

<https://doi.org/10.46344/JBINO.2020.v09i04.11>

A COMPARATIVE EXPLORATORY TRIAL ON GROWTH OF *SPIRULINA PLATENSIS* WITH SERIALLY DYNAMISED HOMOEOPATHIC PREPARATIONS FOR QUALITATIVE AND QUANTITATIVE AUGMENTATION.

Sivaramyapragathi R.S^{1*}, Chandraja C.V² and Ajith kumar M.V³

¹Internee, Sarada Krishna Homoeopathic Medical College, Kulasekhram. TN, India.

² Department of Medical Research, Sarada Krishna Homoeopathic Medical College, Kulasekhram. TN, India.

³ Department of Community Medicine, Sarada Krishna Homoeopathic Medical College, Kulasekhram, TN, India.

(Received on Date: 30th March 2020 Date of Acceptance: 13th May 2020 Date of Publish: 01st July 2020)

Email id: chandrarathish@gmail.com

ABSTRACT

Spirulina platensis is a symbiotic, single celled, filamentous blue green alga. *In-vitro* growth of *spirulina* needs Magnesium, MgSo₄, Phosphorus, Selenium and NaCl. This study was conducted by exclude these nutrients individually in the crude form and instead administer the chemicals in the homoeopathic dilutions forms. The notable results were high bio mass, protein, chlorophyll and yield than the standard Media. The antibacterial activity was sensitive against *Bacillus subtilis* and *Proteus vulgaris*. This new field paved a way for the upcoming researchers to grow cheaper, contaminants free, fast growing, high quality and healthier *spirulina*.

KEYWORDS : *spirulina plantensis*, cyanobacteria, RM6 media, photosynthesis, yield

No : of References: 11

INTRODUCTION

Spirulina platensis is a symbiotic, single celled, filamentous blue green algae; rich in micro and macro nutrients. Normal *in vitro* growth of *spirulina* can be enhance with the help of certain chemicals such as Magnesium, Magnesium sulphate, Phosphorus, Selenium, Single Super Phosphate, Sodium Nitrate, Potassium

Chloride, Calcium Chloride, Sodium Bicarbonate and sodium chloride. These are the constituents of RM6 media . This study was conducted to know the action of homoeopathic ultra-dilutions upon the *Spirulina* growth. Due to the high cost and heavy metal contaminations, *Spirulina* was not consumed by many peoples. *Spirulina* is the best source of proteins ,that we can reduce the cost.

METHODOLOGY

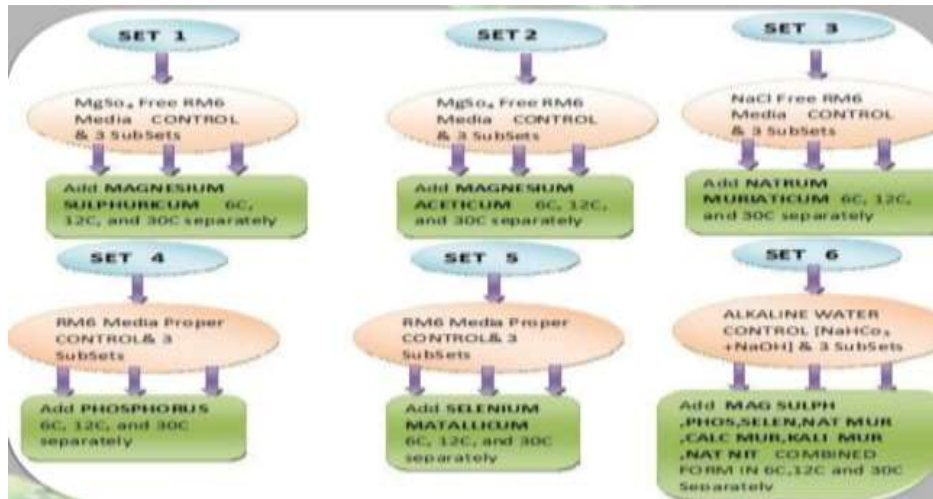
CONTENTS	AMOUN T	CORRESPONDING MEDICINES
Single Super Phosphate (SSP)	1.25g	PHOSPHORUS
Sodium Nitrate (NaNO3)	2.5g	NATRIUM NITRICUM
Potassium Chloride (KCl)	0.5g	KALIUM MURIATICUM
Sodium Chloride (NaCl)	0.5g	NATRIUM MURIATICUM
Magnesium Sulfate (MgSO4)	0.15g	MAGNESIUM SULPHURICUM & MAGNESIUM ACETICUM
Calcium Chloride (CaCl2)	0.04g	CALCAREA MURIATICUM
Sodium Bicarbonate (NaHCO3)	8g	-

