

## Artemisia nilagirica will Be the Best Vaccine against Okra and COVID-19: Enriched Agriculture Medical-Science Technology-Mechanism Applications!

**Subhas Chandra Datta**

Headmaster, Secretary and Researcher, Eco-club, Kanchannagar D.N. Das High School (HS), Kanchannagar, Burdwan Municipality, Purba Bardhaman, Burdwan-713102, West Bengal, India

### ABSTRACT

It's been an urgency to develop vaccines against pandemic-coronavirus, the COVID19, effects on global-health, educations, clinical-research, human-civilization, and economy. India's emphasis on the consumption of vegetables-okra, naturally-infected with different diseases-causing-pathogens, reducing food-productions. Though pesticides are effective-control-measures, but they're expensive and toxic to the environment. So, homeopathic medicines; *Artemisia nilagirica*-extracts, were applied with pre-and post-treatment foliar-spray, against Root-Knot (RK), Yellow Vein Mosaic Virus (YVMV), and Okra Enation Leaf Curl Virus (OELCV) diseases of okra, and these don't seem to be only used as a potential-biomedical-drugs 'vaccine' against various plant-diseases, by synthesis of PR-proteins, increasing natural-defense-response, but also, it should help for the preparation of a vaccine by increasing immunity against COVID-19, forming a possible 'Best Vaccine' against okra and COVID-19 diseases, and enriched agriculture medical-science-technology-mechanism applications issues, reviving human civilizations within the old form", which not only shows the clinical, physical, chemical, biological and physiological effects but also on relative molecular mass, explaining the confirmation of mechanism and action of the homeopathic medicines supported scientific experimentations and proofs, and also the future clinical-scientists develop all aspects of clinical-case-reports globally by publishing. And in the near future okra may itself be a 'Best Potential Vaccine', and safe alternative to live replicating COVID-19 vaccines which restarts, a window of hope and opportunity.

**Keywords:** *Artemisia nilagirica*; *Best-Vaccine*; *Okra-and-COVID-19*; *Enriched-Agriculture-Medical-Science-Technology*; *Mechanism-Applications*

**\*Corresponding Author**

**Subhas Chandra Datta**

Department of Zoology, Visva Bharati, Sriniketan-731235, West Bengal, India



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### INTRODUCTION

The COVID19 effects on the human-civilization, our private-and-professional life, and the social-organization-communities [1], global-health, travel, economy, and clinical research, with scientists, has been an urgency to develop vaccines against newly emerged COVID-19 [2] with unusual viral pneumonia [3], forming the fifth endemic coronavirus, leaping from animals to humans, becoming a health danger [4], and recent, pandemic-situation is analogous to war, the delay of every-week in the deployment of a vaccine to the seven-billion-humans on earth will cost thousands of lives [5], and WHO develops a blueprint for diagnostics, vaccines, and therapeutics against coronavirus [6]. India emphasis on the most economically important number one oldest widely consumption oligo purpose vegetable-crop, okra [7], using as traditional medicine, forming the 'Nature's Gift to human disease-free healthy life' [8], consumed in a variety of ways for the good source of superior-quality for human-nutrition, and mature fruit-and-stems, used in the paper industry [9]. But the production is hampered adversely by the naturally occurring Root-Knot diseases, Yellow Vein Mosaic Virus disease- and Okra Enation Leaf Curl Virus disease. The use of chemicals is the most effective means of control, but they are not cost-effective and environment-friendly [10], and climatic changes impact on the global economy [11]. A number of bio-agents or bio-nematicides or biomedicine [10,12,13,14,15,16,17,18), intercropping [19,17,20,21,22,23), and bio-controller or social vaccine or biological and bio-systems engineering or epidemic-model [24,25,26,27), stand as a suitable- and useful- against different plants-, animals- and human- diseases, but it causes some problems [28,12].

To concur the both the pandemic-situations, the homeopathic medicines or biomedicines; *Artemisia nilagirica* extracts, prepared from the flowering meristems of the 'Indian wormwood'- *Artemisia nilagirica* (Clarke) Pamp, use as vaccines (pre-and post-treatment), at an extremely low dose, under naturally infected; Root-Knot, Yellow Vein Mosaic Virus, and Okra Enation Leaf Curl Virus diseases of okra, (*Abelmoschus esculentus* L. Moench) cv. Ankur-40, in field-trials, to see the synthesis of new-proteins for defense-response, which may develop vaccine against the COVID-19 disease.

## MATERIALS AND METHODS

### Preparation of homeopathic medicines; *Artemisia nilagirica*–extract:

Air-dried and powdered flowering meristems of *Artemisia nilagirica* (Clarke) Pamp (Plate 1), was extracted with 90% ethanol at room temperature ( $25 \pm 2^\circ\text{C}$ ) for 15 days, filtered and removed by evaporation at room temperature ( $25 \pm 2^\circ\text{C}$ ). The residue, obtained after removal of the solvent under reduced pressure, was dried in a desiccator over anhydrous calcium chloride [10] and the crude residues were dissolved in 90% ethanol at 1mg/ml concentration and was formed the *Artemisia nilagirica*–extract [29,30,12,28].

### Preparation of the pre-and post-treatment experimental plots:

The Department of Zoology, Visva-Bharati, Santiniketan–731 235, West Bengal, India, is the experimental garden of [10,12,13], with four concrete plots: one untreated plot was treated with boiling water five times for denematization [31] and the other three plots were naturally infected with *Meloidogyne incognita* (Kofoid and White, Chitwood, 1949), with uniform distribution of *M. incognita* juveniles by standard procedures [32,33].

