



## Upregulation of immune system against COVID-19: the role of food science, nutrition and bioactive compounds

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A scientific round table was held on March 16, 2022 to discuss the role of food science, nutrition and bioactive compounds on up-regulating the body's immune system against SARS-CoV-2. The panel from an international group of experts in food science, nutrition, microbiology and medicine provided the latest scientific information associated with the COVID-19 pandemic. The round-table was organised by the Dr Chin-Kun Wang of the Academy Executive Council chaired by Dr. Aman Wrakartakusumah (Indonesia) and Charles Aworth (Nigeria). The session was concluded by a question and answer period with a summary from Dr. Roger Clemens (USA).

Dr. Narain Naidu, from the USA, emphasized that COVID-19 is a virus-induced 'host metabolic reprogram' (HMR) with clinical onset of iron (Fe)-redox dysregulation (FeRD). He noted that the severe imbalance in iron metabolism among SARS-CoV-2 infected individuals is prominent during all three symptomatic (mild, moderate to severe) clinical phases of COVID-19. Accordingly, the Fe-redox restoration is a host biomarker-driven potential combat strategy for an effective clinical and post-recovery management of COVID-19.

Dr. Chin-Kun Wang, from Taiwan, outlined the role of various "functional foods/nutraceuticals" and a balanced diet rich in various nutrients (i.e., vitamin C, vitamin D, omega 3 polyunsaturated fatty acids, probiotics, and zinc) in restoring and reducing the risk of COVID-19-related health problems. He also presented the results of his ongoing clinical research on electrolyzed (redox) water as an effective antimicrobial intervention to reduce the risks and

comorbidities associated with COVID-19.

Dr. Fereidoon Shahidi, from Canada, suggested that phenolic and polyphenolic compounds have the potential to strengthen antioxidant defenses, decrease viral entry, inhibit the binding of virus to its angiotensin-converting enzyme 2 (ACE2) receptor, upregulate the immune system, and reduce COVID-19 cytokine storm. Dietary compounds/mixtures/extracts that are able to offer this inhibition may serve as intervention targets for COVID-19. These interactions need validation and quantification through clinical research before specific recommendations can be advanced.

Dr. Kenji Sato, from Japan, explained the potential of specific bioactive peptides to decrease risk factors for COVID-19. He explained the ability of specific bioactive peptides to decrease angiotensin II, the host inflammatory peptide. He also suggested that oral administration of glutathione (GSH) and its precursor N-acetylcysteine (NAC) may, depending on one's genetics, ameliorate hypo-glutathione in COVID-19 positive individuals and possibly decrease disease severity.

This Scientific Roundtable Discussion (SRD), one of an ongoing series initiated by IUFOST, was organised and hosted by IAFoST, the International Academy of Food Science and Technology. Outcomes include publication of findings by speakers and panelists in a future publication in the Journal of Food Bioactives (JFB), the official journal of the International Society for Nutraceuticals and Functional Foods (ISNFF) and the IUFOST and further interdisciplinary work among interested scientists and stakeholders in food science, nutrition and medical sciences.