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Mulberry-Gall MT (MGMT) Biomedicines Maybe Act as a Vaccine Against Coronavirus-2 and Mulberry Pathogens: Advancing Sericulture-Agriculture-Agro-Forestry-Environment-Biodiversity-Wildlife- Conservation-Science-Technology-Communication!

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Abstract

The spread of day-to-day the new mutant variant pandemic coronavirus-2 (SARS-CoV-2) of Coronavirus disease 2019 (COVID-19), still now puzzles and collapse changing total human civilizations, and badly impacts on agriculture, sericulture, socio-economy, health, education, and research. At present, no potential booster antiviral vaccines are to prevent COVID-19. And on the other hand, different mulberry diseases like root-knot, fungus, virus, and tukra badly affect economic growth and developmental impact on sericulture which is easily controlled by many chemical pesticides. But it creates many toxic effects on environments. So, it is required to develop new and more efficient solutions to fulfill all requirements. Present pretreatment with high-diluted Mulberry Gall MT (MGMT) @20ml(1mg)/plant twice at an interval of 15 days, prepared from the gall roots of mulberry, *Morus alba* L., cv. S1 by foliar spray and soil drench @ 20ml/plant in each type of pretreatment, applied against nematode pathogens, *Meloidogyne incognita* (Kofoid & White) Chitwood, causing root-knot diseases of the mulberry increasing number and surface area of leaves, and higher protein content in leaves and roots than untreated plants. In all the treated plants, the population of root-knot nematodes decreased significantly than infected untreated plants. And pretreatment is more effective than post-treatment by inducing their natural defense response and both treatments showed high efficacy. Both the treatments are thought to induce systemic acquired resistance response of the treated plants through the expression of many pathogenesis-related (PR) proteins, and high-diluted-biomedicines-MGMT maybe act as a preventive COVID 19 vaccine and mulberry diseases, advancing in sericulture-agriculture-agro-forestry-environment-biodiversity-wildlife-conservation-science-technology-communication, socio-economy-application-Issues, and may prevent any kinds of 21st –century pandemics, and it may also give good scope for new development health, drug and clinical research with the field 'Silk industry, Sericulture, and Agricultural Sector, and Plant Diseases Detection, Monitoring, and Control in New Normal Situation by Fighting against War'.

Key Words: Mulberry-Gall MT-Biomedicines; Vaccine-Coronavirus-2-and-Mulberry Pathogens; Advancing-Sericulture-Agriculture-Agro-Forestry-Environment-Biodiversity-Wildlife- Conservation-Science-Technology-Communication

Introduction:

The 10-40% of the total crop losses annually in India by the root-knot nematodes are infested almost all kinds of crops, mostly economical mulberry (80% mulberry plantation), and vegetables (Sen, 1983), causing root-knot (RK) disease, and serious problem in our country which indirectly affects our sericulture as well as agricultural economy, (Datta, 2019a,2019b,2019c,2019d,2019e;2020a,2020b,2020c,2020d,2020e,2020f,2020g,2020h,2020i, 2020j,2020k,2020l,2020m,2020n,2020o,2020p,2021a,2021b,2021c,2021d,2021e,2021f,2021g,2021h,2021i,2021j,2021k,2021l,2021m,2021n,2021o,2021p,2021q,2021r,

2021s,2021t,2021u,2021v,2021w,2021x; Datta and Mukherjee, 2021). The 80,000 tons of chemical pesticides have been extensively used by the farmers previously on the Indian soil annually for effective control of plant pathogens (Paul, Sinhababu, and Sukul, 1995).

