

REFERENCES

1. Voruz P, Allali G, Benzakour L, Jacot I, Pierce J. Long COVID neuropsychological deficits after severe, moderate or mild infection. medRxiv. 2021.
2. Taquet M, Geddes JR, Husain M, Luciano S, Harrison PJ. 6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records. *Lancet Psychiatry*. 2021.
3. Davis HE, McCorkell L, Vogel JM, Topol EJ. Long COVID: major findings, mechanisms and recommendations. *Nat Rev Microbiol*. 2023;21(3):133-46.
4. Yong SJ. Long-haul COVID-19: Putative pathophysiology, risk factors, and treatments. medRxiv. 2020.
5. Carfi A, Bernabei R, Landi F. Persistent symptoms in patients after acute COVID-19. *JAMA*. 2020.
6. Prescott HC, Girard TD. Recovery from Severe COVID-19. Leveraging the lessons of survival from sepsis. *JAMA*. 2020.
7. Greenhalgh T, Knight M, A'Court C, Buxton M, Husain L. Management of post-acute Covid-19 in primary care. *BMJ*. 2020.
8. Chopra V, Flanders SA, O'Malley M. Sixty-day outcomes among patients hospitalized with COVID-19. *Ann. Intern. Med*. 2020.
9. Mandal S, Barnett J, Brill SE, Brown JS, Hare SS. 'Long-COVID': a cross-sectional study of persisting symptoms, biomarker and imaging abnormalities following hospitalization for COVID-19. *Thorax*. 2020.
10. Michelen M, Manoharan L, Elkheir N, Cheng V, Dagens D, Hastie C. Characterising long-term covid-19: a rapid living systematic review. medRxiv. 2020.
11. Huang C, Huang L, Wang Y, Li X, Ren L, Gu X. 6-month consequences of COVID-19 in patients discharged from hospital: a cohort study. *Lancet*. 2021.
12. Logue JK, Franko NM, McCulloch DJ, McDonald D. Sequelae in adults at 6 months after COVID-19 infection. *JAMA Network Open*. 2021;4:e210830.
13. Janiri D, Carfi A, Kotzalidis GD, Bernabei R. Posttraumatic stress disorder in patients after severe COVID-19 infection. *JAMA Psychiatry*. 2021.
14. Al-Aly Z, Xie Y, Bowe B. High-dimensional characterization of post-acute sequelae of COVID-19. *Nature*. 2021.
15. Bek LM, Berentschot JC, Huijts S, Vlakte JH, Aerts JG. Symptoms persisting after hospitalization for COVID-19: 12 month interim results of the COFLOW study. medRxiv. 2021.
16. Patterson BK, Francisco EB, Yogendra R, Long E, Pise A, Hall E, et al. Persistence of SARS CoV-2 S1 protein in CD16+ monocytes in post-acute sequelae of COVID-19 (PASC) up to 15 months post-infection. *Front. Immunol*. 2022;12:746021.
17. Bryce C, Grimes Z, Pujadas E, Ahuja S, Beasley MB, Albrecht R, Hernandez T. Pathophysiology of SARS-CoV-2: targeting of endothelial cells renders a complex disease with thrombotic microangiopathy and aberrant immune response. The Mount Sinai COVID-19 autopsy experience. medRxiv. 2020.
18. Magro CM, Mulvey JJ, Laurence J, Seshan S, Crowson AN, Harp J. Docked severe acute respiratory syndrome coronavirus 2 proteins within the cutaneous and subcutaneous microvasculature and their role in the pathogenesis of severe coronavirus disease 2019. *Human Pathology*. 2020;106:106-16.
19. Lu Y, Li X, Geng D, Mei N, Wu PY, Huang CC. Cerebral micro-structural changes in COVID-19 patients - An MRI-based 3-month follow-up study. *EClinicalMedicine*. 2020.
20. Franke C, Ferse C, Kreye J, Rocco A, Hosp J. High frequency of cerebrospinal fluid autoantibodies in COVID-19 patients with neurological symptoms. *Brain, Behavior, and Immunity*. 2021.

21. Theoharides TT, Cholevas C, Polyzoidis K, Poliotis A. Long-COVID syndrome-associated brain fog and chemofog: Luteolin to the rescue. *Biofactors*. 2021;47:232-41.
22. Theoharides TC, Tsilioni I, Ren H. Recent advances in our understanding of mast cell activation-or should it be mast cell mediator disorders? *Expert Rev. Clin. Immunol.* 2019;15:639-56.
23. Zilberman-Itskovich S, Catalogna M, Sasson E, Hadanny A, Lang E, Finci S, et al. Hyperbaric oxygen therapy improves neurocognitive functions and symptoms of post-COVID condition: randomized controlled trial. *Scientific Reports*. 2022;12:11252.
24. COVID-19 rapid guideline: managing the long-term effects of COVID-19. www.nice.org.uk/guidance/ng188: National Institute for Health and Care Excellence; 2020.
