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Deterministic & stochastic models in obtaining arsenic-Compounds-free produces in hydroponic mediums added with double sieving's with small planktonic populations in nano-biotechnological application

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Abstract
Here a simple and hi-tech applications is delivered with nano-biotechnological applications. Nano-biotechnology is the branch of biotechnology that deals with making structures that are ranged between 0- 500 nanometres of dimension. Molecular diameter of Arsenic and its compounds usually falls within this range and appropriately porous Phytoplankton cells can accumulate this enzymes inhibition bio-molecules. As we all know that Phytoplankton is the base of several aquatic food webs. Phytoplankton, also known as microalgae, are similar to terrestrial plants in that contain chlorophyll and require sunlight in order to live and grow can be provided to Hydroponic mediums as energy supplements. Mere sieving of arsenic compounds by phytoplankton and providing safety hydroponic foods. From both the biological and the toxicological points of view, arsenic compounds can be classified into three major groups: inorganic arsenic compounds; organic arsenic compounds; and arsine gas and all these can be sieved with plankton populations of small and medium in sizes. Nanotechnology and nano-biotechnology with Plankton population are used in recent days for mankind. Arsenic or its compounds can be termed as nano-particles having environmental hazards to all biological cells, tissue, organs. As per molecular dimensions arsenic and arsenic compounds can be sieved by certain plankton populations. Small algae and medium algae can sieve arsenic or its compounds through their appropriate porous cells and accumulate within and can make the aquatic medium free from arsenic and which can be used for hydroponic culture medium and can produce Arsenic free fruit and vegetables.

Keywords: Nano-biotechnology, Arsenic removal techniques, Plankton population, hydroponic techniques to make arsenic free foods

Introduction
Arsenic compounds are usually having a dimension a nano-meter can enters in to the porous phytoplankton cells with dimension 500 nano-meter and accumulated with and make rest of the hydroponic medium free from Arsenic and hence Arsenic free foods can be achieved. Arsenic compounds are persisting in every climate may found more in tropic and subtropical climates. Arsenic contamination is concern and this is not only through food chains but with every environmental produces unlike synthetic agriculture. After thousands of years from now situation can be worsen unless we take precautionary measures to produce Arsenic compound free produces. Although other than foods drinking water can be a source of Arsenic can eliminated using same techniques.

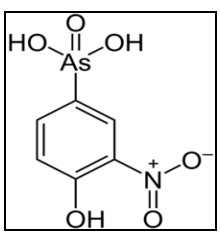

Fig 1: Arsenic compound usually persisting in Hydroponic mediums referenced in Google serach engine at/ Wikipedia

Arsenic compounds can also prevail in nature in many inorganic forms. According to Wikipedia the following the Toxicity of arsenic to insects, bacteria, and fungi led to its use as a wood preservative. Arsenic in foods may be a huge concern. Arsenic enters in body through food chains and can spoil cellular and extra cellular enzymes. Arsenic problem is not only in ARS, but for geographies with every living animals. Hydroponics in aquatic environments with smaller and larger algae can accumulate Arsenic or its compounds owing to their appropriate cellular pore-spaces, and make rest of Hydroponic media, a free from Arsenic or its compounds and make agricultural produces, even non edibles, further harmless within a few hours. Removal of Arsenic compounds from terrestrial mediums may be a very tedious job however same Arsenic compounds removal in any hydroponic medium that added with small and medium plankton with a minimum plankton counts of 2000 per CC water can be found very safety food. Hence naturally foods obtain from any aquaculture system can be preferred to avoid deleterious effects of Arsenic or its compounds. No much references found except in a recent studies where we find freshwater phytoplankton: Biotransformation of Inorganic arsenic to methyl-arsenic and organic arsenic in open access scientific report is referred by Hiroshi *et al.*, 2019 in this research communication**.**