Recently, the 21st century-pandemic pathogens, the acute life threatening severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, previously 2019-nCoV), causing the Coronavirus-Disease-19 (COVID-19) are in the whole world already under intense strain, and the link between COVID-19 and conflicts are a deadly combination; badly impacts globally on food sustainability and security leaving millions of children at risk, disasters, and climate change, nutrition crisis, decreased incomes, production, agricultural marketing, and consumption, labor and logistical constraints, and increased prices of food commodities affecting the consumption pattern, food insecurity and an inability to access medicine and staple foods, poverty and weak essential services, earning opportunities have dried up, health services have been stretched to the limits and travel restrictions have compromised access to markets, humanitarian crisis, recurrent armed conflict, acute malnutrition and major epidemic outbreaks, including the COVID-19 pandemic, threat of and the policy response, inter-group conflict worldwide, violent conflict, civil demonstrations, critical heterogeneity, and facing "a complex peace and security environment", long-standing inequalities, and the climate disruption, face the possibility of an uneven recovery, and the crisis is feeding many of these drivers of conflict and instability", chronic violence, re-emergence of old conflicts, slowed economic growth, severe impact on young people, increased risks, and the loss of opportunities for education, employment, and income, marginalization, mental health, criminals and extremists activities, gender inequalities in all areas of socioeconomic impacts in low-income countries, and political life, vaccines shortage, and conflict affected regions in the second wave, and changing of human behavior with variants struggle with global blind spots, and black fungus infection, and facing legal threat after challenging COVID-19 drug researcher (UNICEF, 2021; Bloem and Salemi, 2021; UN, 2021; Sserwanja et al., 2021; The World Bank, 2021; Josephson, Kilic, and Michler, 2021; Aschwanden, 2021; Wadman, 2021; Watts, 2021; Jeong, 2021; O'Grady, 2021).

Primarily, it is thought that the application of different phytomedicine OR bio-agents OR crud plant extracts OR homeopathy OR intercropped-/multi cropped-biomedicines OR biomedicines-meal OR biomedicine-vaccine OR social-vaccine OR policy-developed global-vaccine OR different epidemic-models OR civil-engineering epidemic-model, etc., will fulfill all requirements for controlling plants and animal diseases. But sometimes it causes problems regarding the emergency application, availability, cost-effectiveness, limitations, restrictions, toxicity, and biodiversity-conservation, etc., also (Datta, 2019a, 2019b, 2019c, 2019d, 2019e, 2020a, 2020b, 2020c, 2020d, 2020e, 2020f, 2020g, 2020h, 2020i, 2020j, 2020k, 2020l, 2020m, 2020n, 2020o, 2020p,2021a, 2021b, 2021c, 2021d, 2021e, 2021f, 2021g, 2021h, 2021i, 2021j, 2021k, 2021l, 2021m, 2021n, 2021o, 2021p, 2021q, 2021r, 2021s,2021t, 2021u, 2021v, 2021w, 2021x; Sukul, 1970, 1992; Sukul et al., 2001).

Presently it is observed that the use of animals-and –plants biomedicines against the both-pandemics pathogens, will be more potent than the previous one; new, and more efficient solutions, science and technology applications, and products improving sericulture as well as agriculture by inducing natural defense response or natural immunity preventing viral pandemic (Datta, 2021j,2021k,2021m,2021p,2021q,2021r,2021t,2021u,2021v,2021w).

In the present study, it is exploited systematic signaling and induced natural defense in the host plants by applying high-diluted biomedicines Mulberry Gall MT (MGMT), prepared from the gall root of mulberry (GRM), against root-knot (RK) nematodes pathogens, *Meloidogyne incognita* (Kofoid& White) Chitwood. The main aims and objectives of the present experiments are to find out the most effective, and further confirm, the effects of high-diluted biomedicines MGMT, which must reduce RK-diseases of mulberry plants (MP), *Morus alba* L., cv. S1, by increasing the defense response of host plants, and also confirm the MGMT could reduce pandemic COVID-19 disease by increasing natural immunities, which may help to develops vaccine ideas.

Materials and Methods:

Research Design Schedule:

The design of research is as follows;

►Location of the experimental plots
►Estimation of the nematode pathogen population
►Preparation of fields
►Plantation of mulberry cutting
►Division of plots
►Preparation of biomedicines mulberry root gall extract (MRGE)
►Preparation of biomedicines mulberry Gall MT (MGMT)
►Preparation of high-diluted biomedicines MGMT
►Preparation of high-diluted test solution of biomedicines MGMT
►Preparation of ultra-high-diluted biomedicinesMulberry Gall 30 to Gall 1000C
►Pretreatments with high-diluted MGMT-test solution
►Mortality test
►Analysis of residue
►Root-knot (RK) diseases
►Global security sustainability science technology communication
► Future research

Location of the Experimental Plots:

The field experiment was carried out at the Sriniketan Sericultural Composite Unit, Government of West Bengal, India where the temperature was 28±5°C and relative humidity was 75±5 %. Throughout the year, the whole mulberry field was naturally infected with the root-knot disease of mulberry plants (*Morus alba* L., cv. S1) caused by *Meloidogyne incognita* (Kofoid& White) Chitwood root-knot nematodes pathogens (Datta,2019a,2019b,2020a,2020b,2020h,2020l,2020p,2021b; Paul, Sinhababu, and Sukul, 1995).