Twenty two Erlenmeyer flasks (of 500 ml capacity) were sterilized and 250 ml of sterilized RM6 Media was poured to all conical flasks under sterile environment and plugged up with cotton. The inoculation room was set up with air conditioning facility (28 - 32° C). The part of the room was illuminated with a tube light to aids the photosynthesis . On 27 / 03/ 2019 , one ml of mother *Spirulina* was inoculated in all flasks. In set 1 , the MgSO4 removed from the RM6 Media, instead of that we add MAGNESIUM SULPHURICUM 6C,12C,30C in set 1 and

Mgso4 free RM6 Media was considered as a control in both set 1 and 2 , in set 2 also MgSO4 was removed but MAGNESIUM ACETICUM 6C,12C,30C was added separately. In set 3, NaCl was removed from the RM6 media, here NaCl free RM 6 Media was considered as control, we give NATRUM MURIATICUM 6C, 12C, 30C separately. In set 4 and 5 , the whole RM6 media was taken but in addition to that we added PHOSPHORUS 6C,12C,30, and SELENIUM METALLICUM 6C,12C,30C . In these set 4 & 5 , RM6Media proper was taken as a

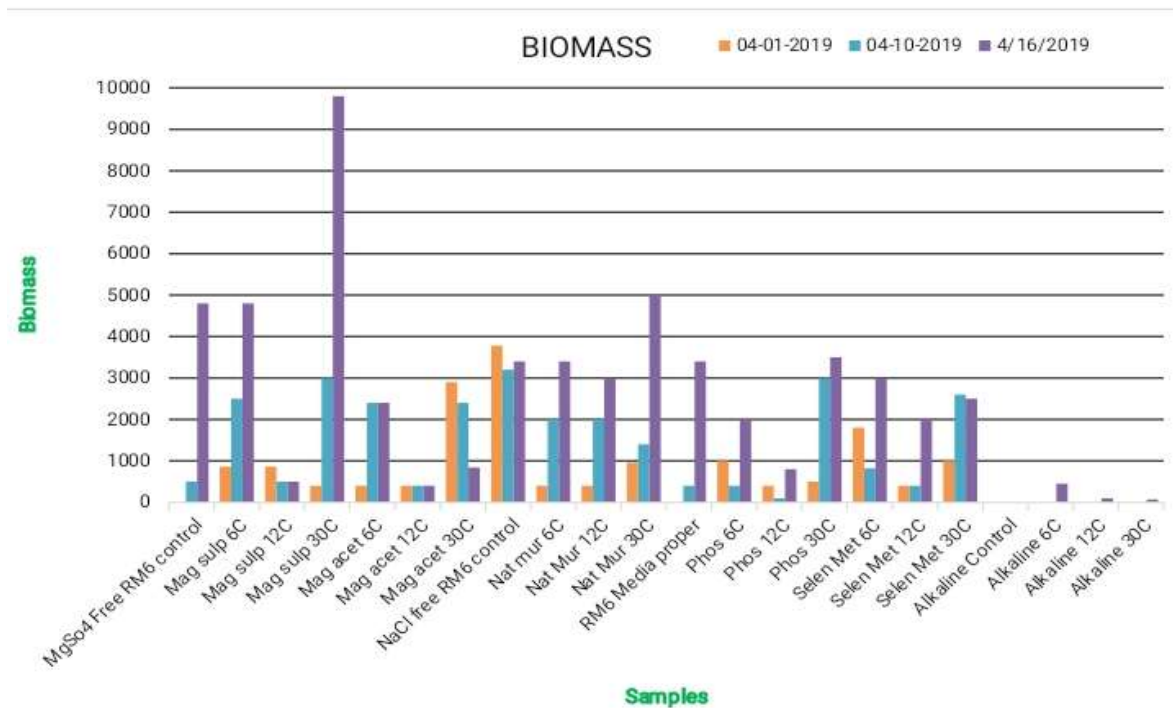
control .In set 6 ,the distilled water was converted into Alkaline water by the addition of NaHCo3 and NaoH and added MAG.SULP, PHOS, SELEN.MET, NAT.MUR,CALC.MUR, KALI.MUR, NAT.NIT

combined form of 6C,12C,30C potencies. For every 3 days pH , bio mass and OD was verified . After 45 days the samples were filtered and analysed .

