

A person wearing a blue shirt and dark pants is crouching in a shallow, pinkish-brown salt pond. In the background, there are several large, conical haystacks or mounds of salt. The sky is clear and blue, and there are trees in the far distance.

In our investigation the following aspects given below were taken.

- a) To improve the salt quality, the brine shrimp, (*Artemia franciscana*) cysts were allowed to hatch at 2.3 degree Beume and periodically acclimatized the nauplii into increasing range of salinities upto 11 degree Beume.
- b) Then, it was introduced in to the integrated ponds (salt pans-condenser ponds). The brine samples were collected for experimental studies.
- c) One pond was used as control, in it usual salt production practices were done. The quality of salt in the control and experimental ponds were compared and analyzed.
- d) To study the biotechnological role of *Artemia* in salt purification, the dominant species of *Artemia* will be selected to study the biodegradation and bioaccumulation of biocarbonate salts of Calcium, Magnesium and Gypsum under lab conditions and field conditions.

Table showing the list of prey, competitor and predator composition of RAJAKKAMANGALAM salt pan of K.K. District which are favourable, unfavourable and toxic for the survivability of *Artemia franciscana* when inoculated during the period of July 2000 to December 2001

Prey	Competitor	Predator
Micro algae like		
1. Oscillatoria subbrevis	1. Brachionus plicatitidis numerous	<p>Predatory fish like Topminnow, Etroplus suratensis, Tilapiamosampica, mullet, chanos chanos, mud crab, -scylla cerata water beetles like Nepa, Notonecta water fowls, water birds like crane, stork, Migratory birds like Pelican, flamingo. Some of the important protozoan ciliates zoologically called as Peridinium conicum, Peridinium punctulatum, Peridinium thorianum, Peridinium oceanicum, Peridinium faltipes etc are dino flagellates. These Peridinium species which are dino flagellates bloom due to the entry of sewage nutrients into the salt pan liberate liberally into the water some toxic metabolic by-products which will lead to the cause of red tide. Red tide inhibits and kills the growth of marine organism especially the brine shrimp <i>Artemia franciscana</i>. This is one of the main reason for the failure in the survival of <i>Artemia franciscana</i> nauplii when it is inoculated.</p>
2. Pleurosigma angulatum	2. cyclops of different species numerous	
3. Rhizosolenia delicatula	3. Calanus - different species numerous	
4. Nitzschia sigma	4. Larval form of cyclops, calanus and Labidocera enormous	
5. Plectonema wollei	5. Eurytemora pacifica (Sato) copepod	
6. Lyngbya semiplena	6. Oithonana nana	
7. Frustulia weinholdii	7. Euchlans macrura	
8. Acantheselata synedra	8. Nematode worm Enterobius vermicularis	
9. Nitzschia lanceolata	9. Different species of shelled gastropode	
10. Nitzschia seriata (Cleve)	10. Paracyclopsina nana	
11. Closteriopsis longissima	11. Globigerina bulloides	
12. Epithemia zebra	12. Mesocyclops	
13. Chlorella vulgaris	13. Mosquitoe larva and eggs	
14. Leptocylindrus danicus (Cleve)	14. Nematode Draconculus medinensis	
15. Skeletonema costatum	15. Different species of gastropoda	
16. Chlamydomonas globosa		
17. Navicula cuspidata		
18. Nitzschia palea		
19. Spirulina meneghiniana		
20. Fragillaria oceanica		
21. Eusyringium siphonostoma		
22. Nostoc		
23. Navicula distans		
24. Tintinnopsis pseudocylindrica		
25. Tintinnopsis radix		
26. Lablab formation		
27. Spirotaenia condensata		

Table showing the list of prey, competitor and predator composition of THAMARA KULAM salt pan of K.K. District which are favourable for the survival of *Artemia parthenogenetica* during the period of July 2000 to December 2001