### Plantations:

The okra seeds (*Abelmoschus esculentus* L. cv. Ankur-40) were planted by standard procedures, and the treatments-plots were: uninoculated untreated, inoculated untreated, *Artemisia nilagirica* –extract pretreated, and *Artemisia nilagirica* –extract post-treated [10,19,12, 13,15,16,17,20,18,21,22,23].



**Plate 1:** Flowering meristem of *Artemisia nilagirica* (Clarke) Pamp



**Plate 2:** Root-Knot (RE) disease caused by *Meloidogyne incognita* of okra



**Plate 3:** Yellow Vein Mosaic Virus (YVMV) disease of okra





**Plate 4:** Okra Enation Leaf Curl Virus (OELCV) disease of okra

#### **Mortality test:**

To assess the direct effect on mortality of homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract by treatment –test solutions by standard procedures which were replicated five times [31,30,12].

#### **Pre- and post-treatment with homeopathic medicines; *Artemisia nilagirica*-extract:**

The homeopathic medicines; *Artemisia nilagirica*-extract, test-and-control solutions: After 29-days, the Root-Knot (RK) diseases (Plate 2) caused by the nematode-pathogens [10,30,12], Yellow Vein Mosaic Virus (YVMV) disease (Plate-3) and Okra Enation Leaf Curl Virus (OELCV) disease (Plate 4), caused by the virus-pathogens which spreads by an insect vector, named-whitefly (*Bemisia tabaci* Gen), are naturally occurred, all the diseases were assessed with; biomedicines; *Artemisia nilagirica*-extract, –test solutions and -control solution respectively [34, 21,22,23].

#### **Analysis of residue:**

The residues run in a thin layer chromatography plate (TLC) with the standard; *Artemisia nilagirica*-extract treatment test substances respectively by standard procedures.

#### **Harvesting:**

Ninety-one days after plantation of germinated seeds of okra, all the plants were uprooted from each plot, and all the parameters of growth and nematode infection such as biomass of shoot and root, root gall number, nematode population per gram of root and 200 soil, fruit and root total protein fraction in each sample was estimated by standard procedures [35,36]. At thirty days after the last pretreatment, all the parameters of diseases were assessed again and all the data were used for statistical analysis by student t-test by standard procedures and were presented in Table 1.

#### **Preparation of Root Proteins:**

Fresh roots of okra plants of 6-groups were collected and were homogenized by standard procedures, and the extracts were then centrifuged in Remi C-24 refrigerated centrifuge and the supernatants were collected, and were transferred into lyophilizer, and after lyophilization, the powdery extract was stored for protein separation by standard procedures [37].

#### **Densitometer scanning:**

Analysis of total soluble roots proteins separation was carried out essentially standard procedures [37], by using one-dimensional vertical sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), with the modification as suggested by the LKB Instructional Manual (1986) by standard procedures, and a 10% separating gel and 5% stacking gel were used. A sample of 65µl of root protein extract was loaded along with dye and the scanned-bands were recording

with an electrophoretic scanner (Biomidi, 96-300 densitometers, Pare de La Plaine, France), and the observation was recorded from the densitometers scanning curve measuring the total number of root-proteins with molecular weight by standard procedures [38].

### Science and technology communications improved biomedicines economy applications:

The activity of “Pre-and Post- Treatment with homeopathic medicines *Artemisia nilagirica* –extract, and the importance at an extremely low doses, cost-effectiveness, potentiality of biomedicines against various pathogens including COVID-19, enrichment of science and technology communication green-economy with applications, healthcare-, defense response- and-immunity, conservation of biodiversity -issues” in different media are recorded, which is a platform to promote and discuss different new issues and developments by publishing [10,30,19,12,13,14,24,15,16,17,20,18,25,21,22,23,26].

### Development of ideas for preparation of vaccine against COVID- and future research:

The development of new ideas or hypotheses for preparation of vaccine against COVID-19, will arise and open the new window of the future research for global good health [10,30,19,12,13,14,24,15,16,17,20,18,25,21,22,23,26].

## RESULTS

### Toxicity Test on Mortality:

The homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, at extremely low doses, had no direct toxic effects on nematodes mortality respectively.

### Analysis of Residues Toxicity:

Okra leaves did not contain any toxic residue of the homeopathic medicines *Artemisia nilagirica* biomedicines-extract.

### Root-knot and Foliar Diseases:

Table 1 shows the pre-and post-treatment effects of high diluted homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, at extremely low doses, on Root-Knot (RK) disease, and Yellow Vein Mosaic Virus (YVMV) and Okra Enation Leaf Curl Virus (OELCV) foliar diseases of okra plants, assessed, and the number of common-shared root-protein is compared to uninoculated untreated one ( $P < 0.01$  by ‘t’- test). All the pretreatments with homeopathic medicines; *Artemisia nilagirica*-extract, significantly reduced the root-knot and foliar diseases in comparison to the first two plots; uninoculated untreated (control) and inoculated untreated ones. Though, all the plant's groups, average; the number of leaves, number of nematodes in soil, biomass of shoots, and protein of fruits, are significantly increased than inoculated untreated plants group, but average; the biomass of roots, number of root galls and nematodes populations in roots and root protein content percent, is higher in the inoculated untreated one. The highest number of common-shared root proteins are seven in healthy uninoculated untreated control plants and the lowest number is one in the inoculated untreated one (Table 1 and Fig. 1).