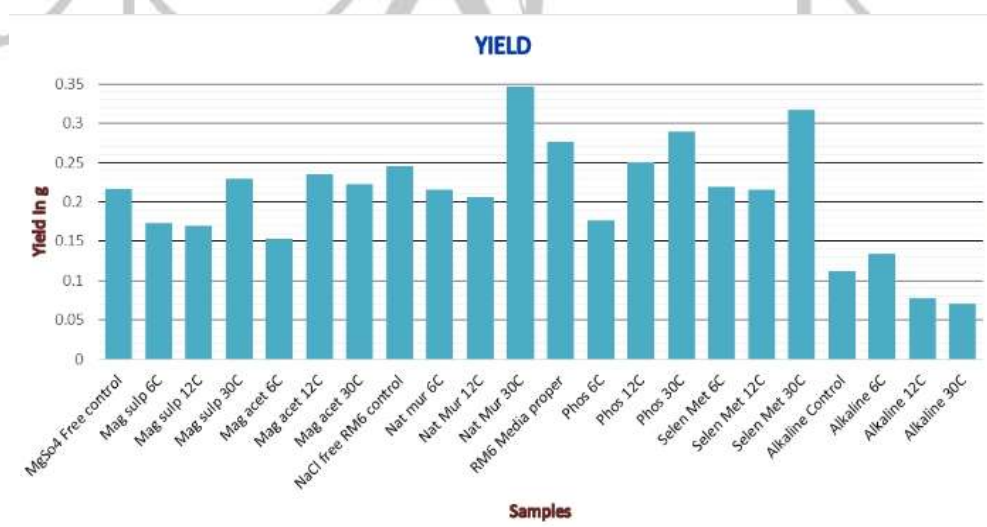


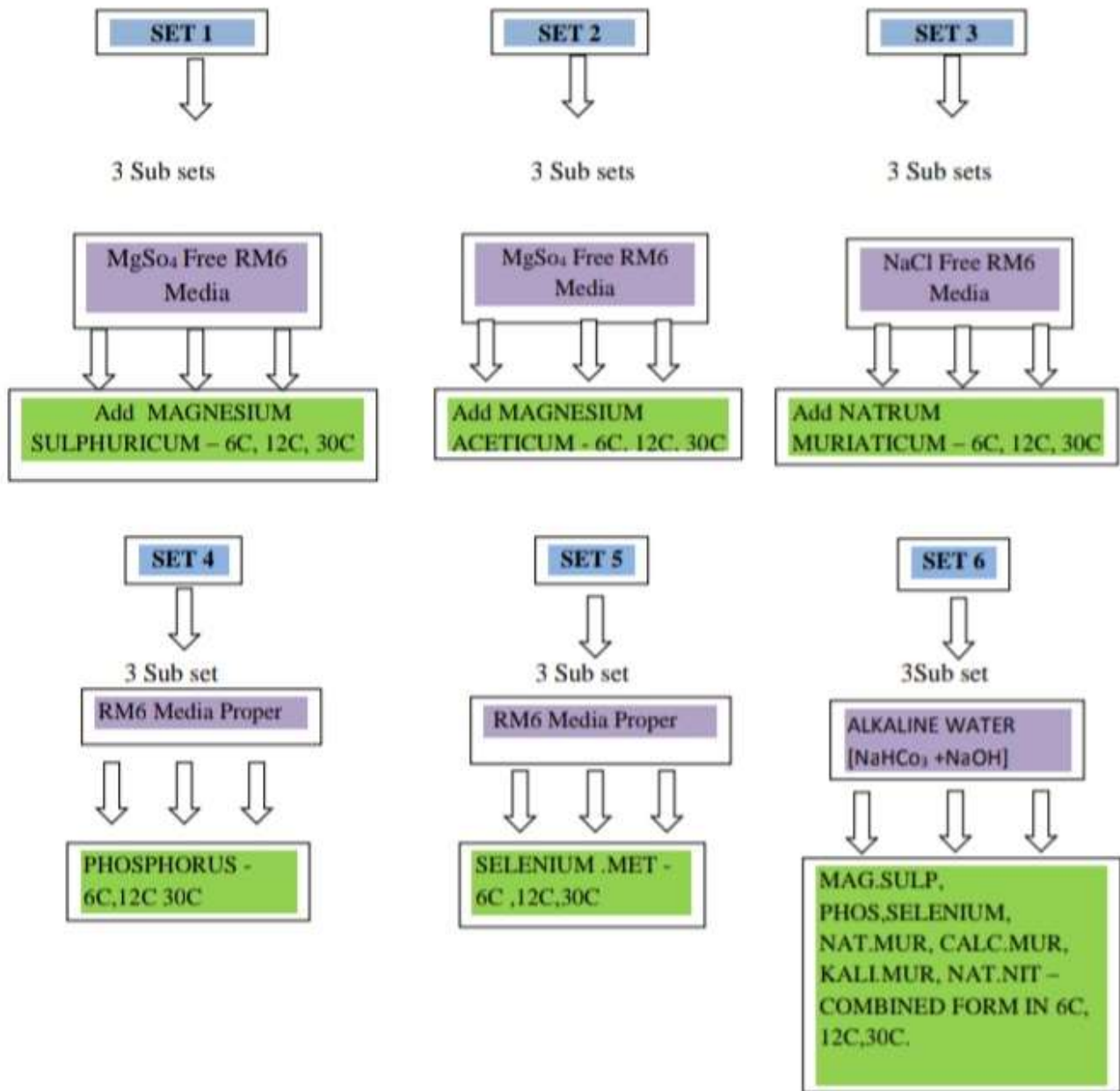
RESULTS

GRAPH: 1



This graph explain the correlation between the biomass values of all the 22 samples, Thus, it discloses which culture has shown better growth. It was found that the cultured grown using Mag Sulph 30C showed the maximum