



Supportive Recommendations for Immune Support & Viral Infections

NOTE - At this time of this document, there are no treatments or vaccines for Coronavirus Disease 2019 (COVID-19) infection. There are a few promising antiviral and immune supportive nutrients and peptides not only for prevention, but also treatment of COVID-19 infection. Nutrients and peptides are chosen for evidence-based clinical results and therapeutically beneficial outcomes, including primary, peer-reviewed references. NOTE - Peptides should ONLY be purchased from a licensed Compounding Pharmacy experienced in the manufacture of therapeutic peptides.

Nutrient – Viral Preventative	Dosage	Uses/Activity	Notes	Studies
Elderberry (Sambucus nigra) syrup	<ul style="list-style-type: none"> Adults: 1 teaspoonful (5ml) BID Std. to anthocyanins 	<ul style="list-style-type: none"> Supports immunity Good scientific evidence against viral infections Anti-inflammatory, antioxidant 2016 study of 312 people reported elderberry decreased cold duration and severity 	<ul style="list-style-type: none"> Several companies sell quality Sambucus nigra syrup Anthocyanins in Elderberry are nearly double that of other fruits 	1,2,3
Mushroom blends	<ul style="list-style-type: none"> 500mg BID-TID Supplements with various individual mushrooms are available; use quality, professional manufacturers 	<ul style="list-style-type: none"> Rich in immune modulating beta-glucans (polysaccharides) Antiviral Antioxidant Support microbiome Anti-cancer Amino acids Ergothioneine (ET, the “master antioxidant”) Important Medicinal Mushrooms: <ul style="list-style-type: none"> Chaga (Inonotus obliquus) (Scierotium) Cordyceps (Cordyceps sinensis or militaris) (Fruiting bodies) Shiitake (Lentinus edodes) (mushroom) Lions Mane (Hericium erinaceus)(fruiting bodies) Maitake (Grifola frondosa) (mushroom) Reishi (Ganoderma lucidum) fruiting body Turkey tail (Coriolus versicolor) mushroom 	<ul style="list-style-type: none"> There are several mushroom blends on the market. Make sure to get water extracted, organic if possible 	4,5,6,7,8,9, 10,11

Nicotinamide riboside (NR)	<ul style="list-style-type: none"> • 300-500mg daily 	<ul style="list-style-type: none"> • Form of vitamin B3 found in cow's milk/yeast • Significantly increases NAD+ levels • Plays key role in innate immunity • Supports mitochondrial biogenesis and function • Promotes cellular resistance and repair • Neuroprotective 	<ul style="list-style-type: none"> • 300mg capsule is NSF Certified Sport • Viral infections deplete NAD+ pools • Sirtuins are NAD+ dependent deacetylases – sirtuins have important antiviral properties (see Thai ginseng) 	12,13,14,15
Moducare® (Beta-sitosterol and its glucoside sitosterolin in a 100:1 ratio)	20mg sterols/0.2mg sterolins/cap, 2 caps AM, 1 cap PM	<ul style="list-style-type: none"> • Superior immune support • Helps balance Th1/Th2 arms of immunity • Decreases metaflammation • Helps dampen overactive antibody responses • Phytosterols have antiviral efficacy • Helps normalize DHEA:cortisol ratio • Beneficial in autoimmune conditions 	If > 200 lbs, increase dose to 2 caps TID	16,17,18,19, 20
Thymus glandular	<ul style="list-style-type: none"> • 250 mg TID, 2 AM, 1 afternoon 	<ul style="list-style-type: none"> • New Zealand bovine glandular • Thymus improves innate immunity 	<ul style="list-style-type: none"> • Although clinical studies are lacking, clinicians report using thymus glandular is an essential part of supporting immune regulation 	21,22,23,24
Vitamin A retinol	<ul style="list-style-type: none"> • 5,000 – 25,000 IU (1,500 - 7,500 RAE) daily 	<ul style="list-style-type: none"> • Essential micronutrient derived from the diet in the form of carotenoids and retinyl esters • Converted in the body to retinoic acid (RA) or stored in liver as retinyl esters • Levels are altered in infections Immune modulating – adaptive and innate • RA stimulates migration of immune cells including dendritic cells, T cells, and B cells to the GUT to signal function • Vitamin A directly regulates proliferation and differentiation in the intestinal epithelium • Modulates GUT microbiome; improves antiviral activity • Regulates secretory IgA (sIgA) – this also influences microbial GUT composition • Found effective against norovirus infection in humans – improved symptoms • Improves interferon responses 	<ul style="list-style-type: none"> • No more than 10,000 IU (3,000 RAE) in pregnant women daily • Make sure to account for multivitamin/mineral amounts of vitamin A for total daily dosage needs • May be depleted by: <ul style="list-style-type: none"> ○ Aminoglycosides ○ Bile acid sequestrants ○ Colchicine 	25,26,27,28