Estimation of the Nematode Pathogen Population:

Soil and root samples were collected at random from a sericulture-field spreading over an area of 5.6 acres of land with a view to determining the extent and intensity of *M. incognita* nematode pathogen infestation. Later, two areas (in the same locality and climatic condition) each measuring 0.02 ha; one naturally root-knot disease infected untreated field and other naturally root-knot disease infected pretreated field, were demarcated in the mulberry field where there were no soil differences as well as an environmental factor (Christie, and Perry, 1951; Datta,2019a,2019b,2020a,2020b,2020h, 2020l,2020p,2021b; Paul, Sinhababu, and Sukul, 1995).

Preparation of Fields:

The first 0.02 ha nematode infected (2863±55 J_2 /1 kg of soil) sandy soil area (18889.76 x 1066.80 x 45.72 cm^3) was mixed with yard manure (2:1 vol/vol). Every day, at least 40 random samplings of moist rhizospheric soil (200g of soil i.e., each sample collected by making a hole of 1.8 cm wide and 6 cm deep) were done in the nematode infected area for 30 days and were assessed the *M. incognita* population and this naturally infected soil-filled area, demarking untreated field, was replicated thrice. The other 0.02 ha (18889.76 x 1066.80 x 45.72 cm^3) naturally *M. incognita* infected sandy soil field was also prepared by mixing yard manure (2: 1 vol/vol), removing weeds, irrigating water, and interchanging among the soil for uniform distribution of manure and nematodes in the naturally infected field which was estimated by regular soil sampling like the same process of previous one. This naturally infected soil-filled area, demarking Pretreated field, was also replicated thrice (Datta, 2019a,2019b,2020a,2020b,2020h,2020l,2020p,2021b; Paul, Sinhababu, and Sukul, 1995).

Plantation of Mulberry Cutting:

Mature three years old mulberry cutting, *Morus alba* L., cv. S1 (average 25cm length and 20g fresh weight) collected from the same sericulture field, were planted with a gap of 45cm throughout the experimental fields where there were no soil differences and climatic conditions. The planted mulberry cuttings were allowed to grow for a period of three months. Regular rhizospheric soil and root sampling (at random) were done for the estimation of the nematode population during this three-month growth period of mulberry in all fields. At least 80 numbers at random rhizospheric soil sampling (200g in each sample) were collected from the rhizospheric root-soil area of root (10-15cm X 10-15cm) and at least 40 numbers at random root sampling (2g fresh root in each sample) were collected from newly formed roots (or gall roots) for determining the intensity or presence of nematodes in all the Pretreatment experimental fields (Datta, 2019a,2019b, 2020a,2020b, 2020h,2020l,2020p,2021b; Paul, Sinhababu, and Sukul, 1995).

Division of Plots Groups:

After three months of growth of mulberry, *M. incognita* population was estimated in the rhizospheric soil as well as roots (at least 40 at random sampling in each area) of mulberry plants in each area of the mulberry field. The *M. incognita* infected mulberry plants were achieved growth of 50-60 cm in height. The infected mulberry plants were divided into 16 plots (Plate 2), each measuring the area of 472.44cm X 533.4cm X 45.72cm. The mulberry plants are divided into two plant groups; Infected Untreated Plants Groups and Infected Pretreated Plants Groups and each group has 8-plots (20 plants/plot). At first, all the plants were pruned, manured with NPK, and irrigated every 7 days. Rhizospheric soil was interchanged among the plants to keep the nematode infestation as uniform as possible in the naturally infected field. After pruning, the plants were allowed to grow for a period of 137 days when their root-knot, leaf spot, powdery mildew, viral and tukra diseases were assessed. The field trial was replicated three times (Datta, 2019a,2019b,2020a,2020b,2020h,2020l,2020p,2021b; Paul,Sinhababu, and Sukul, 1995).