25. Dhooria S, Chaudhary S, Sehgal IS, Agarwal R, Arora S. High-dose versus low-dose prednisolone in symptomatic patients with post-COVID-19 diffuse parenchymal lung abnormalities: an open-label, randomised trial (COLDSTER). *Eur. Respir. J.* 2021.
26. Seifirad S. Pirfenidone: A novel hypothetical treatment for COVID-19. *Medical Hypotheses*. 2020;144:11005.
27. Saba A, Vaidya PJ, Chavhan VB, Achlerkar A, Leuppi J. Combined pirfenidone, azithromycin and prednisolone in post-H1N1 ARDS pulmonary fibrosis. *Sarcoidosis Vasc Diffuse Lung Dis.* 2018;35:85-90.
28. Spagnolo P, Balestro E, Aliberti S, Cocconcelli E, Biondini D, Casa GD. Pulmonary fibrosis secondary to COVID-19: a call to arms? *Lancet Resp Med.* 2020;8:750-2.
29. George PM, Wells AU, Jenkins RG. Pulmonary fibrosis and COVID-19: the potential role for antifibrotic therapy. *Lancet Resp Med.* 2020;8:807-15.
30. Skurikhin EG, Andreeva TV, Khnelevskaya ES, Ermolaeva LA, Pershina OV, Krupin VA. Effect of antiserotonin drug on the development of lung fibrosis and blood system reactions after intratracheal administration of bleomycin. *Bull. Exp. Biol. Med.* 2012;152:519-23.
31. Saha JK, Raihan J. The binding mechanism of ivermectin and levosalbutamol with spike protein of SARS-CoV-2. *Research Square*. 2021.
32. Bello M. Elucidation of the inhibitory activity of ivermectin with host nuclear importin alpha and several SARS-CoV-2 targets. *Journal of Biomolecular Structure and Dynamics*. 2021.
33. Lehrer S, Rheinstein PH. Ivermectin docks to the SARS-CoV-2 spike receptor-binding domain attached to ACE2. *In Vivo*. 2020;34:3023-6.
34. Ci X, Li H, Yu Q, Zhang X, Yu L, Chen N, et al. Avermectin exerts anti-inflammatory effect by downregulating the nuclear transcription factor kappa-B and mitogen activated protein kinase pathway. *Fundamental & Clinical Pharmacology*. 2009;23:449-55.
35. DiNicolantonio JJ, Barroso-Arranda J, McCarty M. Ivermectin may be a clinically useful anti-inflammatory agent for late-stage COVID-19. *Open Heart*. 2020;7:e001350.
36. Yan S, Ci X, Chen N, Chen C, Li X, Chu X, Li J. Anti-inflammatory effects of ivermectin in mouse model of allergic asthma. *Inflamm. Res.* 2011;60:589-96.
37. Nicolas P, Maia MF, Bassat Q, Kobylinski KC, Monteiro W. Safety of oral ivermectin during pregnancy: a systematic review and meta-analysis. *Lancet Glob. Health*. 2020;8:e92-e100.
38. Poenaru S, Abdallah SJ, Corrales-Medina V, Cowan J. COVID-19 and post-infectious myalgic encephalomyelitis/chronic fatigue syndrome: a narrative review. *Ther. Adv. Infectious Dis.* 2021;8:1-16.
39. Raman B, Cassar MP, Tunnicliffe EM, Filippini N, Griffanti L, Okell T, et al. Medium-term effects of SARS-CoV-2 infection on multiple vital organs, exercise capacity, cognition, quality of life and mental health, post hospital discharge. *EClinicalMedicine*. 2022;31:100683.
40. Booth NE, Myhill S, McLaren-Howard J. Mitochondrial dysfunction and the pathophysiology of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS). *Int. J. Clin. Exp. Med.* 2012;5:208-20.

41. Wood E, Hall KH, Tate W. Role of mitochondria, oxidative stress and the response to antioxidants in myalgic encephalomyelitis/Chronic fatigue syndrome: A possible approach to SARS-CoV-2 'long-haulers'? *Chronic Diseases and Translational Medicine*. 2021;7:14-26.
42. Brown JT, Saigal A, Karia N, Patel RK, Razvi Y, Steeden JA. Ongoing exercise intolerance following COVID-19: A magnetic resonance-Augmented Cardiopulmonary exercise Test Study. *J. Am. Heart Assoc*. 2022;11:e024207.
43. Younger J, Parkitny L, McLain D. The use of low-dose naltrexone (LDN) as a novel anti-inflammatory treatment for chronic pain. *Clin. Rheumatol*. 2014;33:451-9.
44. Toljan K, Vrooman B. Low-dose naltrexone (LDN) - Review of therapeutic utilization. *Med. Sci*. 2018;6:82.
45. Molina-Carballo A, Palacios-Lopez R, Jerez-Calero A, Agil A. Protective effect of melatonin administration against SARS-CoV-2 infection: A systematic review. *Current Issues in Molecular Biology*. 2022;44:31-45.
46. Hasan ZT, AlAtrakji MQ, Mehuaiden AK. The effect of melatonin on thrombosis, sepsis and mortality rate in COVID-19 patients. *International Journal of Infectious Diseases*. 2022;114:79-84.