Prey	Competitor	Predator
Microalgae like		
1. Pleurosigma angulatum	1. Rotifer - adult <i>Brachionus plicatilis</i>	Few predators like <i>Tilapia mosampica</i> in reservoir pond migratory birds like Pelican, Flamingo, water fowls, cranes, stork, ducks, water insects like <i>Notonecta</i> , bugs etc.
2. <i>Navicula cuspidata</i>	2. Nauplii of <i>Brachionus plicatilis</i>	
3. <i>Hormidium flaccidum</i>	3. Copepod labidocera	
4. <i>Nitzschia sigma</i>	4. Nauplii of labidocera	
5. <i>Spirogyra indica</i>	5. <i>Microcyclops varicans</i>	
6. <i>Navicula rhyncephalus</i>	6. <i>Paracyclops nana</i>	
7. <i>Chlamydomonas globosa</i>	7. Nematode worm like <i>Enterobius vermicularis</i>	
8. <i>Rhizosolenia delicatula</i> (Cleve)	8. <i>Eurytemora pacifica</i> (Sato)	
9. <i>Nitzschia lanceolata</i>	9. <i>Calanus helgolandicus</i>	
10. <i>Sirocladium vandurense</i>	10. <i>Acartia clausi</i> adult	
11. <i>Chlorella vulgaris</i>	11. <i>Acartia clausi</i> nauplii	
12. <i>Ceratium gravidum</i> which is a protozoan ciliate present numerous favours the survival of <i>Artemia parthenogenetica</i>	12. <i>Oithona nana</i>	
13. Micro algae like <i>Oscillatoria subbrevis</i>	13. <i>Calanus</i> - adult different species	
14. A pink coloured blue green algae <i>Dunaliella salina</i> favours the survival of <i>Artemia parthenogenetica</i>	14. Nauplii of <i>calanus</i> - different species	
15. Micro algae like <i>Closteriopsis longissima</i>	15. <i>Cyclops</i> adult	
16. <i>Gonatozygon monotaenium</i> (micro algae)	16. <i>Cyclops</i> nauplii	
17. <i>Spirotaenia condensata</i>	17. Mosquito larva & eggs	
18. <i>Anabaena variabilis</i>	18. <i>Cleno calanus vanus</i>	
19. Few spirulina meneghiniana	19. Nematode worm- <i>Ancylostoma duodenale</i>	
20. <i>Tintinnopsis radix</i>	20. <i>Gammarus faciatius</i>	
21. <i>Clamydodon exocellatus</i> (Ciliate protozoan)	21. <i>Epistylis</i>	
	22. Spat of mussels	

Table showing the list of prey, competitor and predator composition of KOVALAM salt pan of K.K. District which are favourable for the successful survival of *Artemia franciscana* when inoculated during the period of July 2000 to December 2001

Prey	Competitor	Predator
Microalgae like		
1. <i>Epithemia zebra</i>	1. Rotifer – adult <i>Brachionus plicatilis</i>	Few predators like water insects like <i>Notonecta</i> , <i>Nepa</i> , waterfowls, water ducks, cranes, storks, etc present in reservoir pond.
2. <i>Rhizosolenia delicatula</i> (Cleve)	2. Rotifer – adult <i>Brachionus calyciflorus</i>	
3. <i>Lyagbya semiplena</i>	3. Rotifer – <i>Brachionus</i> nauplii, eggs	
4. <i>Gyrosigma acuminatum</i>	4. Nematode worms like <i>Enterobius vermicularis</i>	
5. <i>Pleurosigma angulatum</i>	5. Mosquito larva & eggs	
6. <i>Striatella interrupta</i>	6. <i>Eurytemora pacifica</i> (Sato)	
7. <i>Thalassiothrix</i>	7. <i>Calanus</i> few	
8. <i>Rhizosolenia semispina</i>	8. Nauplii and eggs of <i>Calanus</i> few Rotifer like	
9. <i>Binuclearia tectorum</i>	9. <i>Euchlanis macrura</i>	
10. <i>Spirulina meneghiniana</i> numerous	10. Copepod <i>Oithona nana</i> with eggs	
11. <i>Chlorella vulgaris</i>	11. <i>Globigerina quinqueloba</i>	
12. Marine plankton - <i>Pelagothrix</i> Cleve	12. <i>Globigerina</i> other species	
13. <i>Nitzschia sigma</i>	13. <i>Globigerinita numilis</i>	
14. <i>Tintinnopsis aperta</i>	14. Some gastropod shells	
15. <i>Ankistrodesmas convolutus</i>	15. Veliger larva of snail	
16. <i>Arachnoidiscus ornatus</i> numerous		
17. <i>Oscillatoria subbrevis</i>		
18. <i>Leptocylindrus danicus</i> (Cleve)		
19. <i>Clamydodon exocellatus</i> protozoan ciliate		
20. <i>Tintinnidium mucicola</i>		
21. <i>Trachelomonas sheauinslandii</i>		
22. <i>Nitzschia amphibia</i>		
23. <i>Codenellopsis parva</i>		
24. <i>Closteropsis longissima</i>		
25. <i>Horandrium flaccidum</i>		
26. <i>Fragilaria oceanica</i>		
27. <i>Anabaena variabilis</i> numerous		
28. A protozoan ciliate <i>ceratium</i> gravidum present numerous		
29. A pink coloured blue green algae name <i>Dunaliella salina</i> favours the survival		
30. <i>Sirocladium vandurense</i>		