**Table1:** Effects of the *Artemisia nilagirica* extract treatments groups of okra plants infected with root-knot, YVMV and OELCV diseases

Treatments Groups	Average number of disease infected leaves / plant ( % )				Average number of leaves / plant	Average number of root galls / plant	Average number of nematodes (Populations)		Average Biomass (g)		Average Protein %		Number of common shared root-Protein in respect to uninoculated untreated
	YVMV		OELCV				Soil (200 g)	Root (2g)	Shoot	Root	Root	Fruits	
	Day-0	Day-30	Day-0	Day-30									
Uninoculated Untreated	1.03 %ax ±0.01	88.00 %by ±0.02	0.05 %ax ±0.01	28.98 %by ±0.06	11.34 b ±0.33	Nil	Nil	Nil	127.25a ±4.34	16.12c ±0.02	1.14b ±0.06	2.87a ±0.23	7

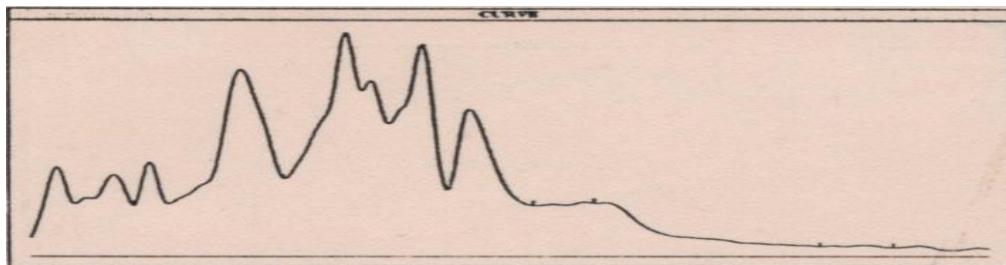
<b>Inoculated Untreated</b>	1.03 %ax ±0.03	94.00 %cy ±2.12	0.05 %ax ±0.03	48.00 %cy ±0.09	6.40a ±0.18	348.8 0b ±15.3 0	30.2 0a ±0.1 4	708. 62c ±8.3 5	108.2 3b ±3.2 2	49.7 2a ±0.0 9	2.8 9a ±0. 09	1.12 c ±0.0 2	<b>1</b>
<b>A. nilagirica - Pretreated</b>	1.03 %ax ±0.02	3.01% ay ±0.21	0.05 %ax ±0.02	0.84% ay ±0.02	15.77 c ±0.35	29.11 a ±0.48	474. 68b ±4.6 5	32.0 2a ±0.4 6	127.1 2a ±2.1 1	18.1 2b ±1.7 6	0.9 9b ±0. 04	2.68 b ±0.0 5	<b>3</b>
<b>A. nilagirica - Posttreated</b>	1.03 %ax ±0.02	4.65 %ay ±0.03	0.05 %ax ±0.02	1.02% ay ±0.02	14.67 c ±0.30	33.22 a ±0.42	520. 02b ±5.3 7	38.9 8b ±0.1 6	126.3 0a ±4.2 6	19.0 2b ±0.6 7	1.1 7b ±0. 02	2.24 b ±0.0 2	<b>2</b>

'a,b,c,d,e'- means different small letter in a column indicate significant difference (P<0.05) by 't'-test.

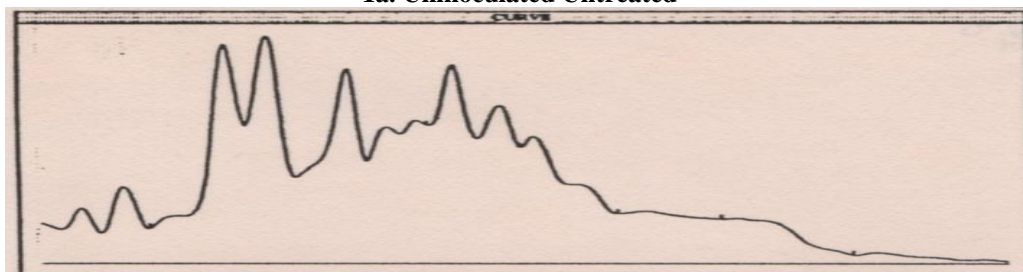
'x,y'- means different small letter in a row indicate significant difference between day-0 and day-30 (P<0.01) by 't'-test.

'Day-0' - means beforepretreatment.

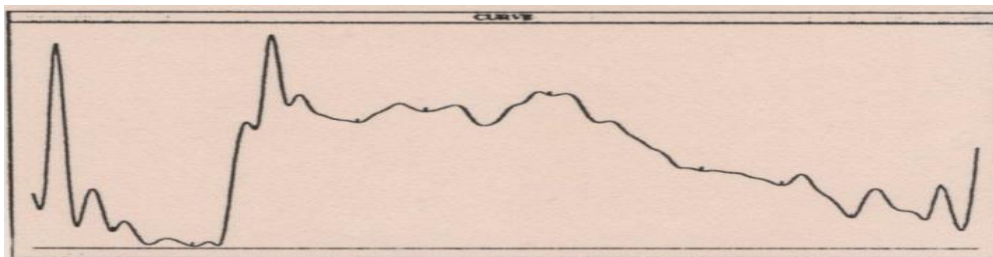
'Day-30' - means after posttreatment.