47. Reiter RJ, Sharma R, Ma Q, Liu C, Manucha W, Abreu-Gonzalez P. Plasticity of glucose metabolism in activated immune cells: advantages for melatonin inhibition of COVID-19 disease. *Melatonin Res*. 2020;3:362-79.
48. Reiter RR, Sharma R, Castillo R, Marik PE, Rodriguez AD, Cardinali DP. Coronavirus-19, Monocyte/Macrophage glycolysis and inhibition by melatonin. *J. SARS-CoV2 COVID*. 2021;2:29-31.
49. Colunga Biancatelli RM, Berrill M, Mohammed YH, Marik PE. Melatonin for the treatment of sepsis: the scientific rationale. *J. Thorac. Dis*. 2020;12 (Suppl 1):S54-S65.
50. Rylander R. Bioavailability of magnesium salts - A review. *Journal of Pharmacy and Nutrition Sciences*. 2014;4:57-9.
51. Uysal N, Kizildag S, Yuce Z, Guvendi G, Kandis S, Koc B, Ates M. Timeline (Bioavailability) of magnesium compounds in hours: Which magnesium compound works best? *Biological Trace Element Research*. 2018.
52. Li W, Yu J, Liu Y, Huang X, Abumaria N, Zhu Y, et al. Elevation of brain magnesium prevents synaptic loss and reverses cognitive deficits in Alzheimer's disease mouse model. *Molecular Brain*. 2014;7:65.
53. Di Y, He YL, Zhao T, Huang X, Wu KW, Liu SH, et al. Methylene blue reduces acute cerebral ischemic injury via the induction of mitophagy. *Mol. Med*. 2015;21:420-9.
54. Jiang Z, Watts LT, Huang S, Shen Q, Rodriguez P, Chen C. The effects of methylene blue on autophagy and apoptosis in MRI-defined normal tissue, ischemic penumbra and ischemic core. *PLoS ONE*. 2015;10:e0131929.
55. Xie L, Li W, Winters A, Yuan F, Jin K, Yang S. Methylene blue induces macroautophagy through 5' adenosine monophosphate-activated protein kinase pathway to protect neurons from serum deprivation. *Frontiers in Cellular Neuroscience*. 2013;7:56.
56. Peter C, Hongwan D, Kupfer A, Lauterburg BH. Pharmacokinetics and organ distribution of intravenous and oral methylene blue. *Eur. J. Clin. Pharmacol*. 2000;56:247-50.
57. Tucker D, Lu Y, Zhang Q. From mitochondrial function to neuroprotection - An emerging role for methylene blue. *Mol. Neurobiol*. 2018;55:5137-53.
58. Yang L, Youngblood H, Wu C, Zhang Q. Mitochondria as a target for neuroprotection: role of methylene blue and photobiomodulation. *Translational Neurodegeneration*. 2020;9:19.
59. Gonzalez-Lima F, Auchter A. Protection against neurodegeneration with low-dose methylene blue and near-infrared light. *Frontiers in Cellular Neuroscience*. 2015;9:179.
60. Rojas JC, Bruchey AK, Gonzalez-Lima F. Neurometabolic mechanisms for memory enhancement and neuroprotection of methylene blue. *Prog. Neurobiol*. 2012;96:32-45.

61. Heiskanen V, Pffiffner M, Partonen T. Sunlight and health; shifting the focus from vitamin D3 to photobiomodulation by red and near-infrared light. *Ageing Research Reviews*. 2022;61:101089.
62. Whitten A. *The Ultimate guide to red light therapy*: Archangel Ink; 2018.
63. Hobday RA, Cason JW. The open-air treatment of pandemic influenza. *Am. J. Public Health*. 2022;99 Suppl.2:S236-S42.
64. Lindqvist PG, Epstein E, Landin-Olsson M, Ingvar C, Nielsen K, stenbeck M, Olsson H. Avoidance of sun exposure is a risk factor for all-cause mortality: results from the Melanoma in Southern Sweden cohort. *Journal of Internal Medicine*. 2014;276:77-86.
65. Hamblin MR. Mechanisms and application of the anti-inflammatory effects of photobiomodulation. *AIMS Biophys*. 2017;4:337-61.
66. Yeager RL, Oleske DA, Sanders RA, Eells JT, Henshel DS. Melatonin as a principal component of red light therapy. *Medical Hypotheses*. 2007;69:372-6.
67. Aguida B, Pooam M, Ahmad M, Jourdan N. Infrared light therapy relieves TLR-4 dependent hyper-inflammation of the type induced by COVID-19. *Communicative & Integrative Biology*. 2021;14(1):200.
68. Hamblin MR. Shining light on the head: Photobiomodulation for brain disorders. *BBA Clinical*. 2016;6:113-24.
69. Hamblin MR. Photobiomodulation for Alzheimer's disease: Has the light dawned? *Photonics*. 2019;6:77.
70. Cassano P, Petrie SR, Cusin C, Yeung A, Bui E, Baer L, Chang T. Transcranial photobiomodulation for the treatment of major depressive disorder. The ELATED-2 pilot trial. *Photomedicine and Laser Surgery*. 2018;36:634-46.