Table showing the list of prey, competitor and predator composition of PALKULAM salt pan of K.K. District which are favourable for the successful survival of *Artemia franciscana* when inoculated during the period of July 2000 to December 2001

Prey	Competitor	Predator
1. Marine plankton Pelagothuria natans	Few competitors like 1. Rotifer – <i>Brachionus plicatilis</i> few	Only very few predators like water insects <i>Notonecta</i> , <i>Nepa</i> , water fowls, cranes and storks
2. Microalgae <i>Oscillatoria subbrevis</i>	2. <i>Calanus</i> rarely seen	
3. <i>Navicula cuspidata</i>	3. Nematode worm <i>Enterobius vermicularis</i>	
4. Marine plankton – <i>Arachnoidiscus ornatus</i> (Breb & Greville)	4. <i>Acartia clausi</i> – copepod few	
5. Marine plankton <i>Codobellopsis parva</i>	5. <i>Cyclops</i> few	
6. A protozoan ciliate – <i>Ceratium gravidum</i> present numerous favours the survival of <i>Artemia franciscana</i>	6. <i>Paracyclops nana</i> rarely seen	
7. A protozoan Ciliate- <i>Clamydodon exocellatus</i>	7. Spat of mussel - few	
8. Micro algae – <i>Pleurosigma angulatum</i>		
9. Micro algae – <i>Nitzschia sigma</i>		
10. Micro algae– <i>Nitzschia amphibia</i>		
11. Micro algae – <i>Spirulina meneghiniana</i>		
12. Blue green algae <i>Dunaliella salina</i> – numerous		
13. Blue green algae <i>Dunaliella tertiolecta</i> numerous favours the survival of <i>Artemia franciscana</i> .		
14. Micro algae – <i>Anabuena variabilis</i>		
15. A protozoan Ciliate – <i>Frontonia</i>		
16. Micro algae – <i>Spirotaenia condensata</i>		
17. Micro algae – <i>Gyra sigma acuminatum</i>		
18. Micro algae - <i>Sirocladium vandalurensis</i>		
19. Micro algae – <i>Chlorella vulgaris</i>		
20. Micro algae – <i>Spirogyra</i>		

# M. Sc.

## TITLE

## AUTHOR

## YEAR

Western blotting studies on yolk protein induction in *Artemia parthenogenetica* and modelling of an automated Dot Blot system

Archis R.Grubh

1998

Studies on the Carotenoid in Extremophiles (*Halobacterium saccharovorum* and *Artemia parthenogenetica*)

P.Ashok kumar

2001

Studies on Protein Expressions during chemically induced cyst production in Brine Shrimp *Artemia* and protein modelling of Artemin.

Sivaram

2001



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# M. Phil.

<b>TITLE</b>	<b>NAME</b>	<b>YEAR</b>
Preparation of Lactobacillus enriched diet and the effect of feeding lactobacillus on survival, growth and reproduction of <i>Artemia parthenogenetica</i> .	S.Indira	1996
Utilization of the unhatched <i>Artemia</i> cysts as <i>Artemia</i> cysts flakes in the larviculture of <i>Penacus indicus</i> .	S.Lekha	1996
Effect of ayurvedic products on the growth, survival and reproduction of <i>A.parthenogenetica</i> (KKT)	P.Prema	1996
Studies on the culture of Brine shrimp <i>A .parthenogenetica</i> using ricebran supplemented with yeast.	K.Uma Mageshwari	1996
Marine shrimp farm effluent treatment by using the brine shrimp <i>Artemia franciscana</i>	P.T.Arokya Glory	1997
Effect of Ayurvedic products on the growth survival and Reproduction of <i>Artemia Parthenogenetica</i> (KKT1; John	M.Brintha	1997

