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Study on the bio-physical properties and safety of MHE products

The purpose of the present study was to investigate biophysical properties of MHE substance and evaluate safety of MHE products. Albert Einstein and Nikola Tesla Scientific Foundation, AENT, Research team performed 3 types of Laboratory tests and analyzed those results:

- 1) Germination test
- 2) Microbial Contamination test
- 3) Plague assay

The investigated substance: MHE, constructs from Marine Herbal Extract.

1. GERMINATION TEST

Experimental media: buckwheat seed

Comparative media: drinking water, sanitizer, MHE

Germination is a critical stage in the life cycle of plants and the control of population dynamics. Therefore the germination test was conducted with the purpose to obtain comparative results and evaluate the buckwheat seeds vigor irrigated by 3 types of substances:

- A. Drinking water
- B. Drinking water with 30% of Sanitizer(SPT)
- C. Drinking water with 30% NM Revitalizer

Random buckwheat seeds were places on paper tissue on the white porcelain saucers (no colors, no metals) and sprayed with 3 types of above mentioned liquids each.

On the second day, the results were compared and photographed.

In the pictures, we can see the difference of the physiological potentials of seeds.



Fig. 1: A. *A. Drinking Water: Most seeds have sprouts;* B. *B. Drinking Water + Sanitizer (SPT): Most seeds do not have sprouts or roots. Husks start discomposure, smell and leak out as brown color components show up;* C. *C. Drinking water +NM Revitalizer: Most seeds have sprouts and roots. Sprouts are slightly bigger and greener. The roots have grown longer*

1.2. Summary on Test 1 :

The comparative study on germination of buckwheat seeds revealed the following:

Drinking water (A) had positive impacts on seeds vigor and growth factor. Drinking water with Sanitizer SPT (B) inhibited the growth and promoted discomposure of the seeds. Drinking water with MHE (C) revived and activated the natural vigor and enhanced bio-physical potentials more efficiently compared to drinking water.

As a result, the MHE solutions demonstrated their organic compatibility and safety, as well as, revealed the capacity to enhance the bio-physical potentials, vigor and growth factor of the buckwheat seeds.

2. MICROBIAL CONTAMINATION TEST

Microbiological contamination refers to the non-intended or accidental introduction of microbes such as bacteria, yeast, mould, fungi, virus, prions, protozoa or their toxins and by-products.

Tested substance: Marine Herbal Extract, MHE

Method: Agar well Diffusion (CLSI)

Results of Microbial Contamination Test	
List of Microbial	Marine Enzyme
<i>Staphylococcus aureus</i>	ND
<i>Pseudomonas aeruginosa</i>	ND
<i>Salmonella spp.</i>	ND
<i>Clostridium spp.</i>	ND
<i>Escherichia coli</i>	ND
Coliform	ND
Yeast & mold	ND
Total bacteria	ND

Table 1. Results of Microbial contamination test. Remark: ND = Non Detect

2.2. Summary on Test 2:

The Microbial contamination test revealed that MHE inhibited the following pathogens: *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Salmonella spp.*, *Clostridium spp.*, *Escherichia coli*, Coliform, Yeast & mold.

3. PLAQUE ASSAY

The epidemiology of SARS-COVID is often related to SARS-COVID associated diarrhea, SARS-COVID associated pneumonia. SARS-CoV types are not only expressed in lung, but also in the small intestinal epithelia, in the upper esophagus, liver, and colon. Several reports indicate viral RNA shedding in stool are detectable for a longer time period than in nasopharyngeal swabs. SARS-COVID diarrhea may precede or trail respiratory symptoms. The clinical studies show an incidence rate of diarrhea increases to 50% of cases and more. SARS-COVID diarrhea often occurs in severe cases, and doctors need to clarify between diarrhea and the outcomes of COVID-19 patients.

The optimal methods to prevent, manage, and treat diarrhea in COVID-19 infected patients are subjects of intensive research.