Preparation of Biomedicines MRGE:

The biomedicines mulberry root galls (MRG), were collected from gall roots of the mulberry plants grown in root-knot infected the mulberry experimental field. MRG was washed with sterile water, homogenizer, and extracted with 90% ethanol at room temperature (25±2°C) for five days and centrifuged at @3500 rpm for 5 minutes. Both the extract supernatant was collected and allowed to evaporate at room temperature (25±2°C) and the biomedicines mulberry root galls extract (MRGE) crude residues were kept over anhydrous calcium chloride (CaCl2) for dehydration and stored at 4°C. The biomedicines extract residue was mixed with sterile distilled water just before application on the test plants ((Datta, 2021i,2021j,2021k,2021m,2021p,2021q,2021r,2021t,2021u, 2021v,2021w; Datta and Mukherjee, 2021; Sukul et al., 2001).

Preparation of High-Diluted Biomedicines MGMT:

The crude MRGE- biomedicines residue was mixed with sterile distilled water just before application on the test plants. The crude residue was diluted in 90% ethanol at 1mg/ml concentration and was prepared high-diluted biomedicines, mulberry Gall MT (MGMT) (Original Solution or Crude Extract i.e. Mother Tincture) (Datta, 2019a, 2020h, 2020l,2020n,2020p,2021b,2021e,2021i,2021j,2021m,2021o,2021p,2021q; Datta and Mukherjee, 2021; Sukul et al., 2001).

Preparation of High-Diluted Test Solution of Biomedicines MGMT:

The preparation of high-diluted test-solution of the biomedicines-MGMT, were diluted (v/v)@1ml drug/20ml sterile tap water (in the proportion of drug: water=1:20) respectively, and the high-diluted-biomedicines liquid control-solution of both the drugs were diluted (v/v) @ 1ml 90% ethanol/20ml sterile tap water (in the proportion of drug: water=1:20) respectively, and the control solution was prepared for comparison to the preparation of test solutions, and stored at 4oC for treatments media (Datta, 2019a,2020h,2020l,2020n,2020p,2021b,2021e,2021i,2021j,2021m,2021o,2021p,2021q; Datta and Mukherjee, 2021; Sukul et al., 2001).

Preparation of Ultra-High-Diluted Biomedicines Mulberry Gall 30 to Gall 1000C:

The preparation of ultra-high-diluted-biomedicines liquid drugs, the high-diluted MGMT was diluted with 90% ethanol (1:100) proportionate in a round vial which was filled up to two-thirds of its space, tightly crocked, and the vials were given 10 powerful downward strokes of the arm for mechanical agitation (succession), forming the 1st centesimal potency named Mulberry Gall 1C. All the subsequent potencies were prepared by further diluting each potencywith 90% ethanol in the same proportion (1:100) and the mixture was given 10 powerful downward strokes. In this way, different potencies of the drugs of mulberry; Gall 30C, Gall 200C, and Gall 1000C, were prepared respectively (Datta, 2019a,2020h,2020l,2020n,2020p,2021b,2021e,2021i,2021j,2021m,2021o,2021p,2021q; Datta and Mukherjee, 2021; Sukul et al., 2001).

Pretreatment with High-Diluted Mulberry Gall MT Test Solutions:

Seventy-six days after pruning of mulberry plants, all the plots (infected untreated groups and infected Gall MT-pretreated groups) were done by foliar spray and soil drench @ 20ml/plant in each type of pretreatment (1 mg MGMT /20 ml concentration in ca case of pretreated groups) twice at an interval of 15 days with MGMT-pretreatment test solution and sterile tap-water respectively before the onset of diseases. Two pretreatments were given in such a way that all the leaves and rhizospheric soil of the plants were completely drenched with pretreatment test solutions and tap water. During spraying, the soil surface underneath each plant was covered with a polyethylene sheet. All the MGMT-pretreated plots were received 80 ml/plant test solutions (4 mg/plant) and other infected untreated- plant groups were similarly received 80 ml/plant sterile tap water respectively. It was told about untreated (control); these controls were only pretreated with the sterile tap water (i.e. without MGMT- pretreatment test solution). At thirty days after the second pretreatment, all the parameters of diseases were assessed again for each group. All the data were used for statistical analysis by student's t-test (Datta, 2019a,2020h,2020l,2020n,2020p,2021b,2021e,2021i,2021j,2021m,2021o,2021p,2021q; Datta and Mukherjee, 2021; Sukul et al., 2001).

