

# Vaccine-Passport Bio-Medicinal-Meals Prevent Reinfection-Coronavirus-2: Improved Global-Health-Clinical-Drug-Discovery-Education-Research Socio-Economy-Science-Technology-Communication-Application!

Subhas Chandra Datta

Headmaster & Secretary of Kanchannagar D.N.Das High School (HS), Kanchannagar, Burdwan Municipality, Purba Bardhaman, Bardhaman-713102, West Bengal, India.

## Article Info

**Received:** April 14, 2021  
**Accepted:** April 20, 2021  
**Published:** April 30, 2021

**\*Corresponding author:** Subhas Chandra Datta, Headmaster & Secretary of Kanchannagar D.N.Das High School (HS), Kanchannagar, Burdwan Municipality, Purba Bardhaman, Bardhaman-713102, West Bengal, India.

**Citation:** Subhas C Datta. (2021) "Vaccine-Passport Bio-Medicinal-Meals Prevent Reinfection-Coronavirus-2: Improved Global-Health-Clinical-Drug-Discovery-Education-Research Socio-Economy-Science-Technology-Communication-Application!", Aditum Journal of Clinical and Biomedical Research, 2(3); DOI: <http://doi.org/04.2021/1.1022>.

**Copyright:** © 2021 Subhas Chandra Datta. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## Abstract

### Backgrounds:

In less than one year, the reinfection of COVID-19 not only restrict the closure of different institutes, parks, sports, and activity classes, achieving the effects on physical activity, sedentary behavior, and change-attitude, but also the COVID-19 has transformed into coronavirus-2 (SARS-CoV-2) OR long-COVID OR new-variant-and-mutant-coronavirus OR environment-friendly-stability-SARS-CoV-2, post-COVID-acute-syndrome OR rare-COVID-vaccine-side-effects like unusual-clotting, etc., and the puzzled-scientists are searching the proper-vaccine to vaccinate the whole-world against the recent-unknown-COVID-19, and the pharmaceutical-companies have taken the responsibility as fast as possible to produce hundreds of millions of doses of COVID-19-vaccine within just a few months, but the world needs-billions, establishing the "From Vaccine-Nationalism to Vaccine-Equity— Finding a Path-Forward".

### Materials and Methods:

The health-beneficial-phytochemicals-content bio-medicinal-midday-meals; amaranth, okra, cowpea, cucumber and ginger OR with the different ultra-high or high-diluted bio-medicines; Zingiber officinale, prepared from the rhizome, Zingiber officinale Rosc., eating and drinking as a preventive-measures against naturally-occurring coronavirus-2 infections before-the symptom-onset OR illness-onset OR onset-of-symptoms.

### Results:

The present preventive combination methods have revealed those bio-medicinal-meals, very much effective in controlling diseases by boosting natural immunity against coronavirus-2 with no side effects.

### Conclusion:

The combination of both the bio-medicinal-meals with high-or ultra-diluted-biomedicines not only serve as "Potential-Natural-National-Bio-Medicine-Vaccine Against Coronavirus-2 By Boosting-Immunity", but also it acts as the "Nature's-Gift to Human-Disease-Free-Global-Healthy-New-Normal-Life" OR fulfill the "Vaccine-Nationalism to Vaccine-Equity and Vaccine-Passport" for its cost-effectiveness, eco-friendliness, easily-manufacturability, easily-applicability, easily-availability, and side-effects-freeness. In future, it may be used mainly on "Public-Health-Epidemiology, Infectious-Diseases, and Pharmacology, Toxicology, Clinical-immunology-Clinical-and-Bio-Medical-Sciences-Technology-Communication-Application, and Pharmaceutical-Research by developing the "ultra-high-diluted-Zingiber officinale-steam-inhalation-therapy" against variant-SARS-CoV-2 which easily-make-enough vaccines to immunize the world's-population".

## Graphical Abstract:

The combined bio-medicinal-meals not only serve as "Potential-Natural-National-Bio-Medicine-Vaccine-Against-Coronavirus-2-by Boosting-Immunity", but also it acts as the "Nature's-Gift to Human-Disease-Free-Global-Healthy-New-Normal-Life" OR fulfill the "Vaccine-Nationalism to Vaccine-Equity and Vaccine-Passport" due to its cost-effectiveness, eco-friendliness, easily-manufacturability, easily-applicability, easily-availability, and side-effects-freeness. In future, it may be used mainly on



“Public-Health-Epidemiology, Infectious-Diseases, and Pharmacology-Toxicology-Clinical-immunology-Clinical-and-Bio-Medical-Sciences-Technology-Communication-Application, with Pharmaceutical-Research by developing the “ultra-high-diluted-Zingiber officinale-steam-inhalation-OR-medicated-mask-therapy” against variant-SARS-CoV-2 which easily-make-enough vaccines to immunize the world’s-population”.