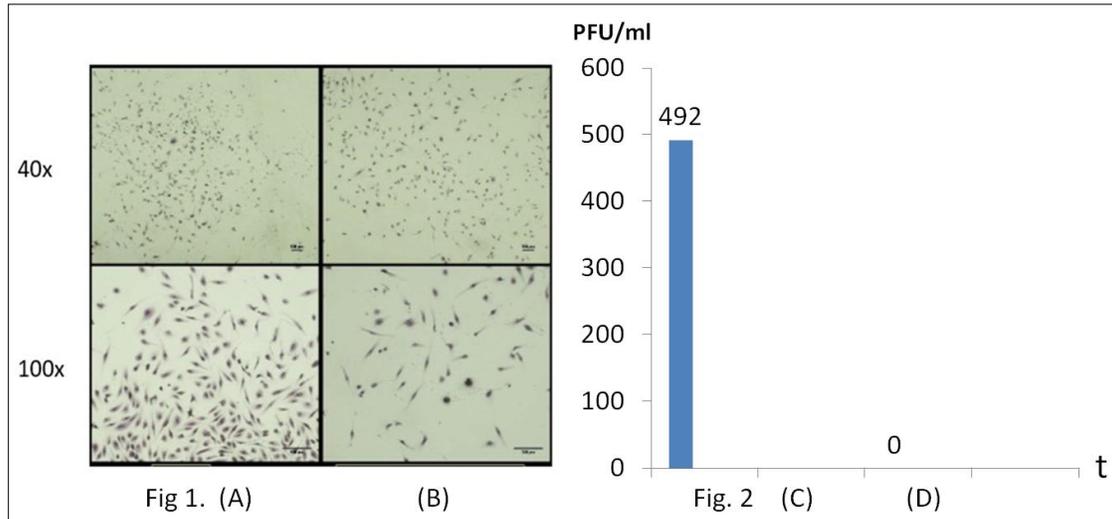
Tested substance: Marine Herbal Extract, MHE

Tested for infection: PED-CoV virus

Method: Viral Assay quantification

Using immunofluorescence techniques to quantify CPE (cyto-pathic effect)

Host cells: Vero cells - a lineage of cells used in cell cultures.



Graph. 1: Results of Plaque assay

Abbreviations and notes:

PFU/ml – Plaque Forming Unit

CPE - cyto-pathic effect

PEDV–CoV is also used for testing Hepatitis C and HIV viruses.

PEDV - Porcine epidemic diarrhea virus caused by a Coronavirus, CoV.

3.1. Summary on test 3:

Results of Plaque assay revealed that Solution with MHE quickly inhibited high viral load as shown in Graph 1.

Graph. 1: Fig.1. Phase (A) shows initial high viral load of PED-CoV dissolved with MHE – on host cellular lineage.

Phase (B) shows considerable reduction of viral load after 3 min.

Photographs were taken at 40-fold and 100-fold magnification: bars (low right) represent 20 μ m and 50 μ m accordingly.

Graph. 1: Fig. 2. shows the quantification results between (C) the initial level of very high viral titer PED-CoV – 492 PFU/ml (vertical scale); and (D) final stage, when the viral load PED-CoV was deactivated by MHE to 0 PFU after incubation for 10 min.

Therefore the present research studied the impact of MHE on COVID associated diarrhea by researching PED-CoV viral cells with very high viral titer. The results had shown the high efficacy of MHE solution to quickly inhibit viral cells.

CONCLUSION

The germination test revealed that the MHE solution was biocompatible, safe and efficiently enhanced natural vigor of the cells. The second test of microbial contamination had shown that a number of different pathogens were inhibited by the MHE solution. The third test had shown that the high efficacy of MHE solution to quickly inhibit a high load of PED-CoV.

Therefore, we can conclude that the MHE solution helps to protect living cells from many types of pathogens by enhancing their natural vigor and vitality, and stimulates their natural immune response.