71. Nizamutdinov D, Qi X, Berman MH, Dougal G, Wu E, Yi SS, Stevens AB. Transcranial near infrared light stimulations improve cognition in patients with dementia. *Aging and Disease*. 2021;12.
72. Liebert A, Bicknell B, Markman W, Kiat H. A potential role for photobiomodulation therapy in disease treatment and prevention in the era of COVID-19. *Aging and Disease*. 2020;11:1352-62.
73. Pereira PC, de Lima CJ, Fernandes AB, Zangaro RA, Villaverde AB. Cardiopulmonary and hematological effects of infrared LED photobiomodulation in the treatment of SARS-COV2. *Journal of Photochemistry & Photobiology, B: Biology*. 2023;238:112619.
74. Gligorijevic N, Stanic-Vucinic D, Radomirovic M, Stajadinovic M, Khulal U, Nedic O. Role of resveratrol in prevention and control of cardiovascular disorders and cardiovascular complications related to COVID-19 disease: Mode of action and approaches explored to increase its bioavailability. *Molecules*. 2021;26:2834.
75. Pandey P, Rane JS, Chatterjee A, Kumar A, Khan R, Prakash A, Ray S. Targeting SARS-CoV-2 spike protein of COVID-19 with naturally occurring phytochemicals: an in silico study for drug development. *Journal of Biomolecular Structure and Dynamics*. 2020.
76. de Sa Coutinho D, Pacheco MT, Frozza RL, Bernardi A. Anti-inflammatory effects of resveratrol: Mechanistic insights. *International Journal of Molecular Sciences*. 2018;19:1812.
77. Park D, Jeong H, Lee MN, Koh A, Kwon O, Yang YR, et al. Resveratrol induces autophagy by directly inhibiting mTOR through ATP competition. *Scientific Reports*. 2016;6:21772.
78. Kou X, Chen N. Resveratrol and natural autophagy regulator for prevention and treatment of Alzheimers disease. *Nutrients*. 2017;9:927.
79. De Santi C, Pietrabissa A, Spisni R, Mosca F, Pacifici GM. Sulphation of resveratrol, a natural compound present in wine, and its inhibition by natural flavonoids. *Xenobiotica*. 2000;30:857-66.
80. Yang JY, Della-Fera MA, Rayalam S, Ambati S, Hartzell DL, Park HJ, Baile CA. Enhanced inhibition of adipogenesis and induction of apoptosis in 3T3-L1 adipocytes with combinations of resveratrol and quercetin. *Life Sciences*. 2008;82:1032-9.
81. Saeedi-Boroujeni A, Mahmoudian-Sani MR. Anti-inflammatory potential of Quercetin in COVID-19 treatment. *J. Inflamm*. 2021;18:3.

82. Chan EW, Wong CW, Tan YH, Foo JP, Wong SK. Resveratrol and pterostilbene: A comparative overview of their chemistry, biosynthesis, plant sources and pharmacological properties. *Journal of Applied Pharmaceutical Science*. 2019;9:124-9.
83. Chang J, Rimando A, Pallas M, Camins A, Porquet D, Reeves J, Smith MA. Low-dose pterostilbene, but not resveratrol, is a potent neuromodulator in aging and Alzheimer's disease. *Neurobiology of Aging*. 2012;33:2062-71.
84. Liu Y, You Y, Lu J, Chen X, Yang Z. Recent advances in synthesis, bioactivity, and pharmacokinetics of Pterostilbene an important analog of resveratrol. *Molecules*. 2020;25:5166.
85. Walle T. Bioavailability of resveratrol. *Annals of the New York Academy of Sciences*. 2011;1215:9-15.
86. Sathyapalan T, Manuchehri AM, Thatcher NJ, Rigby AS, Chapman T. The effect of soy phytoestrogen supplementation on thyroid status and cardiovascular risk markers in patients with subclinical hypothyroidism: A randomized, double-blind, crossover study. *J. Clin. Endocrinol. Metab.* 2020;96:1422-49.
87. Gutierrez-Castrellon P, Gandara-Marti T, Abreu AT, Nieto-Rufino CD, Lopez-Orduna E. Probiotic improves symptomatic and viral clearance in Covid-19 outpatients: a randomized, quadruple-blinded, placebo-controlled trial. *GUT Microbes*. 2022;14:e2018899.
88. Zuo T, Wu X, Wen W, Lan P. Gut microbiome alterations in COVID-19. *Genomics, Proteomics & Bioinformatics*. 2021.
89. Chen Y, Gu S, Chen Y, Lu H, Shi D, Guo J. Six-month follow-up of gut microbiota richness in patients with COVID-19. *Gut*. 2021.
90. Thomas R, Aldous J, Forsyth R, Chater A, Williams M. The influence of a blend of probiotic *Lactobacillus* and prebiotic inulin on the duration and severity of symptoms among individuals with COVID-19. *Infect. Dis. Diag. Treat.* 2022;5:12.