Zinc	30-50mg elemental Zn daily, as zinc chelate	<ul style="list-style-type: none"> • Essential micronutrient • Involved in regulating innate immunity • Modulates NF-kb • Antiviral activity • Deficiency leads to cell-mediated immune dysfunction and metaflammation • Antioxidant/anti-inflammatory 	<ul style="list-style-type: none"> • Zinc chelate improves absorption and bioavailability • Zinc depleted by: <ul style="list-style-type: none"> ○ NSAIDs ○ Corticosteroids ○ Diuretics – all ○ ACE inhibitors ○ Statins ○ Bile acid sequestrants ○ PPIs ○ H2 blockers ○ Oral contraceptives ○ Estrogen HRT ○ Anti-retrovirals ○ Penicillamine ○ Fluoroquinolones ○ Ethambutol 	29,30,31
Nutrient – Viral Treatment	Dosage	Uses/Activity	Notes	Studies
African Geranium (Pelargonium sidoides) root AKA Umckaloabo – meaning “Bad Cough” in Zulu language	<ul style="list-style-type: none"> • Proprietary aqueous/ethanolic extract - EPs 7630 • Available as oral drops, tablets and syrup • Tablets: 20mg TID • Drops: Pelargonium sidoides 1X/ 1.5ml <ul style="list-style-type: none"> ○ Adults and children > 12 yrs: 1.5ml TID ○ Children < 12: 0.75-1ml TID • Syrup: <ul style="list-style-type: none"> ○ Adults- 1.5 tsp (7.5ml) TID ○ Children 6-11: 1 tsp (5ml) TID ○ Children < 6yr: ¼-1/2 tsp BID-TID 	<ul style="list-style-type: none"> • South African traditional herb • Polyphenols are main bioactive phytochemical • Shortens duration and reduces severity of upper respiratory symptoms • Mainly antiviral, antiinfluenza activity; moderate antibacterial activity • Immunomodulatory • Also Non-specific immune effects - modulates cytokines and ROS • Used in Europe to treat cough, sore throat, congestion and other respiratory complaints • Reported to inhibit replication of respiratory viruses and the enzymes haemagglutinin and neuraminidase • Increases ciliary beat frequency of respiratory cells • Clinical trials based on EPs 76730 extract • Clinical studies report significant improvement in uRTIs (upper respiratory tract infections) when using the EPs 7630 extract 	<ul style="list-style-type: none"> • Used for decades in European Pharmacopoeias for respiratory/pulmonary complaints including inflammation (bronchitis, acute sinusitis) and infections (uRTIs, colds) and tuberculosis (TB), coughs • EPs 7630 extract the subject of 20 clinical studies involving more than 9,000 patients, including 3,900 children as young as 1 year old • Safe and efficacious for respiratory conditions 	32,33,34,35, 36,37,38,39, 40
Andrographis (Andrographis	<ul style="list-style-type: none"> • 300mg BID std. to 10-50% andrographolides 	<ul style="list-style-type: none"> • SE Asia herb “King of Bitters” • Std. to andrographolide - diterpenoid 	<ul style="list-style-type: none"> • Clinical studies support using std. Andrographis for uncomplicated 	41,42,43,44, 45,46,47

<p>paniculata) aerial parts extract</p>		<ul style="list-style-type: none"> • Immunomodulatory • Th1/Th2 and Th17 modulation • Antiviral • Anti-inflammatory • Hepatoprotective • Also effective in Type 2 diabetes – lowers fasting insulin and HbA1c 	<p>upper respiratory infections (uRTI) including preventing the common cold</p>	
<p>English ivy (Hedera helix) extract</p>	<ul style="list-style-type: none"> • 5-10ml 3-4 times daily std to 11% hederacoside C (4.7mg/5ml) 	<ul style="list-style-type: none"> • Mucolytic, spasmolytic, bronchodilatory, antibacterial • Antispasmodic and expectorant saponins and phenolic compounds (heterodides) • Trigger mucous release • Review of studies – 10 trials, over 17,000 patients: <ul style="list-style-type: none"> ○ Conclusion” Ivy is effective in reducing symptoms of URTI including frequency and duration of cough and improvement in mucous production” • A post-marketing study in 9657 patients (5181 children) with bronchitis (acute or chronic bronchial inflammatory disease) were treated w/ Ivy extract (11% heterasides). <ul style="list-style-type: none"> ○ After 7 days of therapy, 95% of the patients showed improvement or healing of their symptoms 	<ul style="list-style-type: none"> • Ivy leaf used for bronchial issues in Europe for decades as Rx medicine • German Commission E approves Ivy extract for symptomatic relief of acute and chronic respiratory inflammation 	<p>48,49,50,51,52</p>
<p>Glutathione intranasal spray Compounded w/cyclodextrin</p>	<ul style="list-style-type: none"> • 10%, 20% or 30% glutathione intranasal spray • 1 spray each nostril BID 	<ul style="list-style-type: none"> • Viral infections typically deplete levels of glutathione (GSH) • GSH is an antioxidant and also reported to have antiviral activity • Immune supportive • Cyclodextrin is used as a pharmaceutical aid, but also has high antiviral activity • Study - 15 patients with PD, 200 mg of GSH was given intranasally and reported GSH levels did not only raise, but the levels remained high even 1 hour after administration. 	<ul style="list-style-type: none"> • SE’s can include irritated nasal passages, headaches • Purchase from a licensed Compounding Pharmacy 	<p>53,54,55</p>
<p>Resveratrol, Trans- resveratrol</p>	<ul style="list-style-type: none"> • 200 mg BID-QID Trans-resveratrol 	<ul style="list-style-type: none"> • Antioxidant phenolic, stilbenoid compound from red wine, fruit skins, and Japanese knotweed (Polygonum cuspidatum) • Improves glutathione pools • Decreases cellular aging • Anti-inflammatory 	<ul style="list-style-type: none"> • Poor bioavailability and poorly water soluble • May have pro-oxidant activity – depends on pH; more acidic pH, more pro-oxidant activity 	<p>56,57,58,59</p>