Methodology

Data science and analytics are used in this modelling methodology. All we know small plankton, say cayano-bacterium can fall within the dimension of 500 nano-meters or more and their porous cell-wall, membrane can help in molecular sieving of Arsenic compounds usually which falls around 1-3 nm in dimension and can appropriately be removed by simply molecular sieving either once or twice. This sieving processes of Arsenic having removal with small and medium plankton can be repeated as per our needs and further precisions in different chambers having hydroponics. This Arsenic compounds are usually accumulate in plankton cells and have usual recycle without harming rest of the hydroponic medium further. Data collection and plankton counts are made using mere conventional methods and deterministic and stochastic models are made with modelling software SPSS and EXCEL for deriving models for analytical decision making. As per permissible limits this may be considered that any medium or hydroponics less than 0,1 ppm Arsenic compounds may be a safe, and this Hydroponics mediums to grow safer foods or produces. Author has experimented and successfully grown *Hygrophila auriculata* and anti-anaemic plants having medicinal and extra medicinal Vedic utilities. All we know any plants having fibrous root system can easily be grown in hydroponics mediums. May be good that plankton counts around 2000 per CC waters is a good Hydroponics that can avoid Arsenic compounds and can produce arsenic-free safety foods. Time span required to make Arsenic compounds depleted hydroponic medium within a few hours at the most a day depending on environmental conditions persist, such as plankton counts factor of sunlight, medium, initial concentrations etc and derived in equations.

Results and Discussion

Numerical figures of phytoplankton counts and Arsenic compounds and their deterministic and stochastic equations are described for generalised assumption and applications (Fig 1. To Fig. 5) in methodical Nano-biotechnological process of Arsenic removal techniques in hydroponic systems added Plankton population hydroponic to make arsenic free foods are described.

Deterministic Model

A mathematical representation in which every variable alters according to a mathematical formula, and not to random fluctuations. Supplement. It is one in which every set of variable states is uniquely determined by parameters in the model and by sets of previous states of these variables.

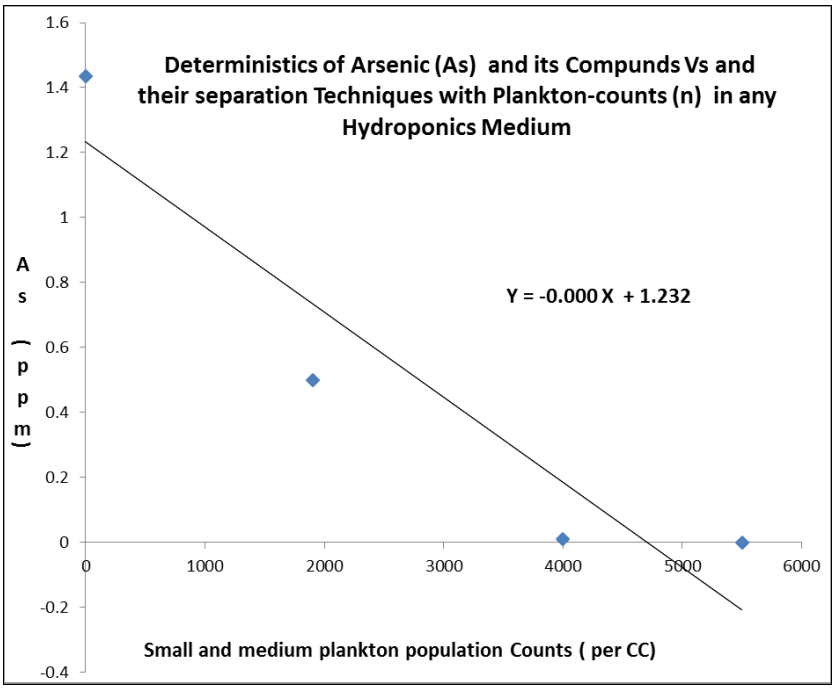

Fig 2: Hydroponics Aquaculture medium containing Arsenic (0.1 ppm may be safer) with Planktonic sieving with Nano biotechnology in Arsenic removal techniques with Plankton population assisted hydroponic techniques to make arsenic free foods, Higher plankton concentration leads to reversed concentration (negative) of As in medium.

Stochastic Models

A stochastic model is a tool for estimating probability distributions of potential outcomes by allowing for random variation in one or more inputs over time. The random variation is usually based on fluctuations observed in historical data for a selected period using standard time-series techniques.