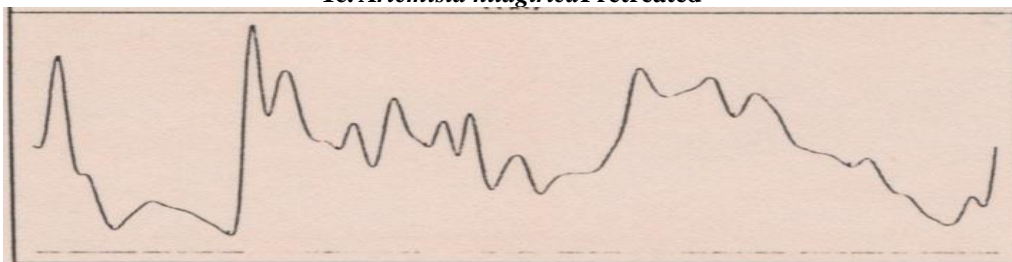
**1a. Uninoculated Untreated**



**1b. Inoculated Untreated**



**1c. Artemisia nilagirica Pretreated**



**1d. Artemisia nilagirica Posttreated**

**Fig1: Densitometric tracings of root proteins of okra plants resolved on acrylamide gel (SDS-PAGE).**

**Table 2:**Molecular weight (k) of the root proteins of the *Artemisia nilagirica* extracttreatments groups of okra plants

Treatments Groups	Total number of protein	Molecular weight (k)of pretreatment groups																								Total number of PR - protein
		Serials number of protein																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Uninculcated Untreated	11	280	260	240	210	155	115	105	85	70	45	13	-	-	-	-	-	-	-	-	-	-	-	-	4	

Inoculated Untreated	15	270	240	200	170	145	118	990	907	757	658	546	377	277	177	-	-	-	-	-	-	-	-	-	-	14	
<i>A.nilagirica</i> - Pretreated	18	280	260	250	209	165	115	985	853	755	658	540	327	223	222	188	155	12	-	-	-	-	-	-	-	-	15
<i>A.nilagirica</i> - Posttreated	16	260	210	155	132	110	95	80	725	600	537	385	228	235	165	11	-	-	-	-	-	-	-	-	-	-	14

‘-’ indicate no band

### Root proteins of the okra:

Table 2 and Fig 1; shows the molecular weight (k) of the root proteins of the different groups of okra plants, pre-and post-treated with high diluted homeopathic medicines; *Artemisia nilagirica*-extract, at extremely low doses, on Root-Knot disease, and Yellow Vein Mosaic Virus (YVMV) and Okra Enation Leaf Curl Virus (OELCV) foliar diseases of okra plants. An analysis of root proteins of all groups by electrophoresis and densitometer scanning of all the test plants show that all the homeopathic medicines *Artemisia nilagirica*-extract, treatments resulted in the increased number of proteins in the roots; the lowest number of protein is 11 in the uninoculated untreated roots and the highest number of proteins, are 18 in the pretreated- and 16 in the post-treated- *Artemisia nilagirica*-extract, roots respectively (Table 2 and Fig. 1). The highest molecular weight of the protein is 280k (280,000kDa) and the lowest molecular weight of the protein is 11k (11,000kDa). The lowest number of the new pathogenesis-related protein (PR-proteins) is 4 in the uninoculated untreated roots and the highest number of the new pathogenesis-related proteins (PR-proteins) are 15 and 14, in the pretreated- and post-treated- *Artemisia nilagirica*-extract, roots respectively (Table 2 and Fig. 1). Though, the PR-proteins of inoculated untreated is 14 (Table 2 and Fig. 1).

### Science and technology communications improved biomedicines applications:

Achieved by; campaign, aware, discuss, arrange workshops and seminars, make news, and publish as abstract regarding the importance of “Pretreated- and Post-treated-homeopathic medicines *Artemisia nilagirica*-extract, with high-diluted, at an extremely low doses; indicate the potential cost-effective biomedicines against various pathogens, including COVID-19?”.

### Development of ideas for preparation of vaccine against COVID- and future research:

The results may fulfill the goal for the preparation of a vaccine for treatment of coronavirus, with the present treatments with the high-diluted homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, at extremely low doses, against COVID-19, need to develop future application of medicines.

### Future ideas in research:

Here, the results fulfill the goal of a research title because the present treatments with homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, at extremely low doses, with regular consumption of nutritious okra-vegetables of need to justify future research ideas.

## DISCUSSION

### Plant pathogens caused diseases:

All the high-diluted homeopathic medicines; *Artemisia nilagirica*-extract, at extremely low doses, ones again not only reduced Root-Knot (RK) disease, and Yellow Vein Mosaic Virus (YVMV) and Okra Enation Leaf Curl Virus (OELCV) foliar diseases of okra plants but also improved the nutritive value (especially protein) of the pretreated fruits of the naturally infected plants [10,30,19,12,13,14,24,15,16,17,20,18,25,21,22,23,26]. It is noted that pretreated with highly-diluted homeopathic medicines *Artemisia nilagirica*-extract, at extremely low doses, is more effective than posttreated with highly-diluted *Artemisia nilagirica*-extract. So, it can be used as vaccine for controlling all naturally occurring other plant diseases also [30,12,18,21,23].

### Toxicity:



Homeopathic medicines *Artemisia nilagirica*-extract, were effective or potential biomedicine at extremely low doses and it had no direct toxic effect on okra plants and the nematodes-pathogens [30,12,18,21,23]. So, it maybe used as vaccine directly against diseases of plants and animals.

#### **Synthesis and disease resistance mechanisms:**

All the homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, could induce synthesis of some antagonistic substances in the pretreated plants [39,40,41], which resist against pathogens, such as lectins accumulated in gall-regions of the root of *Hibiscus esculentus* infected with *M. incognita*[42,43,44,45]. Systemic acquired resistance can be induced by in different crop plants by localized virus infection, non-pathogenic and pathogenic microorganisms, or their culture filtrates or by salicylic acid [44,45,46,47,48] or by the polar vesicle[49] or by the defense-related triterpene glycoside avenacin A-1 is synthesized [50]. So, it can be used as vaccine against diseases of plants and animals.