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Mortality Test:

Ten sets of cavity blocks with 1ml sterile tap water containing 50 larvae (J_2) of *Meloidogyne incognita* were taken; five sets were treated as control and the other five were treated as treatment sets. The MGMT was dissolved in sterile tap water at 1 mg/ml forming an MGMT-test solution. To assess the direct effect of MGMT-test solution, the water was withdrawn by pipette and in all the treatment sets, immediately replaced by 1ml of test solutions (1mg MGMT/ml concentration) was added, except the control and observed with every one-hour interval for a period of 24 hours exposure period at room temperature (25±2°C). Immediately after observation of each block, nematodes were transferred to sterile tap water again to see if any recovery occurred after 4 hours (Datta, 2019a,2020h,2020l,2020n,2020p,2021b,2021e,2021i,2021j,2021m,2021o,2021p,2021q; Datta and Mukherjee, 2021; Sukul et al., 2001).

Analysis of Residue:

Mulberry leaves collected fifteen days after the second treatment were homogenized in a blender and extracted with ethanol. The residue runs in a thin layer chromatography plate (TLC) with the standard from the MGMT-pretreatment test substances. The test substances were MGMT-pretreatment test solution (Datta, 2019a,2020h,2020l,2020n,2020p,2021b,2021e,2021i,2021j,2021m,2021o,2021p,2021q;Datta and Mukherjee, 2021; Sukul et al., 2001).

Root-Knot (RK) Disease:

Rhizospheric soil and root sample were taken at random from all the infected plots. *Meloidogyne incognita* populations (10samples/plot in each plant group) were estimated in the rhizospheric soil as well as roots of infected mulberry plants. The total number and surface area of leaves of all plant groups were counted. A total number of root galls/plants were counted in the infected roots of mulberry plants. The total protein content of the leaf and root samples (10 at random sampling/plot) from each of the 16 plots was determined. All the data from experiments were counted for statistical analysis by student's t-test. In this field trial, sacrifices of mulberry plants were not done due to well-reported pathological characters (Christie, and Perry, 1951; Lowry et al., 1951; Datta,2019a,2019b,2020a,2020b,2020h,2020l,2020p,2021b; Paul, Sinhababu, and Sukul, 1995).

Global Security Sustainability Science Technology Communication:

The NGO-Burdwan Green Haunter and Students' Goal, farmers, administrators, institutions, students, communities, different scientists, academicians, clinicians, associations, teachers, staff, scholars, researchers, regulators, photographers, visitors, healthcare, media personnel, and different club and social organizations, organize street cornering, workshops, seminars, agriculture fair, health camp, campaign, aware, make the news, and publish in different journals emphasis on "Potential combined high-diluted biomedicines against COVID-19 enriching security sustainability sericulture agriculture biodiversity socio-economy science technology communication application issues by preventing mulberry diseases" (Sukul et al., 2001; Datta and Mukherjee, 2021; Datta, 2019a,2020a,2020b,2020c,2020d,2020e,2020f,2020g,2020h,2020i,2020j,2020k,2020l,2020m,2020n,2020o,2020p,2020q,2021a,2021b,2021e,2021f,2021i,2021m,2021o,2021p,2021q,2021r,2021t,2021u,2021v,2021w).

Future Approach in Research:

It will be achieved from typical analysis or justifications of literature review, research articles, specifies hypotheses, backgrounds, problems, a brief review of the key literature, and reports (Datta and Mukherjee, 2021; Datta, 2019a,2020a,2020b,2020c, 2020d,2020e, 2020f,2020g,2020h,2020i,2020j,2020k,2020l,2020m,2020n,2020o,2020p,2020q,2021a,2021b,2021e,2021f, 2021i,2021m,2021o,2021p,2021q,2021r,2021t,2021u,2021v,2021w).