**Keywords:** Vaccine-Passport-Bio-Medicinal-Meal; Prevent-Reinfection; Coronavirus-2; Improved; Global-Health-Clinical-Drug-Discovery-Education-Research; Socio-Economy-Science-Technology-Communication-Application.

## Text:

### Introduction:

In less than one year, the reinfection of COVID-19 not only restrict the closure of different institutes, parks, sports, and activity classes, achieving the effects on physical activity, sedentary behavior, and change-attitude, but also permanently increases the risk of obesity, diabetes, and cardiovascular disease [1]. Now the COVID-19 has transformed into coronavirus-2 (SARS-CoV-2) [2], OR long-COVID [3], OR new-variant-and-mutant-coronavirus [2], OR environment-friendly-stable-SARS-CoV-2 [4], OR post-COVID-acute-syndrome [5], OR rare-COVID-vaccine-side-effects like unusual-clotting [6,7], etc., and the puzzled-scientists are searching the proper-vaccine to vaccinate the whole-world against the recent-unknown-COVID-19, and the pharmaceutical-companies have taken the responsibility as fast as possible to produce hundreds of millions of doses of COVID-19-vaccine within just a few months, but the world needs-billions, establishing the “From Vaccine-Nationalism to Vaccine-Equity— Finding a Path-Forward” [8,9], with its positive credit-worthiness-effects on global warming [10], and it helps to recover all the systems including educational-and clinical-research institutions, by reopening, reorienting, managing, and developing the policy-initiative preventive measures by stimulating the immune system against the “Post-Acute-Coronavirus-2” fulfilling the “Common Goals and Innovative Partnership”, the Indian theme “Vision 2040” for removing immunotoxicity, neurotoxicity, and drug toxicity [2,11-13]. Primarily it has been observed that some biomedicines; amaranth, okra, cowpea, cucumber, and ginger have some therapeutic properties against COVID-19 patients [14-22] with some impact of Covid-19 on ginger export [23].

So the main aims and objectives are to use the combination of both the cost-effective, easily prepare-able, easily available, easily manufacture-able, equitable, marketable, and supply-able bio-medicinal-meals; amaranth, okra, cowpea, cucumber and ginger as preventive measures or ‘Vaccine Passport’ against the new-variant and mutant-coronavirus-2 (SARS-CoV-2) in the new normal situation.

## Materials and Methods:

### Location of Experimental Area:

The experiments were conducted at random among the students, parents/guardians, and family members of 24 No. Ward, Kanchannagar-713102, Burdwan Municipality, Purba Bardhaman, West Bengal, India from 17-03-2020 to 31-03-2021 under the guidance of the headmaster and doctor Ranjan

Mukherjee, MD, District Coordinator of Sishu Sathi Scheme at Department of Health and Family Welfare, Government of West Bengal, India, with the help of the secondary- and higher secondary-students of Kanchannagar D.N.Das High School (HS). These experiments were randomized by using a completely randomized block design. All the data were counted for statistical analysis by t-test [11,14-17,22,24-26].

### Bio-Medicinal Midday Meal Recipe with Doses (Treatments):

The biomedicines-meals; amaranth, cucumber, cowpea, and okra with ginger, are tasty dishes and consumed as salads, soups, stews, and sauces chopped, sliced, fresh or dried, fried or boiled [14-34]. The fresh or cooked weeds-vegetables-fruits; amaranth, cucumber, cowpea, and okra with ginger is consumed as biomedicines @ 152g total (one and half cup) (152g = 25g amaranth + 50g cucumber + 25g cowpea + 25g okra + 2g ginger) at least twice daily (during lunch and dinner) for a minimum of 6-weeks, against coronavirus infections 45-days before the symptom onset OR illness onset (as a vaccine) OR onset of symptoms (if possible) -associated COVID-19 infections are reported (treatments) [22,25,32-35].

### Preparation of Biomedicine- Zingiber officinale Extract:

Air-dried and powdered rhizomes of ginger, *Zingiber officinale* Rosc., were extracted with 90% ethanol at room temperature ( $25 \pm 2^\circ\text{C}$ ) for 15 days and were filtered for collecting extract. Later, the ethanol from the extract was removed by evaporation at room temperature ( $25 \pm 2^\circ\text{C}$ ). The residue was dried in a desiccator over anhydrous calcium chloride [24]. The crude residue was diluted in 90% ethanol at 1mg/ml concentration and was prepared, *Zingiber officinale* extract of *Zingiber officinale* MT (Original solution or crude extract i.e. Mother Tincture) [24,25].

### Preparation of Ultra High Diluted Biomedicines Liquids; Zingiber officinale 30C, Zingiber officinale 200C, and Zingiber officinale 1000C:

These biomedicines were prepared by a few drops of a liquid potency of; *Zingiber officinale* 30C, and *Zingiber officinale* 200C, and *Zingiber officinale* 1000C [24,25].