#### **Defense response on pathogenesis related (PR) proteins as vaccine:**

It is reported that a plant plasma membrane ATP binding cassette-type transporter [51] is involved in antifungal terpenoid, for this transporter in disease resistance or by the share of common antigens with its host plants (McClure, 1973) or by the pure compounds of acaciasides [52,53,54,55], which may be used as vaccine against pathogens.

Treatments with the homeopathic medicines or biomedicines; highly-diluted *Artemisia nilagirica*-extract, at extremely low doses, all the test plants synthesis of various proteins (antigens), and lowest number of the new pathogenesis-related protein (PR-proteins) is 4 in the uninoculated untreated roots and highest number of the new pathogenesis-related protein (PR-proteins) is 15 in the *Artemisia nilagirica*-extract-pretreated roots, which induce defense responses involving several pathogenesis-related proteins, specially low molecular weight proteins, in which the naturally infected plant pathogens fail to tolerate, like the nematode extract (NE) [10,1339,40,56], because during natural infection with pathogen, host plant showed minimum defense responses for the antigenic (proteins) similarity [57,5621,23] and it is proved from the inoculated untreated pretreatment okra plants and the high-diluted drugs; *Artemisia nilagirica*-extract-pretreated roots, produce highest number of new PR-proteins. So, *Artemisia nilagirica*-extract-pretreatments maybe used directly against diseases of plants and animals, by improving immunity or defense responses with the help of new PR-proteins, which may be used as vaccine against pathogens.

#### **Biodiversity conservations:**

Those showed that nematode pathogens infestation somehow serves as a repressor for the expression of defense gene [2,3,56,21,23,58,59,60], and it can be assumed that the *Artemisia nilagirica*-extract-treated-biomedical drugs, serve as a stimulus for the expression of many new induced defense-related PR-proteins by systemic acquired resistance [56,21,23,43,46,47], in which plant immune systems increased pathogen resistance, as well as pathogen inhibition of such defense responses [61], which is governed by defense response genes encoding for the production of various pathogenesis-related (PR) proteins [62], serving a very cost-effective eco-friendly phytomedicine and promoted growth of test plants and this high-diluted treated-biomedical drug conserved our biodiversity conservations as well as vaccine against diseases.

**Now the key question;** is, whether plant-derived natural products, the high-diluted *Artemisia nilagirica*-extract-treated-biomedical drugs, at an extremely low dose, can be used as potential cost effective-biomedical by inducing defense-response against various plant-pathogens causing major (okra-) diseases in a field trial and effective against animal pathogens also? [39,40,56,21,23,63].

**Now the Key answer;** is, the high-diluted *A. nilagirica*-extract-treated-biomedical drugs, at an extremely low dose, are not only highly effective in ameliorating different plant diseases [29,30,12,18,33], enriching agriculture industry as well as green biomedicine economy applications [61,62], but also maybe effective against diseases of animal and human also by inducing immunity [58,65].

#### **Development of ideas for preparation of vaccine against COVID:**

- **In Genome Biology;** we're not completely human, at least when it comes to the genetic material inside our cells; 145-genes from bacteria, other unicellular organisms [60], the genomic sequencing 96.2% identical to a bat coronavirus and shares a 79.5% sequence identity to SARS-CoV [60,66,67] deal with the structure and function of genetic material underpinning all organisms [68,69]. Approximately, ten percent of the human genome is made of bits of virus- DNA [70], and human endogenous retroviruses are by far the most common virus-derived sequences in the human genome[71], which don't always require a body [72].

- **In Genetic and Immune Resistance Mechanisms;** It is reported, "Genetic Resistance to Coronavirus Infection-A Review", three host resistance mechanisms: genetic control at the extent of the, -cellular receptors, -macrophage and -

acquired immunity [73]. SARS-CoV-2 is that the etiological agent to blame for the pandemic COVID-19 outbreak and therefore the main protease (Mpro) of SARS-CoV-2 could be a key enzyme that plays a very important role [74]. When the figure is attacked by germs, the system kicks into gear to repulse the assault [75].

- **In Immune System Blueprint;** once the virus infects the host cell, it takes over the host cell's machinery to become a virus factory. When the human body is attacked by germs, the immune system kicks into gear to fight, by improving the immune system, creates a blueprint of the attacking agent, by which, the body effectively remembers the germ - enabling a person to fight for re-infection by the same or similar viruses[75].

- **Traditional Medicine in Human History;** in the evolution of human history shows the people are using traditional medicine for therapeutic purposes, and the 70%- 80% population is primarily dependent on animals and plant-based [6,76].