Results:

On Mortality:

It was observed that high-diluted-biomedicine-MGMT had no direct toxic effects on nematodes mortality within the exposure period of 24 hours and no mortality occurred within the control.

On Residues Toxicity:
Mulberry leaves collected fifteen days after the second treatment, didn't contain any toxic residue of the MGMT-pretreated test substance.

Pretreatment Effect of High-Diluted Biomedicines-MGMT on Root-Knot (RK) Diseases:
Table1 shows the pretreatment effects of *M. incognita* pathogens infected mulberry plants during a field trial replicated thrice (P<0.01 by 't'- test). All naturally infected plants (infected pretreated plant group) pretreated with high-diluted-biomedicine-MGMT showed increased number and extent of leaves surface area, and better protein content in leaves and root than infected untreated (control) plants (infected untreated plant group), and altogether infected high-diluted-biomedicine-MGMT-pretreated plants, the population of root-knot nematodes decreased significantly in rhizospheric soil and likewise as in roots than infected untreated (control) plants, and the number of root galls also decreased significantly after high-diluted-biomedicine-MGMT- pretreatment.

Pretreatment groups (20 plants/ Plot & 8 plots / group)	**Average number of leaves / plant**		**Average surface area of leaves (sq.cm)**		**Average protein content (%)**				**Average nematode population**				**Average number of root galls/plant**	
					Leaf		**Root**		**Soil(200 g)**		**Root (2g)**			
	Day-0	**Day-30**	**Day-0**	**Day-30**	**Day-0**	**Day-30**	**Day-0**	**Day-30**	**Day-0**	**Day-30**	**Day-0**	**Day-30**	**Day-0**	**Day-30**
Infected Untreated (Control)	392ax	358ay	7675ax	7987ax	2.99ax	1.98ay	4.37ax	3.39ay	2104ax	2402ay	638ax	2034ay	1239ax	2087ay
	±12.22	±10.24	±122.53	±179.65	±0.01	±0.02	±0.01	±0.03	±22.20	±96.72	±20.03	±85.20	±32.13	±86.23
Infected	392ax	443by	7675ax	2486by	2.99ax	9.26by	4.37ax	7.97by	2104ax	32by	638ax	12by	1241ax	15by
Pretreated Gall MT	±12.40	±10.23	±122.53	±381.04	±0.01	±0.02	±0.01	±0.01	±22.20	±0.33	±20.03	±1.02	±23.71	±1.03

Day-0 means before 2nd Pretreatment.
Day-30 means after 2nd Pretreatment.
a,b,- Significant difference by 't'-test (P<0.01) in the same column.
x,y- Significant difference by 't'- test (P<0.01) in the same row between day-0 and day-30 of each character.

Table 1: Effects of pretreatment with high-diluted Gall MT on root-knot infected mulberry plants in a field trial replicated thrice

Discussion:
On Growth of Mulberry Plants (MP):

It is proved that the mulberry plants (MP)-growth in terms of number and extent of leaves surface area, and better protein content in leaves and root was higher than infected untreated groups in all the treatment groups of MP -pretreated with the high diluted MGMT, and it is noted that the improved the nutritive value (especially protein) of the high diluted MGMT -pretreated leaves of naturally infected plants are due to synthesis of new proteins, and it will help to increase feeding to *Bombyxmori* L.

larvae that enrich cocoon quality as well as silk production in the sericulture industry and advances agriculture economy, biodiversity, conservation, science-technology-communication, socio-economy application issue (Suguna and Vedivelu, 1993; Elele, 2012; Datta, 2020l,2020p,2021b,2021j,2021k,2021m,2021p,2021q,2021r,2021t,2021u,2021v,2021w).