### Preparation of Ultra High Diluted Biomedicines Globules; Zingiber officinale 30C, Zingiber officinale 200C, and Zingiber officinale 1000C:

These biomedicine globules were prepared by soaking the few drops of a liquid potency in the proportion of 7.2 mg globules/ml of; *Zingiber officinale* 30C, and *Zingiber officinale* 200C, and *Zingiber officinale* 1000C [24,25].

### Visit for Assessments:

The visits were done at random in the different containment areas of the Burdwan Municipality including 24 No. Ward, Kanchannagar, under the guidance of the Burdwan Medical College and Hospital and Chief Medical Officer of the Hospital (BMCH AND CMOH) who provided rapid antigen kits for the infected and comorbid patients, and instruction of the District



Magistrate, Purba Bardhaman, Government of West Bengal (Figure 1).

**Daily Press Briefing**  
PurbaBardhaman  
Date:07/04/2021 (Up to 5.00 P.M.)  
(Report to be sent by 7.00 P.M Daily)

**Part - I: Related to COVID-19**

i)	Total No. of COVID Positive Patients found on the day of reporting *	37
ii)	Total no of COVID positive patients**	12418
iii)	Total no of active patients as on today***	207
iv)	Total no of discharged cases	12033
v)	Total no of COVID death recorded	180
<b>* Quarantine status</b>		
vi)	Total no of persons under institutional quarantine	838
vii)	Total no of persons under home quarantine	0
viii)	Total no of persons under quarantine from Maharashtra, Delhi, Gujarat, Tamil Nadu & M.P.	733
ix)	Total no of persons under quarantine from other state of India	27
x)	Total no of persons released from institutional quarantine	192
<b>* Testing status</b>		
xi)	Total no of Sample collected up to 06.04.2021	206528
xii)	Total no of Sample tested	204984
xiii)	Total no of Positive cases	7047 (+52 repeat +ve)
xiv)	Total no of negative Cases	196725(-1000+illage+rejected)
<b>* Containment Zone status</b>		
xv)	Total no of Containment Zone as on today	110
xvi)	Total no of containment withdrawn	4103
<b>* Analysis of Positive Persons Details: On date - Positive-</b>		
xvii)	Total No. of Migrant (Other State + Other Dist. of WB):	00
xviii)	No. of Person in Self Isolation:	00
xix)	No. of Person in Covid Hospital:	00
xx)	No. of Person in Home Isolation:	07
<b>Analysis on COVID-19 +ve Cases:</b>		
xxi)	Rate of Recovery <sup>†</sup> (Percentage)	96.88
xxii)	Rate of Mortality <sup>‡</sup> (Percentage)	1.45

**Distribution of COVID Positive Cases found on 07/04/2021**  
**(Aushgram-I:03, Aushgram-II:04, Burdwan Municipality:15, Bhatar:01, Burdwan-I:02, Galsi-II:01, Kalna-I:01, Ketugram-I:01, Khandoghosh:01, Other District:08)**

**Figure 1:** Report of the COVID-19 patients in Purba Bardhaman

Dr. Ranjan Mukherjee, MD, District Coordinator, and Dr. Dipanitwa Malik, M.B.B.S., Sishu Sathi Scheme at Department of Health and Family Welfare, and attached with BMCH AND CMOH Office, have come for health-checkup assessment of 76 students (Class IX to Class XII), parents/guardians and family member in Kanchannagar D. N. Das High School (HS) after reopening of the school (Table 1).

Average Treatment Age Group (years)	Treatment / Visited Area: Kanchannagar D.N.Das High School (HS), Burdwan Municipality (17-03-2020 to 07-04-2021)						
	Average Number Observed	Average Number of Family Member	Average Percent COVID-19 Active Patient	Average Percent COVID-19 Passive	Average Percent Home Quarantine	Average Recovery Percent	Remarks
Parents / Guardian (35 to 78)	76a ±00.02	453a ±00.07	34.08a ±00.02	52.02a ±00.08	86.10a ±00.08	99a ±00.02	Died only aged and comorbid patients
Students (14 to 19)	76a ±00.02	453a ±00.07	00b ±00	01.00b ±00	01.31b ±00.01	100a ±00.02	No reinfection occur
Total: (01-100)	152	906	35	53	88	199	Very good result

a,b,c: Significant difference by 't'-test (P≤0.01) in the same column.