		<ul style="list-style-type: none"> • Cardiovascular protective • Neuroprotective • Upregulates SIRT1 – Sirtuins are viral restriction factors, antiviral • Antitumor • Antiviral activity <ul style="list-style-type: none"> ○ Reported useful in treating in vitro Middle East Respiratory Syndrome coronavirus (MERS-CoV) ○ Affects Zika virus in-vitro ○ Effectiveness against Epstein-Barr in-vitro ○ HIV virus ○ Respiratory Syncytial Virus ○ Herpes simplex virus ○ Varicella zoster virus ○ Hepatitis C virus 	<ul style="list-style-type: none"> • Use with caution if taking prescription and non-prescription medications as resveratrol interacts with CYP34A, especially at higher dosages • Also inhibits P-glycoprotein • Reported to hinder platelet aggregation in vitro, use with caution if taking anticoagulants/antiplatelets on NSAIDs, and/or has a bleeding disorder 	
Thai ginseng (Kaempferia parviflora)	<ul style="list-style-type: none"> • 50mg BID, std. to at least 4% 5,7-dimethoxyflavone 	<ul style="list-style-type: none"> • Traditionally used as a male potency herb – used for erectile dysfunction. PDE5 inhibiting properties • Much research in last 5 years • Improves mitochondrial biogenesis • Improves physical performance and decreases effects of stress • SIRT-1 activity - Sirtuins are viral restriction factors, antiviral • Inhibits viral proteases • Upregulates TNF alpha and IFN beta mRNA expression • Inhibits viral replication • Active against cytokine response to viral infection – cytokine “storm” • Reported to be useful in treating in vitro H5N1 avian influenza virus 	<ul style="list-style-type: none"> • SIRT1 activity of KP’s 5,7 dimethoxyflavones is 3-4x as potent as resveratrol • Use with caution if taking PDE5 inhibitors... Kaempferia has PDE5 inhibitory activity in vivo • KP reported to decrease expression of CYP3A11 and CYP3A25. Use with caution if prescribing medications metabolized by these enzymes including: <ul style="list-style-type: none"> ○ Benzodiazepines ○ Buspirone ○ Calcium channel blockers ○ Carbamazepine ○ HIV protease inhibitors ○ Fentanyl ○ Felodipine, nifedipine ○ Lovastatin, simvastatin ○ Quinidine, quinine 	60,61,62,63, 64,65,66

Peptides – Immune/Antiviral Treatment	Dosage	Uses/Activity	Notes	Studies
Thymosin alpha-1 (TA1)	<ul style="list-style-type: none"> 450 mcg SQ daily (0.15ml) Supplied 3,000mcg/ml 5ml 	<ul style="list-style-type: none"> Synthetic thymic peptide Immune supportive Modulates innate immunity (Pleiotropic) Improves Th1/Th2 balance Modulates human GUT mucosal immune system 	<ul style="list-style-type: none"> FDA approved form available for Hepatitis B & C Transient increases in ALT may occur May use in conjunction with vaccines to support immunity 	67,68,69
Thymosin Beta-4 (TB4)	<ul style="list-style-type: none"> 300mcg – 1gm daily, depending upon clinical presentation Do not does > 3 months Cycle if long-term needed – 3 months on, 1 month off Dose in conjunction with TA1 if using for immune support 	<ul style="list-style-type: none"> Synthetic thymic peptide Immune supportive Antimicrobial Improves T cells Helps modulate GUT mucosal immune system Wound and soft tissue repair 		70,71,72

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