- **Therapeutic Value of Traditional Medicines;** it is reported that the 'Indian wormwood' - *Artemisia nilagirica*, is considered against many ailments as it is possessed to have high content of biologically active molecules and essential oils. It has been used since centuries in antimicrobial, antifungal, antibacterial, and filarial, insecticidal, antiulcer, anticancer, antioxidant, anti-proliferative, healing potential, neurological disorders, tuberous sclerosis, dermal infection, larvicidal, anti-inflammatory activities, anti-asthmatic and anti-malarial activity, Parkinson's disease, Alzheimer's disease, hypertension, diabetes, atherosclerosis, cardiovascular diseases, cytotoxic, malignancy, genetic abnormalities, diabetes, epilepsy, asthma, psychoneurosis, depression, anxiety and stress, leucorrhoea, threatened abortion, hemoptysis, tuberous sclerosis, skin diseases, immunological disorders, and the aging process, and the pharmacological studies confirm its therapeutic value due to the presences of the widerange of chemical compounds which indicate that the plant could serve as a potent material for the development of novel agents having good efficacy in various disorders in the coming years [28,77]. It is used for the treatment of human parasites, animals, and plants. The common photochemical of *A. nilagirica* that causes effective results on human health care biologically active chemical compounds are flavonoids, alkaloids, tannins, glycosides, phenol, saponins, terpenes, amino acids, quinines, phlorotannins and volatile oils, polysaccharides, sesquiterpene lactones, coumarins and acetylenes, and terpenoids [78,79,28,77,80]. Forty-three constituents (98.16% essential oil); 79.91% monoterpenoids and 18.25% sesquiterpenoids,  $\alpha$ -Thujone (36.35%),  $\beta$ -thujone (9.37%), germacrene D (6.32%), 4-terpineol (6.31%),  $\beta$ -caryophyllene (5.43%), camphene (5.47%) and borneol (4.12%), were the major constituents from aerial parts of *Artemisia nilagirica*[81]. The *Artemisia* has a diverse range of activities for medicinal uses in human and plant diseases ailments due to possess several active constituents that work through several modes of action and the 1, 8-cineole, beta-pinene, thujone, artemisia ketone, camphor, caryophyllene, camphene and germacrene D are the major components in most of the essential oils of this plant species [82]. *Artemisia* has long been not only used in traditional medicine and but also as a food source for different functions in eastern Asia [83]. It's essential oils has hepatoprotective- and hepatic non-toxic- effects, and as a natural source of hepatoprotective agent [84,85]. But, 4th May 2020, WHO recognizes that *Artemisia annua* are being considered as possible treatments for COVID-19 and should be tested for efficacy and adverse side effects? [74,85].

- **Therapeutic Approach;** recently, the NovavaxInc, which contributed to the development of other epidemic vaccines, has announced it is currently in pre-clinical animal trials for several multiple nanoparticle COVID-19 vaccine candidates, by using their recombinant protein, the adjuvant is 'saponin-based' and it has shown a "potent and well-tolerated effect" [86,87]. Scientists are trying to discover novel inhibitor molecules against enzymes Mpro and ACE2 by the use of phytochemicals, which be utilized for further innovation and development of antiviral compounds against Coronavirus [88].

- **Human Immunomics Initiativefor Vaccination;** so, for successful vaccination requires four components. Human Immunomics Initiative (HII) aims to decode the underlying mechanisms and rules of how the human immune system fights disease with advances in computing and artificialintelligence, genomics, systems biology, and bioinformatics100. And should follow the guideline of WHO entitled "Vaccine-preventable diseases and vaccines" [89,6,90,91,92]. It reduces wait time for emergency vaccination [93] and one or more randomized trials will be needed to answer [94]. Then, with allopath is using trial and error method in some cases to treat COVID-19 [84,85] and according to the World Health Organization's latest table of COVID-19 vaccines, 124-candidates with technologies or platforms. Merck's new investments focus on two different COVID-19 vaccines that are already in early clinical trials [5,95].

- Mechanism of Homeopathic Medicines;** It not only shows the clinical, physical, chemical, biological and physiological effects but also on relative molecular mass, explaining the confirmation of mechanism and action of the homeopathic medicines supported scientific experimentations and proofs, and also the future clinical-scientists develop all aspects of clinical-case-reports globally [20,21].

• **Development of ideas for treatment;** in this situation, it will be essential to inform public health expertise for moving academic research [96] with “Return to Work” and a gradual, stepwise approach to reopening [97]. And, the present results and discussion, fulfill the goal for the effective treatments methods, because the present treatments with the *Artemisia nilagirica*-extract, prepared from the flowering meristem of *Artemisia nilagirica*, mixed with water at an extremely low dose [30,12,18,21,23], need to justify [84,85] for immunomodulatory effect [98].

#### **Causes for applications of treatment against COVID-19:**

Recently, in lower-income countries, cause excess deaths due to closer inter-generational contact, largely negated, and poorer health care benefit [99]. On the other hand, Yemen was grappling with “the largest humanitarian crisis in the world [100], and the coronavirus outbreak began in Wuhan, China, in December 2019 and now the virus has resulted in more than 52.8million infections and nearly 1.3 million deaths [101]. So, we urgently need effective drugs for coronavirus disease 2019 (Covid-19), but what is the quickest way to find them?(Parks and Smith, 2020).Recently, the Max Planck Institute test *Artemisia annua* plant extract against the novel coronavirus disease and *A. annua* extracts show very little toxicity and artemisinin-based drugs are widely used to treat malaria even in newborns [102]. Then it is thought for application as a vaccine, but it will not be cost-effective and affects biodiversity in conservation with green economy applications [103]. Hence, the high-diluted biomedicines; pretreated- and posttreated- *Artemisia nilagirica*-extract, maybe used in vaccine formulations to regulate immune function by acting as -antioxidants and -scavenge oxidative stress [102] due to the presence of chief constituents of many human health care potential biologically active chemical compounds. that work through several modes of action; are flavonoids, alkaloids, tannins, glycosides, phenol, saponins, terpenes, amino acids, quinines, phlorotannins, polysaccharides, sesquiterpene lactones, coumarins, acetylenes, and volatile oils; terpenoids, monoterpenoids, sesquiterpenoids,  $\alpha$ -Thujone,  $\beta$ -thujone, beta-pinene, germacrene D, 4-terpineol,  $\beta$ -caryophyllene, 1, 8-cineole, artemisia ketone, camphor, caryophyllene, camphene, and borneol, etc., - isolated from the crude extract of *A. nilagirica* flowering meristem [80].