**Table 1:** Effects of bio-medicinal midday meals on students, parents/guardian and family member regarding the infection or reinfection of coronavirus

**Global Healthcare Science and Technology Communication Socio-Economy:**

The activity of students, parents/guardians, communities, teachers, staff, scholars, researchers, regulators, photographers, visitors, different scientist, academicians, clinicians, administrators, institutions, farmers, NGO-Burdwan Green Haunter and Students' Goal', healthcare and media personnel, -campaign or -aware or -make the news or -publication regarding "Improvement of Global-Health, Clinical-Drug-Discovery, Education-Research, Socio-Economy, Science, Technology, Communication, and Application Issues" [11,14-16,22,24-26,32,33,35].

**Future Suggestions in Research:**

The literature review, different research articles, specifies hypotheses, backgrounds, and problems, and new important experimental findings and conclusions, lead to achieving future research [11,14-16,22,24-26,32,33,35].

**Results and Discussion:**

**Table 1:** showed the effects of bio-medicinal meals on students, parents/guardians, and family members regarding the infection or reinfection of coronavirus, and all the data were counted for the statistical analysis by 't'-test (P≤0.01). It was shown that the aged parents/guardian (age 35 yrs. to 78yrs.) comorbid and senior COVID-19 patients were severely infected with high mortality rate than the (age 1yr. to 35yrs.) age students and young groups (Table 1) due to treatment with bio-medicinal midday meals; amaranth, cucumber, cowpea, and okra with ginger, which



boosted innate immunity [2,11,14-36]. It was notable that the less than 20 age group showed as passive COVID-19 patients with 100% recovery. It was interesting that no reinfection occurs in the middle and early age group (age 1yr. to 35yrs.; students, children, and young groups) of all family member due to the effects of biomedicines in the meals, long-lasting potential immunity due to the presence of various potential, effective and active phytochemical-constituents in amaranth, cucumber, cowpea, okra, and ginger-like; vitamins, calcium, folic acid, carbohydrates, phosphorus, magnesium and potassium, iodine, and other mineral matters, and a -oil and – protein, unsaturated fatty acids such as linoleic acid, tannins, resins, reducing sugars and amino acids, rutin and quercetin [36], spinosterol (24-ethyl-22-dehydrolathosterol), 24-methylthosterol 24-ethylthosterol, 24-methyl- 22-dehydrolathosterol, 24-ethyl cholesterol and 24-ethyl-22-dehydrocholesterol, amasterol (24-methylene-20-hydroxycholesta-5,7-dien-3 $\beta$ -ol). 8-Gingerol, 10-Gingerol, etc., are significantly active against COVID-19 [11,14-36]. So, the present preventive treatment measures revealed that bio-medicinal meals are highly effective in controlling diseases by boosting natural immunity against coronavirus with no side effects (Table 1).

### Present Ideas as Vaccines:

#### Idea-I

In biomedicines, the different plant mosaic virus, may be used in vaccine formulations to regulate immune function against coronavirus, which has been developed as antigenic epitopes derived from the vaccine targets COVID-19 [11,14,16,22,24,25,32,33,35], and these plant virus-based nanoparticles are attracting, and clinicians for imaging, drug delivery, and therapeutic applications [37], cost-effective, easily available, and preparable, higher yields, stability, and safety, as well as safe alternatives to living replicating COVID-19 vaccines [11,14,16,22,24,25,32,33,35,38-41].

#### Idea-II

The adjuvant Zingiber officinale MT may be used with recombinant protein nanoparticle antigens derived from the coronavirus spike protein and combine these antigens with its adjuvant Zingiber officinale MT for the final formulation of the vaccine which may be shown a “potent and well-tolerated effect” through stimulating the entry of antigen-presenting cells into the injection site and enhancing antigen presentation in local lymph nodes, boosting immune responses, and it is obligatory to inform the concerned authority to maintain all applicable laws and regulations, in the study schedules and emphasis on poor-developing countries for cost-effective-emergency-vaccine [11,14,16,22,24,25,32,33,35,42-45].

#### Idea-III

The adjuvant - Zingiber officinale MT may be used with anti-Human antibodies like IgG (A80-104A, A80-105A), IgM (A80-100A, A80-101A), & IgA (A80-102A, A80-103A) and offer treatments or vaccine preparation of COVID-19 (SARS-CoV-2) and it may also be accelerated the discovery to improve lives, because “Shared B cell memory to coronaviruses and other pathogens varies in human age groups and tissues” [44-47], and

after achieving successful clinical trials, the concerned authority-ClinicalTrials.gov, may be permitted for the use as a vaccine, for treatments for cost-effective-emergency-vaccine [11,14,16,22,24,25,32,33,35,42-46].

#### Idea-IV

The immediately applicable combined-treatments ‘vaccines’ may be prepared by the; 5-10 drops of the high-diluted biomedicines; Zingiber officinale MT liquid- for diabetic patients or Zingiber officinale MT globules- for all, is mixed with a cup of moderately hot sterile-distilled-or pure-drinking-water orally-administered, or taking orally @ 4-6 times/day, after taking bio-medicinal-meals, against naturally occurring coronavirus infections 30-days before symptom onset OR illness onset OR onset of symptoms where patients in hospital-associated COVID-19 infections has been used as emergency treatments, and the doses may be increased depending on the intensity of diseases in case of treatment [5,15,24-26].