growth and Alkaline control showed no growth at all.

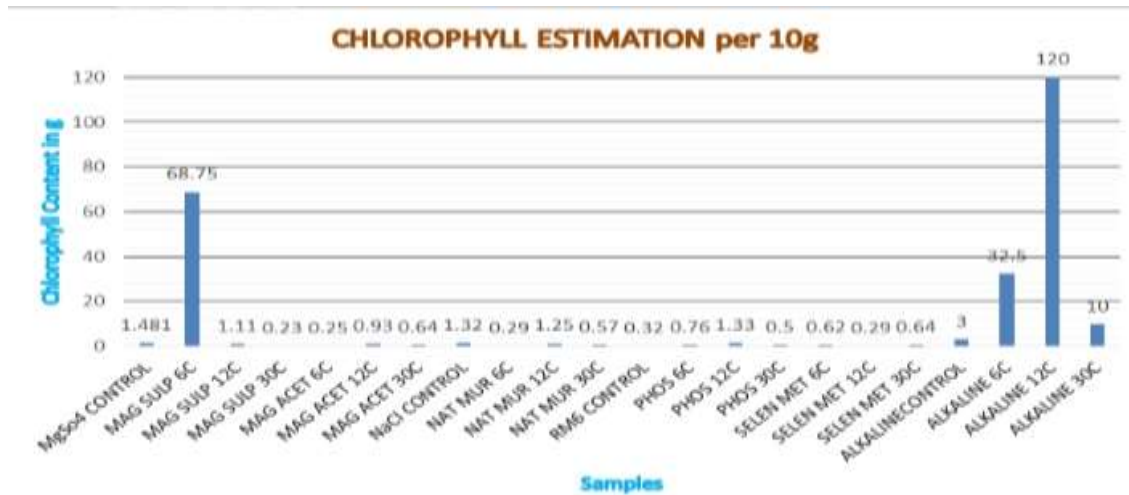




This graph explain the correlation between the final weight of all the 22 samples. It has been found out that the cultured grown using Nat Mur 30C

showed the maximum yield and that grown with Alkaline 30C showed minimum yield.