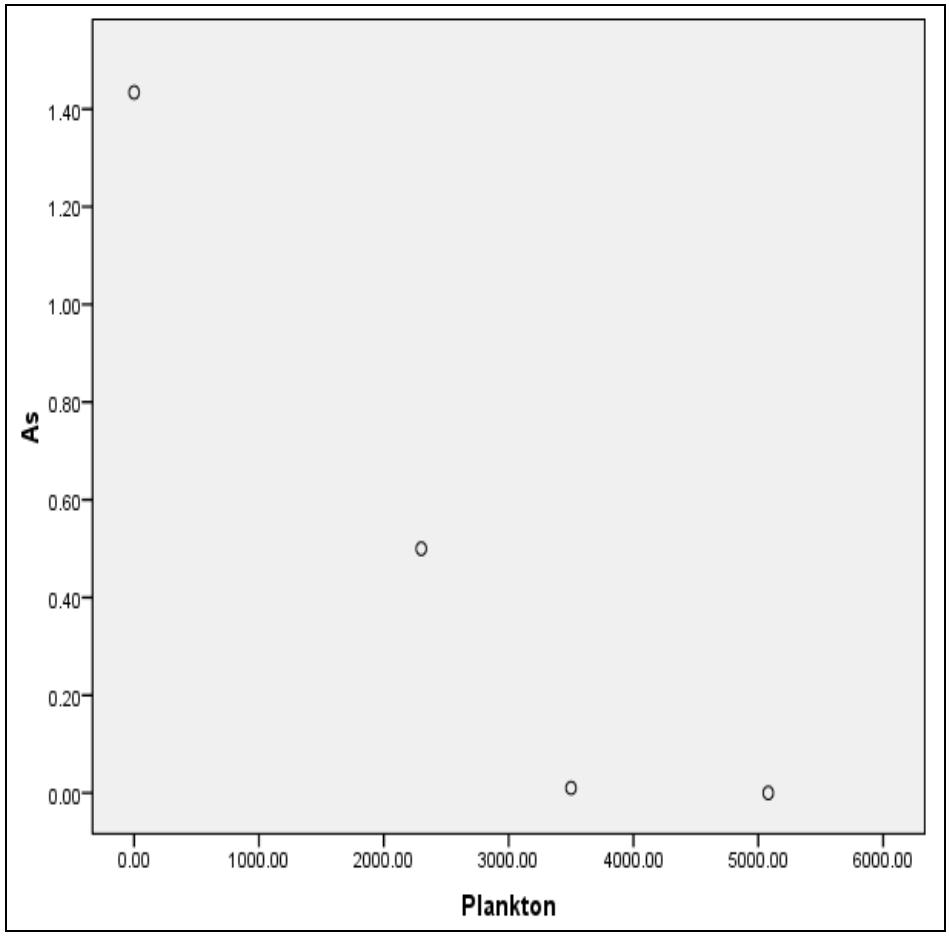

Fig 3: Graphical hydroponics aquaculture medium having Arsenic and its compounds concentration and separation with Plankton Populations for stochastic model derivations Nano-biotechnology, Arsenic removal techniques, Plankton population, Environmental-editing, hydroponic techniques to make arsenic free foods