#### Idea-V

World Health Organization reported that on 14th April 2021, the COVID-19 has had a devastating effect on global health, with nearly 3 million deaths recorded worldwide. The immediately applicable of the combined-treatments ‘vaccines’ of the ultra-high diluted biomedicines [5,15,24-26,40];

► **For diabetic patients:** Zingiber officinale-MT or – Zingiber officinale 30C, Zingiber officinale 200C, and Zingiber officinale 1000C- liquid, and

► **For nondiabetic general patients:** Zingiber officinale-MT or – Zingiber officinale 30C, Zingiber officinale 200C, and Zingiber officinale 1000C –globules, is mixed with a cup of moderately hot sterile-distilled-or pure-drinking-water orally-administered, or taking orally @ 4-6 times/day, before taking bio-medicinal-meals, against naturally occurring coronavirus infections 30-days before symptom onset OR illness onset OR onset of symptoms where patients in hospital-associated COVID-19 infections has been used as emergency treatments, and the doses may be increased depending on the intensity of diseases in case of treatment [5,15,24-26].

In this new normal situation, it will be immediate use for its traditional use as medicines, and its many medical components and many pharmacological activities against different complications, high efficacy with low toxicity (LD50 = 3741.7 mg/kg), and cost-effective, easily prepare-able, easily-available, easily-manufacture-able, equitable, marketable and supply-able, etc. and achieve the highest quality scientific information on all aspects of pharmacology activities, and its side-effects free effective medicines or drugs with up-to-date information in drug and clinical health education research, and promote communication, and collaboration among researchers and professional clinicians all over the world, and developing policy-initiative social strategies issues, and maintain the “Vaccine Nationalism to Vaccine Equity— Finding a Path Forward” with the “Vaccine Passports for Common Global Health-Conference Inequity” for them all, including the low and middle-income also [5,8,15,24-26,48].





### Future Research Ideas:

The Combined treatment methods; biomedicines-meals with the ultra-high diluted biomedicines in biomedical science may be achieved the possible area for controlling the SARS-CoV-2 virus by the powerful boosting immune system due to face the unique challenges raised by the epidemiologists, immunologists, and medical doctors, including COVID-19's survival, symptoms, protein surface composition, and mechanisms of infection including nanotechnology, vaccine engineering, diagnostic, monitoring, and therapy. And the future approach is aimed at discussing the current impact of biomedical science in healthcare for the management of COVID-19, as well as some challenges to be addressed below [49].

#### Idea-VI

Use N95 Respirator- or Double-layered Surgical Mask as Non-Medicine Vaccine awareness programs [26,49-52].

#### Idea-VII

Use ultra-high diluted biomedicines; Zingiber officinale 30C, Zingiber officinale 200C, and Zingiber officinale 1000C- liquid soaked N95 Respirator- or double-layered Surgical Mask as Medicine Vaccine awareness programs [11-22,24-26,32,33,35,49-52].

#### Idea-VIII

High-diluted Ginger, Zingiber officinale-MT Steam inhalation therapy awareness programs [11-22,24-26,32,33,35,49-55].

#### Idea-IX

Use ultra-high diluted biomedicines Zingiber officinale 30C, Zingiber officinale 200C, and Zingiber officinale 1000C- liquid Steam inhalation therapy awareness programs [11-22,24-26,32,33,35,49-55].

#### Idea-X

Multiple intercropping among the bio-medicinal plants; amaranth, cucumber, cowpea, and okra with ginger, will be very effective for agriculture, biodiversity, socio-economy, global health, clinical-drug-discovery and development, education, research, science, technology, communication, and application issues [14,16,22,32,33,55]., and it is also reported "SARS-CoV-2 genome-wide T cell epitope mapping reveals immunodominance and substantial CD8+ T cell activation in COVID-19 patients" [56].

#### Idea-XI

The farmers would be benefited double; by controlling plant diseases, and by buying and selling the bio-medicinal plants; amaranth, cucumber, cowpea, okra, and ginger in multiple-intercropping, land equivalent ratio, benefit-cost ratio, and monetary advantage index are used to assess the productivity and its economic benefits with "Food Security in Agriculture for Climate Change and Chemicals' Usage" [14,16,22,32,33,55].