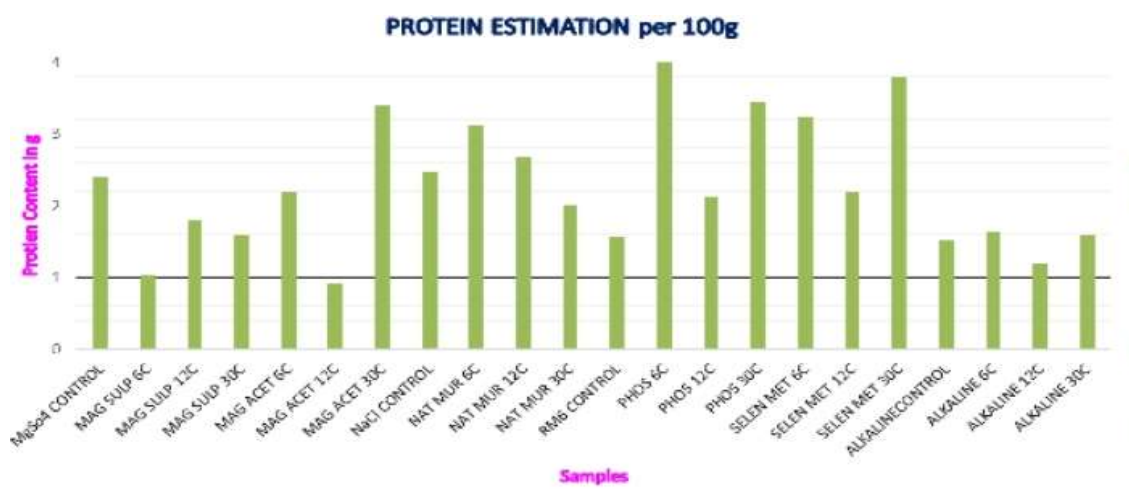
GRAPH : 3



In this graph, the TOTAL CHLOROPHYLL values of each sample were analyzed. Hence the maximum pigmentation seen in MAG SULP 6C and ALKALINE 12C .The

minimum pigmentation was obtained in MAG SULP 30C and shows the protein content of all the samples.

GRAPH : 4



From this graph, the high protein available in PHOS 6C and SELEN MET 30C

.The low quantity of protein available in sample MAG SULP 6C and MAG ACET 12C.

CONCLUSION

From these all evidences , here an alternate homoeopathic culture media was formed. The techniques also a cost effective one. This new field paved a way for the upcoming researchers to found a cheaper and healthier *Spirulina*. These are evidence for the effect of homoeopathic ultra dilutions upon the life of a single celled organism. Thereby linking the field of homoeopathy and cyanobacteriology will give new branch of science ,called cyano- homoeopathy .

REFERENCES

Habib .B Ashsan. M,ParvinMashuda, Huntington.C Tim et al. – A review on culture ,production and use of spirulina as a food for humans and feeds for domestic animals and fish FIMA/C 1034

[Internet].Food and Agriculture of Organizations of United Nations :Rome,2008 [Cited on 2018 July 25].Available from : <http://www.fao.org>.

Piccolo Antonio. Spirulina – a livelihood and a business venture [internet].European union: Mauritius, 2011[Cited 2018 July 25].Available from<http://www.fao.org>.

Koru Edis.Earth food Spirulina (*Arthrospira*) production and Quality standards [internet].Intech: Turkey, 2012[cited 2018

July 25].Available from<http://www.intechopen.com>.

Dr. Cysewki R.Gerald, Moorhead Kelly, Capelli Bob. Spirulina Nature's Super food [internet]. Cyanotech corporation: Hawaii, 2011[Cited 2018 July 25].Available from <http://www.terapiaclark.es.com>.

Gammer Natan.Grow Organic Spirulina [internet].[Cited on 2018 July 26].Available from<http://www.grow-organic-spirulina.com>.

Corner .E.D.S.Phosphorus in marine zooplanktons Water research Volume 7,Issue 1-2 pages 77- 91(Phosphorus in primary aquatic plants).[internet].Elsevier Ltd:1973,[Cited on 2018 July 26]. Availablefrom:<http://www.sciencedirect.com>.

Chapter -7 Microbial growth Binary fission steps in binary fission generation time, [internet]. [Cited on 2018 July 26].Available from: <http://www.yumpu.com>.

Li Zhi Yong, Guo Si Yuan ,Li Lin. Bio Effects of Selenite on the growth of spirulina platensis and its biotransformation.[Internet].2003 January 19 [Cited on 2018 July 25]. Available from :<http://www.sciencedirect.com>.

Liu C, et al. Growth and antioxidant production of spirulina in different NaCl concentrations. [Internet].2016[Cited on 2018 July 27].<http://www.ncbi.nlm.nih.gov>.