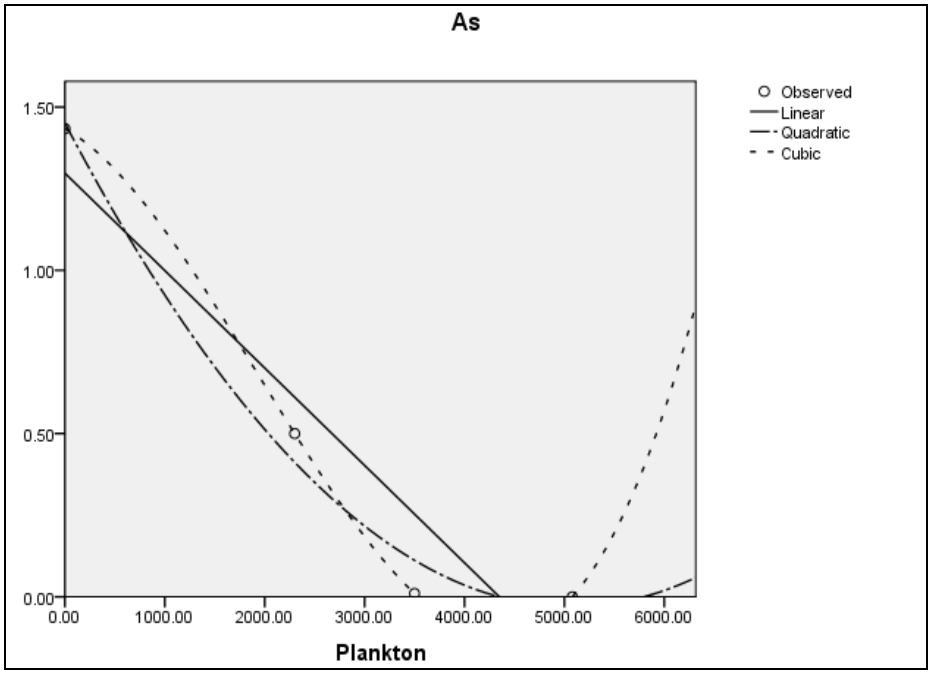

Fig 4: Hydroponics Aquaculture medium having as removal with sieving with plankton populations and stochastic models with Nano-biotechnology of Arsenic removal techniques of Plankton population assisted hydroponic techniques to make an Arsenic-free produce.

Stochastic Model Equations of Arsenic concentration (ppm) Vs Plankton Counts									
Dependent Variable: As									
Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.821	9.204	1	2	.094	1.194	.000		
Logarithmic[a]	.	.	.	.	.	.	.		
Inverse[b]	.	.	.	.	.	.	.		
Quadratic	.998	240.497	2	1	.046	1.445	.000	7.010E-8	
Cubic	1.000	.	3	0	.	1.434	.000	9.077E-9	7.439E-12
Compound[c]	.	.	.	.	.	.000	.000		
Power[a]	.	.	.	.	.	.000	.000		
S[b]	.	.	.	.	.	.000	.000		
Growth[c]	.	.	.	.	.	.000	.000		
Exponential[c]	.	.	.	.	.	.000	.000		
Logistic[c]	.	.	.	.	.	.000	.000		
The independent variable is Plankton.									
a. The independent variable (Plankton) contains non-positive values. The minimum value is .00. The Logarithmic and Power models cannot be calculated.									
b. The independent variable (Plankton) contains values of zero. The Inverse and S models cannot be calculated.									
c. The dependent variable (As) contains non-positive values. The minimum value is .00. Log transform cannot be applied. The Compound, Power, S, Growth, Exponential, and Logistic models cannot be calculated for this variable.									

Fig 5: Hydroponics Aquaculture medium having as removal with sieving with plankton populations and stochastic models with parameters with Nano biotechnology of Arsenic removal techniques with Plankton population assisted with hydroponic techniques to make arsenic free foods

Conclusion

Phyto-plankton cells are predominantly recommended in filtering Arsenic compounds with nano biotechnology modes hence hydroponics of plankton can produce arsenic free and safe foods (Fig. 1 to Fig. 5). Plankton population can be generated within shortly say around 7 days in a synthetic aquaculture tank and having hydroponic medium. National flower Lotus seldom have Arsenic problem owing to planktonic sieving Arsenic compounds sieving naturally. Present research communication dealt some induction process of Arsenic removal with nano-biotechnological method of Arsenic removal techniques with Plankton population relates to environmental-editing way of hydroponic techniques to make arsenic free and safety foods in many long years to come. There may be a least panicking in fisheries may be since In usual natural fisheries there may not be any alarming situations as many planktivore fish species can release Arsenic compounds some extent through excreta while major concern Arsenic compounds may the be terrestrial sources. This is only other day when Phytoplankton was invented by very renowned personality named, Victor Hensen of Germany. Since then further researches continued specially in marine planktons. As a natural laws terrestrial phytoplankton can be easily incorporated in Hydroponic systems since their growth behaviours are well known and synonymous to Hydroponic system growing fruits and vegetables. Decay cells of Phytoplankton is further sieved by newly generated phytoplankton cells and hence Arsenic sieving is a continuous system and remain safe to mankind. We may know that permissible level of Arsenic may be 0.1 ppm in every foods and this can be obtainable using hydroponic system added with phytoplankton for their ever persisting sieving phenomenon. Obtaining a hygiene agricultural produces can also be possible enhanced with this methodology since some plankton can produces Isoprene in the medium. May be we are knowing isoprene obtained from marine or terrestrial phytoplankton can be anti-pathogenic, specially for unicellular microbes. Using similar methodology followed by filtration and sedimentation Arsenic compounds free drinking water can also the process of mankind.

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