### Conclusion:

The combination of both the bio-medicinal-midday-meals with high-or ultra-diluted-biomedicines not only serve as "Potential-Natural-National-Bio-Medicine-Vaccine Against Coronavirus-2 by Boosting-Immunity", but also it acts as the "Nature's-Gift to Human-Disease-Free-Global-Healthy-Life" OR fulfill the "Vaccine-Nationalism to Vaccine-Equity and Vaccine-Passport" for its cost-effectiveness, eco-friendliness, easily-manufacturability, easily-applicability, easily-availability, and side-effects-freeness. In the future, it may be used mainly on "Public-Health-Epidemiology, Infectious-Diseases, and Pharmacology, Toxicology, Clinical-immunology-Clinical-and-Bio-Medical-Sciences-Technology-Communication-Application, and Pharmaceutical-Research by developing the "ultra-high-diluted-Zingiber officinale-mask-OR-steam-inhalation-therapy" against variant-SARS-CoV-2 which easily-make-enough vaccines to immunize the world's-population" and its economic benefits with "Food Security in Agriculture for Climate Change and Chemicals' Usage".

**Conflict of Interest:** The authors have no conflict of interest.

**Funding Sources:** Not applicable.

#### Acknowledgment:

I am thankful to the eminent Physician Dr. Ranjan Mukherjee, MD, District Coordinator of Sishu Sathi Scheme at Department of Health and Family Welfare, Government of West Bengal, India, and Dr. Dipanitwa Malik, M.B.B.S., Burdwan Medical College & Hospital, for inspiration, treatments, and help. I express my deep gratitude to Mr. Rakesh Khan, Secretary, and Mr. Subhendu Bose, President with all Young Green-Members of the "International NGO named Burdwan Green Haunter and Students' Goal" for arranging to many awareness programs on COVID-19. Last but not the least; I am thankful to the eminent educationist Sri Tapaprakash Bhattacharya for inspiration and guidance.

#### References:

1. Dunton GF, Do B, Wang SD. Early effects of the COVID-19 pandemic on physical activity and sedentary behavior in children living in the U.S. *BMC Public Heal.* 2020; 20:1351.
2. Fauci AS. The story behind COVID-19 vaccines. *Sci.* 2021;372(6538): 109.
3. Murnan A. Living with long COVID, 1 year on. *Medical News Today*, March 31, 2021.
4. Chin AWH, Chu JTS, Perera MRA, Hui KPY, Yen HL, Chan MCW, Peiris M, Poon LLM. Stability of SARS-CoV-2 in different environmental conditions. *The Lan.* 2020; 1:1.
5. Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS et al. Post-acute COVID-19 syndrome. *Nat. Med.* 2021; 1-15.
6. Ledford H. How could a COVID vaccine cause blood clots? Scientists race to investigate. *Nat.* 09 April 2021.
7. Baker N, Rimmel A. Coronapod: How to define rare COVID vaccine side effects. *Nat.* 2021.
8. Katz IT, Weintraub R, Bekker LG, Brandt AM. From Vaccine Nationalism to Vaccine Equity— Finding a Path