91. Lee CR, Zeldin DC. Resolvin infectious inflammation by targeting the host response. *N. Engl. J. Med.* 2015;373:2183-5.
92. Serhan CN. Novel pro-resolving lipid mediators in inflammation are leads for resolution physiology. *Nature*. 2014;510:92-101.
93. Kosmopoulos A, Bhatt L, Meglis G, Verma R, Pan Y. A randomized trial of Icosapent Ethyl in ambulatory patients with COVID-19. *iScience*. 2021;24:103040.
94. Yokoyama M, Origasa H, Matsuzaki M, Matsuzawa Y, Saito Y, Ishikawa Y, et al. Effects of eicosapentaenoic acid on major coronary events in hypercholesterolaemic patients (JELIS): a randomised open-label, blinded endpoint analysis. *Lancet*. 2007;369(9567):1090-8.
95. Harris WS. Understanding why REDUCE-It was positive-mechanistic overview of eicosapentaenoic acid. *Progress in Cardiovascular Diseases*. 2019;62:401-5.
96. Bhatt D, Steg PG, Miller M, Brinton EA, Jacobson TA, Ketchum SB, Doyle RT. Cardiovascular risk reduction with icosapent ethyl for hypertriglyceridemia. *N. Engl. J. Med.* 2019;380:11.
97. Kastelstein JJ, Stroes ES. FISHing for the miracle of eicosapentaenoic acid. *N. Engl. J. Med.* 2019;380:89-91.
98. Guo XF, Li KL, Li JM, Li D. Effects of EPA and DHA on blood pressure and inflammatory factors: a meta-analysis of randomized controlled trials. *Clinical Reviews in Food Science and Nutrition*. 2019;59:3380-93.
99. von Schacky C. Importance of EPA and DHA blood levels in brain structure and function. *Nutrients*. 2021;13:1074.
100. Cottin SC, Sanders TA, Hall WL. The differential effects of EPA and DHA on cardiovascular risk factors. *Proceeding of the Nutrition Society*. 2011;70:215-31.
101. Allaire J, Couture P, Leclerc M, Charest A, Marin J. A randomized, crossover, head to head comparison of eicosapentaenoic acid and docosahexaenoic acid supplementation to reduce inflammation markers in men and women: the Comparing PA to DHA (ComparED) study. *Am. J. Clin. Nutr.* 2016;104:280-7.

102. Izquierdo JL, Soriano JB, Gonzalez Y, Lumbreras S. Use of N-Acetylcysteine at high doses as an oral treatment for patients with COVID-19. *Science Progress*. 2022;105.
103. Shi Z, Puyo CA. N-Acetylcysteine to combat COVID-19: an evidence review. *Therapeutics and Clinical Risk Management*. 2020;16:1047-55.
104. De Flora S, Balansky R, La Maestra S. Rationale for the use of N-acetylcysteine in both prevention and adjuvant therapy of COVID-19. *FASEB J*. 2020.
105. Schmitt B, Vicenzi M, Garrel C, Denis FM. Effects of N-acetylcysteine, oral glutathione (GSH) and a novel sublingual for of GSH on oxidative stress markers: A comparative crossover study. *Redox Biology*. 2015;6:198-205.
106. Allen J, Bradley RD. Effects of oral glutathione supplementation on systemic oxidative stress biomarkers in human volunteers. *Journal of Alternative & Complementary Medicine*. 2011;17:827-33.
107. Sinha R, Sinha I, Calcagnotto A, Trushin N, Haley JS. Oral supplementation with liposomal glutathione elevates body stores of glutathione and markers of immune function. *Eur. J. Clin. Nutr*. 2018;72:105-11.
108. Yoon JK, Frankel AE, Feun LG, Ekmekcioglu S, Kim KB. Arginine deprivation therapy for malignant melanoma. *Clinical Pharmacology Advances and Applications*. 2013;5:11-9.
109. Stang A, Robers J, Schonert B, Jockei KH, Speisberg A. The performance of the SARS-CoV-2 RT-PCR test as a tool for detecting SARS-CoV-2 infection in the population. *J. Infect*. 2021;83:244-5.
110. Islam MT, Guha B, Hosen S, Alam T, Shahadat S. Nigellalogy: A review on *Nigella Sativa*. *MOJ Bioequiv. Availab*. 2017;3:00056.
111. Ashraf S, Ashraf S, Ashraf M, Imran MA, Kalsoom L, Siddiqui UN, Farooq I. Honey and *Nigella sativa* against COVID-19 in Pakistan (HNS-COVID-PK): A multi-center placebo-controlled randomized clinical trial. *medRxiv*. 2021.
112. Barbash IJ, Davis BS, Yabes JG, Seymour CW, Angus DC, Kahn JM. Treatment patterns and clinical outcomes after the introduction of the Medicare Sepsis Performance Measure (SEP-1). *Ann. Intern. Med*. 2021.
113. Fakhar-e-Alam Kulyar M, Li R, Mehmood K, Waqas M, Li K, Li J. Potential influence of *Nagella sativa* (Black cumin) in reinforcing immune system: A hope to decelerate the COVID-19 pandemic. *Phytomedicine*. 2021;85:153277.