#### **Idea-I Emergency preparations of vaccine for all general and diabetic patients:**

The high-diluted homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, prepared from the flowering meristem of *Artemisia nilagirica*, @ 5-10 drops mixed with 10-20 ml of sterile distilled- or pure drinking -water, maybe orally administered twice daily in the early morning and evening respectively (before taking any food) for 10-15 days, depending of age and body weight, against naturally occurring novel coronavirus infections, 15-days before symptom onset OR illness onset (as a vaccine) OR onset of symptoms where patients in hospital-associated COVID-19 infections have been reported [104,105]. In the case of application of drugs for treatment, depending on the disease intensity, the dose may be increased 3-5 times a day. It is cost-effective, eco-friendly, and easy -prepare able and -available and emergency applicable drug [30,106,]. It is obligatory that information on ClinicalTrials.gov, a resource provided by the U.S. National Library of Medicine (NLM), to the National Institutes of Health (NIH) or World Health Organization or other agencies of the U.S. Federal Government, is provided by study sponsors and investigators, and they are responsible for ensuring that the studies follow all applicable laws and regulations and the concerned authorities [30] should give permission for direct-emergency [107] used of biomedicines vaccine; *Artemisia nilagirica*-extract, -liquid against COVID-19, which is well known with the generalized concept of medicines for emergency apply [107] and these drug serve as emergency-medicines, like antibiotics, leading to a generalized concept of medicine for emergency-applications (Kaiser, 2020; Werner et al., 2020). It is the most cost-effective [106], easily prepare able, easily available, easily applicable [106,30] and help in biodiversity conservations and green economy applications against COVID-19 also for the nonspecific benefits as well as immunity to the target pathogen?[108].

It is known that our body as a complex system, has the capacity for self-organization, emergence and self-similarity over global (overall health and wellbeing) and local (organ) levels of organization and these features are key for future research on the systemic healing that evolves over time during individualized emergency treatment with homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, which is a complex nano-scale system involving multiple interconnected, interacting components, and emergent properties (Bell, 2020a,2020b). So, it is the most; cost-effective, easily prepare able, easily available, and helps in biodiversity conservations and green economy applications issues and easily applicable also with increasing immunity [108] and the high-diluted medicines; *Artemisia nilagirica*-extract, is the best emergency effective applicable treatment potential biomedicine-vaccine against COVID-19. It is also studied the cost-effectiveness of emergency care interventions in low and middle-income countries like India [30,105].

#### **Idea-II Emergency preparations of vaccine for general and non diabetic patients:**

The high-diluted homeopathic medicines *Artemisia nilagirica*- globules, prepared from the few drops of a liquid *Artemisia nilagirica*-extract, by pouring and to just moistening all the sucrose-globules in the vial forming *Artemisia nilagirica*- biomedicines globules @ 10-20 medicated-globules (7.2-14.4mg), maybe orally administered thrice daily in the early morning, afternoon and evening (before taking any kinds of food) for 10-15 days, depending of age and body

weight, against naturally occurring virus infections 15-days before symptom onset OR illness onset (as a vaccine) OR onset of symptoms where patients admitted in hospital with COVID-19 infections have been reported (treatments) [33]. In the case of treatment, depending on the disease intensity, the dose may also be increased 3-4 times a day. It is also the most cost-effective and easy -prepare able, –available and easy-applicable drug [30]. The biomedicine *Artemisia nilagirica*- globules, can also be directly used for emergency effective treatment as vaccine of COVID-19 after getting permission from the; -WHO, -ClinicalTrials.gov., -U.S. NLM and –NIH [30,89] and these concerned authorities, should give permission for direct-emergency used of biomedicines *Artemisia nilagirica*-globules vaccine against COVID-19, because for no side effects [107], and serve also as antibiotics, leading to a generalized concept of medicine [30], future research on the systemic healing that evolves over time during individualized emergency applications, with multiple inter-connected, interacting components, and emergent properties[109,110]. It is also the most; cost-effective, easily prepare able, easily available, and helps in biodiversity conservations and green economy applications issues and easily emergency-applicable also with increasing immunity and it is the best emergency effective applicable treatment methods against COVID-19, without spending time and it also becomes the most cost-effectiveness of emergency applicable-care interventions in low and middle-income countries like India[30].

#### **Idea-III Emergency preparations of vaccine for all patients:**

The adjuvant homeopathic medicines *Artemisia nilagirica*-extract [102] maybe used with recombinant protein nanoparticle antigens derived from the coronavirus spike protein and combine these antigens with its adjuvant *Artemisia nilagirica*-extract for the final formulation of the vaccine and it 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 [30,111]. In a letter as an e-mail, the Science Advisory Board Net, at Express Cells, for their business of creating better knock-in cell lines for drug discovery, toxicology, and other biologic research and add for purchase SARS-CoV-2 Spike Protein (NC\_045512.2), SARS-CoV-2 Nucleocapsid Protein (NC\_045512.2), TMPRSS2 (NM\_001135099.1), ACE2 (NM\_021804.3), BSG (CD147) (NM\_001728.3), SARS-CoV Nucleocapsid Protein (MK062179.1), SARS-CoV Spike Protein (MK062179.1), MERS-CoV Nucleocapsid Protein (NC\_019843.3), MERS-CoV Spike Protein (NC\_019843.3) (The Science Advisory Board Net, 2020) and the readily available coronavirus spike proteins may be helped to use for vaccine preparation which may fight against “COVID Toes among kids: New symptom of novel coronavirus infection” [112]. Here, vaccination or treatments, is the use of remedies against diseases either earlier in an epidemic or given routinely to prevent diseases. When the latter is used it involves mostly the users just like any conventional vaccination which administers the antigen in an inactive state to gain immunity towards the disease and is given before the onset of disease or disease symptoms in an individual as a prevention rather than cure and in a clinical study shows the efficiency of triple antibiotic mixture and propolis as intracanal medication in revascularization process in immature apex [113]. It is obligatory that information to the ClinicalTrials.gov, the U.S. National Library of Medicine, to the National Institutes of Health or other agencies of the U.S. Federal Government and maybe easily emergency-applicable drugs with increasing immunity.