- Forward. *The New Eng. J. Med.* 2021; 384(14): 1281-1283.
9. Irwin A. What it will take to vaccinate the world against COVID-19. *Nat.* 2021; 592:176-178.
  10. Dibley A, Wetzer T, Hepburn C. National COVID debts: climate change imperils countries' ability to repay. *Nat.* 2021;592: 184-187.
  11. Datta SC. Enriched Science and Technology Communication Economy in Agriculture by Use of Acacia sides as Potential Bio-Agents against Various Pathogens. *Advances in Agric. Hort. Entomol.* 2020a; 2: 1-13.
  12. Dasgupta M. Neurotoxicity, Immunotoxicity and Drug Toxicity – A Rev. *Adv. Clin. Toxicol.* 2018; 3(S1): 000S1-001.
  13. Yang J. Clinical Characteristics, Treatment, and Prognosis of 74 COVID-19 Patients from Cities Outside Wuhan: A Descriptive Study. *Am. J. Pharmacol.* 2020; 3(1): 1025.
  14. Datta SC. Weeds-Vegetables and Fruits Act as Potential Biomedicines against COVID-19: Enriched Agriculture Biodiversity Socio-Economy Science Technology Communications by Controlling Plants Diseases. *J. Exp. Biol. Agric. Sci.* October-2020b;8(Spl-1-SARS-CoV-2): S139-S157. doi:10.18006/2020.8(Spl-1-SARS-CoV-2). S139.S157.
  15. Datta SC. High-Diluted Pharmacological-Potential Biomedicines Prevent 21st Century COVID-19 Like Pandemic: Improved Drugs-Research Biodiversity Agriculture Socio-Economy. *Am. J. Pharma.* 2021a; 4(1): 1031.
  16. Datta SC. Weed-Plant Act as Vaccine against Plant-and-COVID-19 Diseases: Enriched-Agriculture-Health-Development Socio-Economy Sciences-Technology-Communication-Application. *Int. J. Pharmaceutical Sci. Cli. Res.* 2021b; 1(1):1-17.
  17. Safa O, Hassaniyazad M, Farashahinejad M, Davoodian P, Dadvand H, Hassanipour S, Fathalipour M. Effects of Ginger on clinical manifestations and para clinical features of patients with Severe Acute Respiratory Syndrome due to COVID-19: A structured summary of a study protocol for a randomized controlled trial. *Trials* 2020; 21:841.
  18. Prasad S, Tyagi AK. Ginger and Its Constituents: Role in Prevention and Treatment of Gastrointestinal Cancer. *Hindawi Publishing Corporation, Gastroenterol. Res. Prac.* 2015; 142979:1-11.
  19. Dugasani S, Pichika MR, Nadarajah VD, Balijepalli MK, Tandra S, et al. Comparative antioxidant and anti-inflammatory effects of [6] -gingerol, [8] -gingerol, [10]-gingerol and [6]-shogaol. *J. Ethnopharmacol.* 2010; 127:515-20.
  20. Afzal M, Al-Hadidi D, Menon M, Pesek J, Dhami MS. Ginger: An ethno medical, chemical and pharmacological review. *Drug Metabol. Drug Interact.* 2001;18: 159-90.
  21. Pecoraro A, Patel J, Guthrie T, Ndubisi B. Efficacy of ginger as an adjunctive anti-emetic in acute chemotherapy-induced nausea and vomiting. *ASHP Midyear Clinical Meet.* 1998; 33:429.
  22. Datta SC. Potential Policy-Developed Global-COVID-19-Vaccine: Enriched Medical Sciences and Technology Green-Socio-Economy. *Cross Current International J. Medical and Biosci.* 2020c; 2(10): 143-154.
  23. Ayipey P. Impact of Covid-19 on Ginger Export, a Root Crop as Traditional Remedy for Covid-19. *J. Basic and Applied Res. Biomed.* 2020;6(1): 25-31.
  24. Datta SC. Immediate apply cost-effective easily preparable-available 21<sup>st</sup> century potential –ayurvedic-herbal-integrative-medicine-vaccine of COVID-19: achieved agriculture healthcare-socio-economy science technology communication mechanism! *Int. J. Res.-Granthaalayah,* 2021c;9(1):227–247.
  25. Datta SC. Cina-Pretreatments Act as Potential-Biomedicine-Vaccine against COVID-19 and Okra-Plant-Diseases: Synthesis PR-Proteins Increased-Immunity Improved Biomedicines-Economy Applications Science-Technology-Communications. *Int. J. Ayur.* 2020d; 5(12): 05-26.
  26. Datta SC. Students Act as 21st Century Preventive-Pandemic-COVID-19 Model: Improved Advance-Clinical-Toxicology Biomedicine Green-Socio-Economy Science-Technology-Innovations. *Adv. Cli. Toxicol.* 2021d; 6(1): 000204.
  27. Kochlar SI. Okra (lady finger) in tropical crops, a textbook of economic botany, 1986;1: 263-264.
  28. Annor GA, Zhen MA, Boye JI. Crops– legumes, in *Food Processing:Principles and Applications*, Vol. 2, ed. by Clark S, Jung S and Lamsal B, John Wiley and Sons, Inc., Chichester, West Sussex, UK, 2014; Pg No: 305.
  29. Kumaraswamy L. Cucumber-A Natural Medicine and its Therapeutic Potentia. *RPMP Phytotherap.* 2016;43:1-8.
  30. Agatemor UMM, Nwodo OFC, Anosike CA. Phytochemical and proximate composition of cucumber (*Cucumis sativus*) fruit from Nsukka, Nigeria. *African Journal of Biotechnol.* 2018;17(38): 1215-1219.
  31. Govender N. Amaranth – an Aid to Eating and Staying Healthy during COVID-19. *News, Science and Indigenous Knowledge Education in UKZN 's School of Edu.* 2020.
  32. Datta SC. Okra Maybe Potential Cost-Effective Personalized-Biomedicines Social-Vaccine against COVID-19: Improved Immunity Food-Security Green-Economy Science-and-Technology-Communication Applications. *Innovative Journal of Medical Sci.* 2020e;4(2): 5-20.
  33. Datta SC. Intercropped Cowpea Maybe Use as Biomedicine Improved Immunity against COVID-19: Enriching Science and Technology Communication Applications Food Security Economy. *Dia. The. Compl. Trad. Med.* 2020f;1: 35-48.
  34. *Bio Spectrum News.* Homeopathy in managing viral infections like COVID-19. 10April 2020.
  35. Datta SC. Discovery of COVID-19 Vaccine by Using Acaciades as a Phytomedicine Improving Science and Technology Communication Applications- An Ideas. *Open Acc. J. Biogeneric Sci.Res.* 2020g;2(1): 1-30.
  36. Bashri G, Parihar P, Singh R, Singh S, Singh V, Prasad S. Physiological and biochemical characterization of two Amaranthus species under Cr (VI) stress differing in Cr (VI) tolerance. *Plant Physiol. Biochem.* 2016; 108:12-23.
  37. Hema M, Vardhan G, Savithri H, Murthy M. Emerging trends in the development of plant virus-based nanoparticles and their biomedical applications. *Science* 2019; 2019:61-82.
  38. Beverly A. Modeling coronavirus infection. *Sci.* 2020; 369:640.
  39. Robert F. AI invents new “recipes” for potential COVID-19 drugs. *Science* 2020; 5:45.
  40. World Health Organization. A Global Collaboration to Accelerate the Development, Production and Equitable