114. Hannan MA. Black Cumin (*Nigella sativa* L.): A Comprehensive Review on Phytochemistry, Health Benefits, Molecular Pharmacology, and Safety. *Nutrients*. 2021;13(6).
115. Warner ME, Naranjo J, Pollard EM, Weingarten TN, Warner MA. Serotonergic medications, herbal supplements, and perioperative serotonin syndrome. *Can. J. Anaesth*. 2017;64:940-6.
116. Santamarina MG, Boisier D, Contreras R, Baque M, Volpacchio M. COVID-19: a hypothesis regarding the ventilation-perfusion mismatch. *Crit. Care*. 2020;24:395.
117. Mario L, Roberto M, Marta L, Teresa CM, Laura M. Hypothesis of COVID-19 therapy with sildenafil. *International Journal of Preventive Medicine*. 2020;11:76.
118. Santamarina MG, Beddings I, Martinez Lomakin F, Boisier Riscal D. Sildenafil for treating patients with COVID-19 and perfusion mismatch: a pilot randomized trial. *Crit. Care*. 2022;26:1.
119. Kniotek M, Boguska A. Sildenafil can affect innate and adaptive immune system in both experimental animals and patients. *Journal of Immunology Research*. 2017;2017:4541958.
120. Isidori AM, Giannetta E, Pofi R, Venneri MA, Gianfrilli D, Campolo F. Targeting the NO-cGMP-PDE5 pathway in COVID-19 infection. The DEDALO project. *Andrology*. 2021;9:33-8.
121. Al-kuraishy HM, Ali-Gareeb AI, Al-Niemi MS, Buhadily AK. COVID-19 and phosphodiesterase enzyme type 5 inhibitors. *J. Microsc. Ultrastruct*. 2022;8:141-5.
122. Reid PM, Borgstahl GE, Radhakrishnan P. Bromelain inhibits SARS-CoV-2 infection via targeting ACE-2, TMPRSS2, and spike protein. *Clin. Transl. Med*. 2021;11:e281.

123. Tallei TE, Yelnetty A, Idroes R, Emran TB, Sippi W. An analysis based on molecular docking and molecular dynamics simulation study of Bromelain as anti-SARS-CoV-2 variants. *Front. Pharmacol.* 2021;12:717757.
124. Akhter J, Queromes G, Pillai K, Badar S, Frobert E, Valle SJ. The combination of bromelain and acetylcysteine (BromAc) synergistically inactivates SARS-CoV-2. *Viruses.* 2021;13:425.
125. Marik PE. Hydrocortisone, Ascorbic Acid and Thiamine (HAT therapy) for the treatment of sepsis. Focus on ascorbic acid. *Nutrients.* 2018;10:1762.
126. Marik PE. Vitamin C for the treatment of sepsis: The scientific rationale. *Pharmacol. Therapeut.* 2018;189:63-70.
127. Colunga Biancatelli RM, Berrill M, Marik PE. The antiviral properties of vitamin C. *Expert Rev. Anti Infect. Ther.* 2020;18:99-101.
128. Miranda-Massari JR, Toro AP, Loh D, Rodriguez JR, Borges RM. The effects of vitamin C on the multiple pathological stages of COVID-19. *Life.* 2021;11:1341.
129. Holford P, Carr AC, Zawari M, Vizcaychipi MP. Vitamin C intervention for Critical COVID-19: A pragmatic review of the current level of evidence. *Life.* 2021;11:1166.
130. Madeo F, Eisenberg T, Pietrocola F, Kroemer G. Spermidine in health and disease. *Science.* 2018;359:410.
131. Eisenberg T, Abdellatif M, Schroeder S, Primessnig U, Stekovic S, Pendl T, et al. Cardioprotection and lifespan extension by natural polyamine spermidine. *Nat. Med.* 2016;22:1428-38.
132. Morselli E, Marino G, Bennetzen MV, Eisenberg T, Megalou E, Schroeder S, Cabrera S. Spermidine and resveratrol induce autophagy by distinct pathways converging on the acetylproteome. *J. Cell. Biol.* 2022;192:615-29.
133. Kiechl S, Pechlaner R, Willeit P, Notdurfier M, Paulweber B, Willeit K, et al. Higher spermidine intake is linked to lower mortality: a prospective population-based study. *Am. J. Clin. Nutr.* 2018;108:371-80.
134. Nowotarski SL, Woster PM, Casero RA. Polyamines and cancer: implications for chemoprevention and chemotherapy. *Expert Rev. Mol. Med.* 2014.
135. Zheng L, Xie Y, Sun Z, Zhang R, Ma Y, Xu J, Zheng J. Serum spermidine in relation to risk of stroke: A multilevel study. *Front. Nutr.* 2022;9:843616.
136. Sabel BA, Flammer J, Merabet LB. Residual vision activation and the brain-eye-vascular triad: Dysregulation, plasticity and restoration in low vision and blindness - a review. *Restorative Neurology and Neuroscience.* 2018;36:767-91.