#### **Idea-IV Emergency preparations of vaccine for all patients:**

The adjuvant homeopathic medicines *Artemisia nilagirica*-extract [102,84,85] maybe 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 [115]. After getting successful clinical trials, the concerned authorities may be permitted for the use as a vaccine for emergency preparation for treatments against novel coronavirus.

#### **Practical note for emergency applications:**

Recently, the NovavaxInc, has announced it is currently in pre-clinical animal trials for several multiple nanoparticle COVID-19 vaccine candidates, the adjuvant is ‘saponin-based’ [84,85]. Merck’s new investments focus on two different COVID-19 vaccines that are already in early clinical trials [5,95] and the Max Planck Institute test *Artemisia annua* plant extract [102] against the novel coronavirus disease and *A. annua* extracts show very little toxicity and artemisinin-based drugs are widely used to treat malaria even in newborns [6,90,91,]. In this pandemic situations, it is thought that the high-diluted biomedicines (liquid and globules); *Artemisia nilagirica*-extract, at the above-mentioned doses, the personalized medicines, may improve medical decision-making individualized diagnosis, prevention, and emergency applicable cost-effective treatments as vaccine against COVID-19 diseases, with the support of WHO, NIH, ClinicalTrials.gov. and U.S. NLM, showing an example for the ‘Use, Production and Emergency Application of Vaccines’, and to distribute free for all the population. Because, all the high-diluted *Artemisia nilagirica*-extract, -liquid and –globules biomedicines, are making them capable for different biological activities, and expected to be effective against Covid-19, and the U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO), want to apply safe vaccine against SARS-CoV-2, for the newly developed-late hyper inflammatory multisystem inflammatory syndrome in children (MIS-C) and adults with Covid-19[115].



### **Economy of vaccine applications:**

Recently, the Coronavirus pandemic has adverse effects on education, especially on school education and characteristics, including research, academic programs, staff professional development, and jobs also [116]. At present, many groups (80) are working globally for vaccines for a human which normally takes years to develop. Currently, there are [64] potential vaccines for the SARS-CoV-2 which are in different stages of clinical trials [117] and a committee that makes vaccine use recommendations to the U.S. Centers for Disease Control and Prevention (CDC), suggesting they should be high on the list [5,95,118].

While a cure or vaccine for COVID-19 is not available, in the absence of any side-effects and adverse interactions with any conventional medicines along with a robust safety profile and repeated evidence-based successes against viral infections, the high-diluted biomedicine (liquid and globules); *Artemisia nilagirica*-extract, at an extremely low dose, may play an important role in the fight against COVID-19 [105]. It is the most; cost-effective-methods, easily prepare able, easily available, and help in biodiversity conservations and green economy applications issues also and should be use as emergency applicable methods against COVID-19 as early as possible, for taking measures or treatment opportunities or avoid new coronavirus infections. And immediate apply by; campaign, aware, discuss, arrange workshops and seminars, make news, and publish as abstract regarding the importance of “The Biomedicines Vaccine (liquid and globules); *Artemisia nilagirica*-extract, at extremely low doses; Indicate the Potential Cost-Effective Biomedicines Against Various Pathogens including COVID-19 by Improving Immunity” [10,12,13]

### **Future Research Okra as a Vaccine:**

Here, the results fulfill the goal of a research title because the present treatments with homeopathic medicines or biomedicines; *Artemisia nilagirica*-extract, at extremely low doses, with regular consumption of okra vegetables of need to justify future research ideas. It is known that social vaccines resist and change unhealthy social and economic structures and useful metaphor for health promotion [119]. Okra plants itself may serve as a good “Eco-Friendly Highly Economical Plants as well as Biomedicines” thereby reducing diseases conserving our biodiversity contributing towards “Sustainable Climate Health and Development” and it may have important economic implications in agriculture to fulfill its food and nutrition requirement and improved midday meals by preventing malnutrition. And highly-trace-tolerance-okra may be used, in vaccine formulations, as one of the most powerful potential-biomedicine, improving natural immunity against COVID-19, enriching science and technology communication applications food security economy. It may be the most; cost-effective, easily-available, safe-edible and prepare able as well as and safe alternative to live replicating COVID-19 social vaccines which restarts, a window of hope and opportunity opens for nations to green their recovery the 21st-century economy in ways that are clean, green, healthy, safe and more resilient.

### **CONCLUSIONS**

The homeopathic medicines or biomedicines- *Artemisia nilagirica*-extract, at extremely low doses, not only used as the best potential-biomedical-drugs vaccine against various plant-diseases, by synthesis of new PR-proteins, increasing natural-defense-response, but also, it may be increased urgency to prepare safe and an effective emergency use as the best vaccine for treatment or prevention coronavirus, the COVID-19, by increasing the immune system for the improvement of agriculture economy medical science technology communication mechanism with cost-effectiveness and biodiversity conservations as well as bio-applications issues, reviving human civilizations in the old form, forming the ‘Best Vaccine’, which not only shows the clinical, physical, chemical, biological and physiological effects but also on relative molecular mass, explaining the confirmation of mechanism and action of the homeopathic medicines supported scientific experimentations and proofs, and also the future clinical-scientists develop all aspects of clinical-case-reports globally by publishing. And in the near future okra may itself be a ‘Best Potential Vaccine’, and safe alternative to live replicating COVID-19 vaccines which restarts, a window of hope and opportunity.

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