- Access to New COVID-19 Diagnostics, Therapeutics and Vaccines. Geneva: World Health Organization 24<sup>th</sup> April 2020.
41. Parvathy S. Engineering plants as platforms for production of vaccines. *Am J Plant Sci* 2020; 11: 707-35.
  42. Said N. Coronavirus COVID-19: Available Free Literature Provided by Various Companies, Journals and Organizations around the World. *Ongoing Chemical Res.* 2020;5(1): 7-13.
  43. News Drug Target Review's. Coronavirus update: recent developments in vaccine Research. Drug Target Review's round-up of the latest developments in 2019 novel coronavirus (COVID-19 or SARS-CoV-2) therapeutics and vaccines 27th February 2020.
  44. NIH.Clinical Alerts and Advisories /Disclaimer. U.S.National Library of Medicine, ClinicalTrials.gov. 2017.
  45. Werner K, Werner K, Risko N, Burkholder T, Munge K, Wallis L, Reynolds T. Cost-effectiveness of emergency care interventions in low and middleincome countries: a systematic review. *Bull World Health Organ.* 2020; 98: 341-352.
  46. The Science Advisory Board.Net. Bulk Antibody Production to Support COVID-19 Research & More. Are You Involved in COVID-19 (SARS-CoV-2) Research? Let's Work
  47. Together. Letter Science Advisory Board. 2020. Yang F, Sandra CAN, Ramona AH, Katharina R, Oliver FW, Emily H et al. Shared B cell memory to coronaviruses and other pathogens varies in human age groups and tissues. *Science.* First Release,12 Apr 2021; eabf6648:1-11.
  48. Pai M. How Vaccine Passports Will Worsen Inequities in Global Health? *Nature Microbiology Community*, Published 3<sup>rd</sup> April 2021
  49. Zamora-Ledezma C, Clavijo CDE, Medina E, Sinche F, Vispo NS, Dahoumane SA, Alexis F. Biomedical Science to Tackle the COVID-19 Pandemic: Current Status and Future Perspect. *Mol.* 2020; 25(4620).
  50. Datta SC. NGO Act as Potential-Policy-Developer Social-Vaccine-COVID-19 Epidemic-Model until Discovery-of-Medical-Vaccine: Achieved Green-Socio-Economic Welfare Science Technology Innovations. *Arch Community Med Public Heal.* 2020h;6(2):225-232.
  51. Datta SC. Only Environmental Science Act as Natural Biomedicine Preventive Epidemic Model of 21st Century Pandemic Diseases. Editorial, *Environ Sci Ind J.* 2021e; 17(1):e177.
  52. Datta SC. Artificial-Nest Rainwater-Harvesting with Fishery and Floating-or-Rooftop-Gardening Act as 21<sup>st</sup> Century Civil-Engineering COVID-19 Epidemic-Model: Improved Biodiversity Agriculture Socio-Economic Environmental-Sciences Technology-Communication. *J. Civil Engin. Environ. Sci.* 2020i;6(2):022-036.
  53. Marca LG, Barp J, Frenos S, Mugelli A, Galli L, Calistri E, Biasucci G, De Masi S, Guerrini R. Thermal inactivation of SARS COVID-2 virus: Are steam inhalations a potential treatment? *Life Sci.* 2021; 265:118801.
  54. Mandal A. Steam inhalation therapy found to inactivate SARS-CoV-2 virions. November 30, 2020.
  55. Datta SC. Amaranth Plant Protects Climate-Health-Development Socio-Economy Sciences-Technology-Communication: Act as Potential Biomedicine-Vaccine against Plant and 21st Century-Epidemic COVID-19 Diseases. *Expert Opin Environ Biol.* 2021f; 10:1.
  56. SK, Hersby DS, Tamhane T, Povlsen HR, Hernandez SPA Nielsen M, Gang AO, Hadrup SR. SARS-CoV-2 genome-wide T cell epitope mapping reveals immunodominance and substantial CD8+ T cell activation in COVID-19 patients. *Science Immunol.* 2021;6(58): eabf7550