reasons, or if you know you may come into contact with others or be in a vulnerable situation.

Scoop a little out of the jar and rub between your hands to melt. Now rub this oil around your nose and mouth - any virus coming into contact with this solution should be killed in 30 seconds.

*Note: Iodine is yellow; once the yellow disappears the iodine has gone, along with its antimicrobial effect. So it does mean you'll be going out in warpaint :-)))*

### Make an anti-viral salt pipe

Take a small plastic pot such as an empty supplement container

Poke small holes in its base with a metal skewer

Inside, line the base with a thin layer of gauze or cotton wool

Top the cotton wool with a half centimetre-ish layer of sea or rock salt

Put 2 drops of 5% or 7% Lugol's iodine on the salt

Put the lid on.

***Usage***

Sniff the 'pipe' 5 - 10 times every hour; it will coat the airways killing microbes in the respiratory tract.

Once you stop smelling the iodine you should add another 2 drops to the salt.

## Dosage of Other Supplements Previously Discussed

Supplements vary considerably; often cheaper versions are difficult for the human body to absorb, so might as well be put straight down the toilet! For example, the supplement AdCal often prescribed by doctors to provide calcium and vitamin D to osteoporosis patients is a form of calcium that neutralises stomach acid (essential for absorption of calcium) and only 4 - 10% of this calcium gets absorbed into the body via the intestines. We also know that long-term use can damage the intestinal epithelium too (remember where the immune system is??)

So I describe below the best forms of these immune-supportive nutrients proven in clinical trials for their efficacy.

Under normal circumstances I always prescribe from The Natural Dispensary but they are having difficulty supplying at the moment but you can try because they update on a day-to-day basis: https://naturaldispensary.co.uk/

An alternative trusted supplier is Nutri-Link, who remain open for the moment but I know are running out of the immune-support nutrients fast: https://www.nutri-link.co.uk/

Failing that try Amazon.

### Vitamin A

Supplementation: 800 - 1200mcg daily as a precautionary measure but stop taking if you develop symptoms as it may stimulate the adaptive response provoking increased symptoms.

*Best as a capsule suspended in a natural oil. If tablet form, always take with a meal contains fat as it is a fat-soluble nutrient.*

### Vitamin D

Choose vitamin D3, preferably in an oil-based capsule as it is a fat-soluble vitamin. If it is in tablet form take with a meal containing fats. Dosage: 4000iu is safe to take all year round. If you catch COVID-19 or any virus, a short-term, significantly increased dose can be advantageous but this should be under the supervision of a health professional.

*In addition, to support vitamin D activation take 200 - 400mg of magnesium citrate daily.*

**B Vitamins**

B vitamins should always be taken as a complex unless individually prescribed by a health professional.

As 48% of the population have an MTHFR SNiP (single nucleic polymorphism) in their genetic makeup, which means they cannot metabolise folic acid effectively, you should hedge your bets and buy a B-Complex that contains folate in the form of either methylfolate, 5-MTHF or folinic acid; any other form may block your methylation cycle if you have this SNiP.

**Zinc (Zn)**

Choose zinc picolinate or zinc citrate at a dose of 25 - 50mg daily.

Reduce to a 15mg daily maintenance dose once the high risk period is over as long-term high intake of Zn may result in copper deficiency.

**Selenium (Se)**

Choose selenium from a vegetable culture, or in a liquid form as sodium selenate at a dose of 100mcg (ug) per day.

## Getting these nutrients in one product

The very best all-round multi-nutrient product I can personally recommend is:

**Biotics Research, ProMulti Plus at a therapeutic dose of 2 capsules 3 times a day with meals**

Although relatively expensive, it contains all of the above in therapeutic doses and the most bioavailable forms, along with supporting nutrients and antioxidants. Take at the therapeutic dose while the risk is high, then reduce to 3 a day for maintenance all year, perhaps increasing again as the 'Flu Season' looms.

*This is available from both of the websites mentioned earlier.*

***Two additional supplements mentioned earlier that you could consider during the COVID-19 outbreak include:***

**Beta-glucans**

There are many Beta-glucan products available in powder, tablet and capsule form. My choice would be:

**Cytoplan, Immunovite** at 3 a day while risk is high or during infection, reducing to one a day for continued immune support.

*This product contains a small amount of zinc and selenium too.*

**Nucleotides**

My choice would be:

**Lipolife, Liposomal Nucleotide Complex,** 5ml daily added to water during high risk times. Double during infection because when the immune system is in demand the body cannot make its own nucleotides efficiently.

**Note: the supplements and information above is for educational purposes. If you have any concerns about your health, medication or supplements you should seek medical advice.**