137. Siegert A, Diedrich L, Antal A. New methods, old brains - A systematic review on the effects of tDCS on cognition of elderly people. *Frontiers in Human Neuroscience.* 2021;15:730134.
138. Teselink J, Bawa KK, Koo GK, Sankhe K, Liu CS, Oh P. Efficacy of non-invasive brain stimulation on global cognition and neuropsychiatric symptoms in Alzheimer's disease and mild cognitive impairment: A meta-analysis and systematic review. *Ageing Research Reviews.* 2021;72:101499.
139. Sabel BA, Zhou W, Huber F, Schmidt F, Sabel K. Non-invasive brain microcurrent stimulation therapy of long-COVID-19 reduces vascular dysregulation and improves visual and cognitive impairment. *Restorative Neurology and Neuroscience.* 2021;39:393-408.
140. Ahorsu DK, Adjaottor ES, Lam BY. Intervention effect of non-invasive brain stimulation on cognitive functions among people with traumatic brain injury: A systematic review and meta-analysis. *Brain Sci.* 2021;11:840.
141. Finisguerra A, Borgatti R, Urgesi C. Non-invasive brain stimulation for the rehabilitation of children and adolescents with neurodevelopmental disorders: A systematic review. *Frontiers in Psychology.* 2019;10:135.
142. Chen JJ, Zeng BS, Wu CN, Stubbs B, Carvalho AF, Su KP. Association of central noninvasive brain stimulation interventions with efficacy and safety in tinnitus management. A meta-analysis. *JAMA Otolaryngol. Head Neck Surg.* 2020;146:801-9.

143. Chen JJ, Zeng BY, Lui CC, Chen TY, Chen YW, Tseng PT. Pfizer-BioNTech COVID-19 vaccine-associated tinnitus and treatment with transcranial magnetic stimulation. *QJM*. 2022.
144. Sanabria-Mazo JP, Montero-Marin J, Feliu-Soler A, Gasion V, Navarro-Gil M. Mindfulness-based program plus amygdala and insula retraining (MAIR) for the treatment of women with fibromyalgia: A pilot randomized controlled trial. *J. Clin. Med.* 2020;9:3246.
145. Shu C, Feng S, Cui Q, Cheng S, Wang Y. Impact of Tai Chi on CRP, TNF-alpha and IL-6 in inflammation: a systematic review and meta-analysis. *Ann. Palliat. Med.* 2021;10:7468-6478.
146. Zhang Z, Ren JG, Guo JL, An L, Li S, Zhang ZC. Effects of Tai Chi and Qigong on rehabilitation after COVID-19: a protocol for systematic review and meta-analysis. *BMJ Open*. 2022;12:e059067.
147. Falkenberg RI, Eising C, Peters ML. Yoga and immune system functioning: a systematic review of randomized controlled trials. *J. Behav. Med.* 2018;41:467-82.
148. Robbins T, Gonevski M, Clark C, Sharma K, Magar A. Hyperbaric oxygen therapy for the treatment of long COVID: early evaluation of a highly promising intervention. *Clinical Medicine*. 2021;21:e629-e32.
149. Oliaei S, Mehrtak M, Karimi A, Noori T, Shojaei A, Dadras O. The effects of hyperbaric oxygen therapy (HBOT) on coronavirus disease-2019 (COVID-19): a systematic review. *Eur. J. Med. Res.* 2021;26:96.
150. Senniappan K, Jeyabalan S, Rangappa P, Kanchi M. Hyperbaric oxygen therapy: Can it be a novel supportive therap in COVID-19? *Indian Journal of Anaesthesia*. 2020;64:835-41.
151. Kjellberg A, De Maio A, Lindholm P. Can hyperbaric oxygen safely serve as an anti-inflammatory treatment for COVID-19? *Medical Hypotheses*. 2020;144:110224.
152. Hadanny A, Abbott S, Suzin G, Bechor Y, Efrati S. Effect of hyperbaric oxygen therapy on chronic neurocognitive deficits of post-traumatic brain injury patients: retrospective analysis. *BMJ Open*. 2018;8:e023387.
153. Han CH, Zhang PX, Xu WG, Li RP. Polarization of macrophages in the blood after decompression in mice. *J. Appl. Phys.* 2017(236):240.
154. De Maio A, Hightower LE. COVID-19, acute respiratory distress syndrome (ARDS), and hyperbaric oxygen therapy (HBOT): what is the link? *Cell Stress & Chaperones*. 2020;25:717-20.
155. Buras JA, Holt D, Orlow D, Belikoff B, Pavildes S, Reenstra WR. Hyperbaric oxygen protects from sepsis mortality via an interleukin-10-dependent mechanism. *Crit. Care Med.* 2006;34:2624-9.
156. Tezgin D, Giardina C, Perdrizet GA, Hightower LE. The effect of hyperbaric oxygen on mitochondrial and glycolytic energy metabolism: the caloristasis concept. *Cell Stress and Chaperones*. 2020;25:667-77.