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<b>TITLE</b>	<b>NAME</b>	<b>YEAR</b>
Effect of vertebrate sex steroid hormone progesterone on growth and reproduction of the brine shrimp <i>Artemia parthenogenetica</i>	P.Namasivayamm	1997
Effect of progesterone on the clones of <i>Artemia parthenogenetica</i> (KKT1., John)	S.M.Vijila	1997
Effect of plant sex steroid progesterone acting as growth stimulant in the larvae of <i>Penaeus indicus</i> (H.MilneEdwards) Fed with hormone isolated <i>Artemia</i>	K.Athilinga Raja	1997
Biological Effectiveness of ultraviolet radiation on different life stages of <i>Artemia parthenogenetica</i>	P.Geetha	1998
Effect of progesterone on fecundity in the brine shrimp <i>A. parthenogenetica</i> by the addition of the sex steroid hormone testosterone.	N.Deva Sai Rani	1998
Effect of Marine brown algae (Phaeophyceae) on the Growth, survival and reproduction in brine shrimp <i>Artemia franciscana</i> .	J.Janthus Babani	1998
Effect on the use of two ayurvedic product <i>Ipomea digitata</i> and <i>Curcuma turita</i> on the culture of brine shrimp <i>Artemia franciscana</i> .	C.Kavitha	1998
Effect of some marine red algae as feed ingredient in the formulation of artificial diet for the brine shrimp <i>Artemia fransiscana</i>	K.R.Kavitha	1998
Effect of malathion and chronic toxicity effect of malathion on growth and reproduction in the brine shrimp <i>A. parthenogenetica</i> .	S.Mary Jeya	1998

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<b>TITLE</b>	<b>NAME</b>	<b>YEAR</b>
<b>Studies on insolubles and role of <i>Artemia</i> in salt water Purification in the salt pans of K.K.Dist.</b>	<b>S.Ramesh Babu</b>	<b>1998</b>
<b>Biochemical and culture characterization of the Brine shrimp <i>Artemia franciscana</i> exposed to extreme salinities</b>	<b>A.Mary Janet</b>	<b>1999</b>
<b>Characterization of chemically induced cyst of <i>A. franciscana</i> for Aquaculture.</b>	<b>S.F.Raseena Parveen</b>	<b>1999</b>
<b>Extremophile organisms in the saltworks of Kanyakumari District.</b>	<b>S.Sivakama Sundari</b>	<b>1999</b>
<b>Studies on the characterization of hyposaline shock protein in the brine shrimp <i>Artemia franciscana</i>.</b>	<b>T.Melbin kala</b>	<b>2000</b>
<b>Studies on the characterization of hypersaline shock protein in the brine shrimp <i>Artemia franciscana</i></b>	<b>C.Senthil Nathan</b>	<b>2000</b>
<b>Efficiency of the ayurvedic product aswagandhi suranam in inducing biomass production of <i>Artemia franciscana</i></b>	<b>S.Bama</b>	<b>2000</b>
<b>Characterisation of formaldehyde induced <i>Artemia franciscana</i> offspring.</b>	<b>P.Gurufila Rejini</b>	<b>2000</b>
<b>Studies on the culture of live feeds using different media and its application in aquaculture industry.</b>	<b>P.K.Jeyasurya</b>	<b>2000</b>
<b>Influence of inoculated <i>Artemia Parthenogenetica</i> (KKTi; John 1994) in the salt work of Palkulam, Kanyakumari District on salt production.</b>	<b>A.Krishna Moorthy</b>	<b>2000</b>



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# Ph.D.

TOPIC	NAME	YEAR
Studies on the parthenogenetic brine shrimp <i>Artemia</i> from Thamaraiikulam, S. India.	Dr. J. A. Christopher John	1996
Studies on HUFA oil from <i>Odonus niger</i> as <i>Artemia</i> encapsulated feed for shrimp	Dr. G. Immanuel	1996
Studies on salt and <i>Artemia</i> production in the salt pan of Kanyakumari District.	Dr. A. Chidambarathanu	1998
Studies on the use of organic water for producing microalgae to produce <i>Artemia</i> .	Dr. C. Susila Bai	1999
Developing <i>Artemia</i> bioencapsulated ayurvedic products for maturation and quality larval production in <i>Penaeus monodon</i>	Dr. M. Michael Babu	1999
Salt and <i>Artemia</i> production in Chidambaranr District.	Dr. Ganapathy	2001
Effect of <i>Artemia</i> encapsulated ayurvedic products for growth, reproduction and stress resistance in <i>Penaeus monodon</i> larvae	Dr. T. Citarasu	2001
Studies on the use of some ayurvedic products for improving the reproductive performance in Parthenogenetic <i>Artemia</i> from Thamaraiikulam, South India.	Dr. C. S. Moni	2001
Developing feed to promote growth and reproduction in <i>Artemia fransiscana</i> using selected marine micro algae and ayurvedic productrs	Mrs. S. Mary Josephine Punitha	