On Root-Knot (RK) Diseases in Mulberry Plants (MP):

All the pretreatment groups of mulberry plants treated with high diluted biomedicines MGMT reduced nematode infestation in terms of root gall number and nematode population in roots in comparison to naturally infected untreated groups, and the population of nematode in the rhizospheric soil was the maximum with the group pretreated with high diluted biomedicines MGMT, and minimum with the naturally infected untreated one, due to potential high diluted effects of drugs, and it is confirmed that the biomedicines could induce synthesis of some antagonistic substance in the pretreated- mulberry root (MR), which is proved from the naturally infected untreated MR contained the highest protein-content due to presence of a large number of nematodes (Chatterjee and Sukul, 1981; Datta and Mukherjee, 2021; Datta, 2019a, 2020a,2020b,2020h,2020j,2020l,2020n,2020p,2021b,2021j,2021k,2021m,2021p,2021q, 2021r,2021t,2021u,2021v,2021w).

On the Toxicity:

This study is also showed again that the high-diluted biomedicines-MGMT had no direct toxic effects on nematodes juveniles, and mulberry plants, but it induced synthesis of some resistance substances in MP to *M. incognita* infection for preventing RK-diseases in the MP, and for these reasons, all the pretreated groups had significantly increased number of leaves, greater surface area, protein content in leaves and roots in MP than the untreated one (Datta, 2020l,2020p,2021b,2021j,2021k,2021m,2021p,2021q).

On Defense Responses:

The current experiment once more confirmed that the high-diluted biomedicines-MGMT act as truly potential preventive biomedicines against mulberry plant diseases because of their defense resistance, and it's known that the lectins accumulated in galled regions of the MR- infected with the RK-disease (Das et al., 1989). It's already known that the many crop plants will be induced by acquiring systemic-resistance for the localized virus- infection or non-pathogenic, and pathogenic-microorganisms or their culture-filtrates or gas or salicylic-acid, etc. protects plants from the many pathogens attack, by working systemically (Ross, 1961; Descalzo, Rahe, and Mauza,1990; Kuc' and Strobel, 1992; Merra et al., 1994; Kiessig and Malamy, 1994; Kiessig et al., 2000; Schneider et al., 1996; Manuch-Mani and Metraux, 1998; Nandi et al., 2002, 2003; Mukherjee,Mondal, and Sinhababu, 2020; Datta, 2020l,2020p,2021b,2021j,2021k, 2021m, 2021p,2021q).

On Pathogenesis-Related (PR)-Proteins:

It is well known that the *M. incognita* is known to share common antigens with its host plants (McClure et al., 1973), and Iqbal, Fosu-Nyarko, and Jones (2020) informed that the attempt to 'Silence Genes' of the root-knot nematode, *M. incognita* results in diverse responses including increase and no change in expression of some genes. So It is assumed that the high-diluted biomedicines-MGMT-pretreatments might be an increased number of proteins-genes in the root than untreated-mulberry plants-groups, and it is already proved that the highest number of PR-proteins-genes in the high-diluted biomedicines-GMT-pretreated okra group is 23, and the next highest number of the PR- protein-gene is 16 in the post-treated-GMT inoculated-group, and 15 in the inoculated untreated group, and the lowest number of protein is 11 in the uninoculated untreated group respectively, which also proved that during infection with the nematode, host plants showed minimal defense responses to the nematode because of this antigenic similarity, and the different PR-proteins-genes of the okra root proteins ranging from 295kD (the highest molecular weight protein) to 11kD (the lowest molecular weight protein) of the OR-protein. And both the high-diluted treated biomedicines;-GMT stimulate the synthesis of numerous different PR-proteins-antigens-genes that must induce defense responses in which the nematodes fail to survive, and it is also proved from the plant-nematode interaction, newly synthesized PR-proteins genes have been found in potato plants infected with the potato-cyst-nematodes Globodera pallida and G. rostochiensis (Hammond-Kosack, Atkinson, and Bowles, 1989; Rahimi, Perry, R.N. and Wright,1993,1996). It is also reported that salicylic acid (SA) increases resistance in plants against RK-diseases by inducing expression and accumulation of pathogenesis related-I protein (14 kD, PR-I) in the sprayed plant-root and leaves, and it sprays enhances-PAL higher activity in infected-roots (Nandi et al.,2002,2003; Mukherjee, Mondal, andSinhababu, 2020; Datta, 2020j,2020n,2021p,2021r,2021t,2021u,2021v,2021w; Iqbal et al., 2020).