157. Mogil RJ, Kaste SC, Ferry RJ, Hudson MM, Howell CR. Effect of low-magnitude, high-frequency mechanical stimulation on BMD among young childhood cancer survivors. A randomized clinical trial. *JAMA Oncol.* 2016;2:908-15.
158. Misra HS, rajpurohit YS, Khairnar NP. Pyrroloquinoline-quinone and its versatile roles in biological processes. *J. Biosci.* 2012;37:312-25.
159. Akagawa M, Nakano M, Ikemoto K. Recent progress in studies on the health benefits of pyrroloquinoline quinone. *Bioscience, Biotenchnology, and Biochemistry*. 2016;80:13-22.
160. Hamilton D, Jensen GS. Nutraceutical support of mitochondrial function associated with reduction of long-term fatigue and inflammation. *Alternative Therapies in Health & Medicine*. 2021;27:8-18.
161. Nicolson GL, Settineri R, Ellithorpe R. Lipid replacement therapy with a glycolipid formulation of NADH and CoQ10 significantly reduces fatigue in intractable chronic fatiguing illnesses and chronic lyme disease patients. *International Journal of Clinical Medicine*. 2012;3:163-70.
162. Chowanadisai W, Bauerly KA, Tchapanian E, Wong A, Rucker RB. Pyrroloquinoline quinone stimulates mitochondrial biogenesis through cAMP response element-binding protein phosphorylation and increased PGC-1alpha expression. *J. Biol. Chem.* 2010;285:142-52.

163. Nicolson GL, Settineri R. Lipid replacement therapy: a functional food approach with new formulations for reducing cellular oxidative damage, cancer-associated fatigue and the adverse effects of cancer therapy. *Functional Foods in Health and Disease*. 2011;1:135-60.
164. Nicolson GL, Rosenblatt S, de Mattos GF, Settineri R, Breeding PC, Ash ME. Clinical uses of membrane lipid replacement supplements in restoring membrane function and reducing fatigue in chronic disease and cancer. *Discoveries*. 2016;4:e54.
165. Shukla AM, Shukla AW. Expanding horizons for clinical applications of chloroquine, hydroxychloroquine and related structural analogues. *Drugs in Context*. 2019;8:2019-9-1.
166. Plantone D, Koudriavtseva T. Current and future use of chloroquine and hydroxychloroquine in infectious, immune, neoplastic and neurological diseases: A mini review. *Clin. Drug Invest.* 2018;38:653-71.
167. Ruiz-Irastorza G, Khamashta MA. Hydroxychloroquine: the cornerstone of lupus therapy. *Lupus*. 2008;17:271-3.
168. de Moreuil C, Alavi Z, Pasquier E. Hydroxychloroquine may be beneficial in preeclampsia and recurrent miscarriage. *Br. J. Clin. Pharmacol.* 2020;86:39-49.
169. Siso A, Ramos-Casals M, Bove A, Soria N, Testi A, Plaza J. Previous antimalarial therapy in patients diagnosed with lupus nephritis: Influence on outcomes and survival. *Lupus*. 2008;17:281-8.
170. Lai YJ, Liu SH, Manachevakul S, Lee TA, Kuo CT, Bello D. Biomarkers in long COVID-19: A systematic review. *Front Med (Lausanne)*. 2023 Jan
171. Pasini E, Corsetti G, Romano C, Scarabelli TM, Chen-Scarabelli C, Saravolatz L, Dioguardi FS. Serum Metabolic Profile in Patients With Long-Covid (PASC) Syndrome: Clinical Implications. *Front Med (Lausanne)*. 2021 Jul
172. Klein, J., Wood, J., Jaycox, J.R. et al. Distinguishing features of long COVID identified through immune profiling. *Nature* 623, 139–148 (2023).
173. Shilia Jacob Kurian, Sara Poikayil Mathews, Abin Paul, Subeesh K. Viswam, Shivashankara Kaniyoor Nagri, Sonal Sekhar Miraj, Shubhada Karanth,
174. Association of serum ferritin with severity and clinical outcome in COVID-19 patients: An observational study in a tertiary healthcare facility, *Clinical Epidemiology and Global Health*, Volume 21, 2023
175. Tsilingiris D, Vallianou NG, Karampela I, Christodoulatos GS, Papavasileiou G, Petropoulou D, Magkos F, Dalamaga M. Laboratory Findings and Biomarkers in Long COVID: What Do We Know So Far? Insights into Epidemiology, Pathogenesis, Therapeutic Perspectives and Challenges. *Int J Mol Sci*. 2023 Jun
176. Conti, V.; Corbi, G.; Sabbatino, F.; De Pascale, D.; Sellitto, C.; Stefanelli, B.; Bertini, N.; De Simone, M.; Liguori, L.; Di Paola, I.; et al. Long COVID: Clinical Framing, Biomarkers, and Therapeutic Approaches. *J. Pers. Med.* 2023, 13, 334.
177. Patel, M.A., Knauer, M.J., Nicholson, M. et al. Elevated vascular transformation blood biomarkers in Long-COVID indicate angiogenesis as a key pathophysiological mechanism. *Mol Med* 28, 122 (2022)