Causes the Development of Vaccines against COVID-19 for Humans:

It is believed that the chapter needs to point out how these experiments are related to the development of vaccines against COVID-19 for humans, and all reader's understanding, and it will be achieved from typical analysis or justifications of literature review, reports of different clinical research trials, or fields study or new treatment-methods and ideas, or hypotheses or suggestions for the education, research, and prevention keys to extending global good health as follows (Datta,2021i,2021j,2021l, 2021p,2021r,2021t,2021u,2021v,2021w);

►Through genetic similarity,
►Through genetic and immune resistance mechanisms,
►Through plant-based technology,
►Through the human immunomics initiative,
►Through the nature of the binding,
►Through antigenic epitopes,
►Through viral nano-biotechnology,
►Through coronavirus updated dashboard,
►Through the importance of biomedicines,
►Through multiple benefits of biomedicines,
►Through the synthesis of new molecular weight PR-protein-genes,
►Through the advantage of saponin- and protein-based adjuvants,

Future Prospects:

The mulberry gall protein could be induced the production of new defense-related PR-genes in the test plants and might be confirmed, and in near future, synthetic production of the MRG-proteins would be the potential cost-effective personalized-biomedicine OR social vaccine OR vaccine against coronavirus-2 like pandemic diseases by increasing immunity, and helping policy initiative clinical research in all areas in the field of advanced agronomy-plant-breeding-horticulture-agricultural, agro-forestry, aquatic sciences, environment, wildlife conservation, socio-economy, and green-science-technology-communication issues by preventing okra root-knot and COVID-19 also. Thus, MRG-proteins will serve as very effective biomedicines that would be the most effective cheapest, non-phytotoxic, non-pollutant, conserve our biodiversity, and this vaccine might be the most effective against the different mutant delta variants of coronavirus, and scholars that give good scope for new development and future research in various fields of medical pathology. In near future, the synthetic production of particular molecular-weight-proteins-genes of the antigen of this biomedical research will enrich the 'Advances in Sericulture Agriculture Security Sustainability against COVID-19' by identifying and implementing more promising therapeutics further to reduce future-pandemic-complications of COVID-19. The scientists are searching for challenges and an opportunity for potential-designing a stronger public-health-system for the future by identifying and tracking SARS-CoV-2 variants, and the 'Coronavirus-Structural-Proteins-Genes', and the SARS-CoV-2 viruses promote their own spread and virulence by hijacking human proteins, which occurs through viral protein recognition of human targets. So, it is necessary to sequence and the entirety of the human genome — including the missing parts, and the genomic tools help researchers understand how SARS-CoV-2 is evolving, which may help to the development of potential-antivirus-drug or active and efficient vaccines against different strains of this virus from its structure, molecular-studies and molecular-dynamics-simulations (Chai, et al., 2021; Martin, 2021; Datta, 2020j,2020n,2021p,2021r,2021t,2021u,2021v,2021w; Mukherjee et al., 2020). Maintaining physical distance, hand-sanitization, and use 'Double-N95 Respirator- or Double-/-Triple-layered Surgical-Mask' as 'Life-Long Non-Medicine-Vaccine' for all following COVID-19 protocol (Datta, 2020e,2020i,2021c,2021h,2021k,2021n,2021l,2021q).

Conclusions:

Present pretreatment with high-diluted Mulberry Gall MT (MGMT) not only control root-knot diseases of the mulberry, but also increases number and surface area of leaves, and higher protein content in leaves and roots, by boosting their natural defense response, and inducing systemic acquired resistance response of the pretreated plants through the expression of many pathogenesis-related (PR) proteins genes, and enriches the sericulture industry, and high-diluted-biomedicines-MGMT maybe act as a preventive COVID 19 vaccine and mulberry diseases, advancing in sericulture-agriculture-environment-agro-forestry, wildlife, biodiversity, conservation, science, technology, communication, socio-economy-application-Issues, and may prevent any kinds of 21st–century pandemics, and it may also give good scope for new development health, drug and clinical research with the field 'Silk industry, Sericulture, and Agricultural Sector, and Plant Diseases Detection, Monitoring, and Control in New Normal Situation by Fighting against War'.

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The author declared that he has no conflict of interest regarding the research work.

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