Ashish Bhatnagar

Date of Birth: June 17th, 1965
Email:*bhatnagarashis@gmail.com*
Phone: Office: 91-145-2787056 Ext 286 Residence: 91-145-2644234, Mobile 91-9462788558, **Fax**: Office: 91-145-2787049

Current Occupation: Head, Department of Microbiology
Director Algae Biofuel & Biomolecules Centre
Associate Professor, Microbiology, Maharshi Dayanand Saraswati University, Ajmer 305009 Rajasthan, India.

Formerly: Post Doctoral Research Associate, Biorefining and Carbon Cycling Program, Department of Biological and Agricultural Engineering, The University of Georgia, Athens GA 30602.

Education

Ph.D Microbiology, Indian Agricultural Research Institute, New Delhi, India, 1993
M.Sc Microbiology, Indian Agricultural Research Institute, New Delhi, India, 1989**IARI Gold Medal**
B.Sc Agriculture, Jawahar Lal Nehru Agriculture University, Jabalpur (M.P.), India, 1987**Aspee Gold Medal and Bank of India Cash Prize**

Field of specialization:

Main field	Specialization	Sub/Super specialization
Microbiology	Algae Biofuel	Cultivation systems
	Bioremediation	Wastewater remediation, biosorption
	Microbial Ecology	Cyanobacteria, Green algae Biodiversity
		Calcicolous algae, microbiotic crusts
	Stress Biology	Osmotic, fluoride stress
	Bioprospecting	Algae Biofuel, biopolymers

Awards/Recognitions

Amongst Top 25 of Science Direct
Science Direct listed Microalgae cultivation in a wastewater dominated by carpet mill effluents for biofuel applications**.** By Chinnasamy, S.; **Bhatnagar, A.;** Hunt, R.W.; Das, K.C. *Bioresource Technology,101 (9): 2010:3097-3105*
Science Direct: A service for Elsevier Journals with a database of 2500 journals and 11 million users worldwide.

Updates its list of top 25 hottest Articles based on number of downloads of an article. It has 236 journals in Agricultural and Biological Sciences

Third best paper award by International Journal of Molecular Science, 2013


Int. J. Mol. Sci. **2013**, *14*, 4372-4374; doi:10.3390/ijms14024372

OPEN ACCESS
International Journal of
Molecular Sciences
ISSN 1422–0067
www.mdpi.com/journal/ijms

Editorial

***International Journal of Molecular Science* Best Paper Award 2013**

Ophelia Han

MDPI AG, Postfach, CH-4057 Basel, Switzerland and MDPI Branch Office, Beijing 101101, China; E-Mail: ophelia.han@mdpi.com; Tel.: +86-10-8152-1170

Received: 7 February 2013 / Accepted: 7 February 2013 / Published: 22 February 2013

Since 2012, *International Journal of Molecular Science* has instituted an annual award to recognize outstanding papers in the area of chemistry, molecular physics and molecular biology that meet the aims, scope and high standards of this journal [1].

We are pleased to announce the second "*International Journal of Molecular Science* Best Paper Award" for 2013. Nominations were made by the Section Editor-in-Chiefs of *International Journal of Molecular Science*, with all papers published in 2009 eligible for consideration. The awards are issued for reviews and articles separately. We are pleased to announce that the following five papers were awarded:

Third Prize

Senthil Chinnasamy, Balasubramanian Ramakrishnan, Ashish Bhatnagar and Keshav C. Das
Biomass Production Potential of a Wastewater Alga Chlorella vulgaris ARC 1 under Elevated Levels of CO2 and Temperature
Int. J. Mol. Sci. **2009**, *10*, 518-532; doi:10.3390/ijms10020518
Available online: http://www.mdpi.com/1422-0067/10/2/518

Selected as Senior Manager for Algal Biofuels Project of Reliance Energy, Hyderabad at Kakinada**,** didn't join **2007**

2nd best poster award to Neetu Manglani for the poster paper titled Production and optimization of alkaline seine keratinase exhibiting potential dehairing activity. Neetu Mangalani, Monica Bhatnagar, **Ashish Bhatnagar** in the International Conference on Biotechnology: A rendezvous with Basic Sciences for Global Prosperity. 26-27 Dec 2012, New Delhi. Society for Plant Research, New Delhi

Third Best Poster Award to Laxmi Parwani in the International Conference on Biotechnology: A Rendezvous with Basic Sciences for Global Prosperity for the Poster paper titled Potential of Gum Acacia in wound management: A new approach by Laxmi Parwani, Monica Bhatnagar, **Ashish Bhatnagar** held at NASC Complex, New Delhi December 26-27, 2012

Third positionfor Young Scientist Award to Laxmi Parwani in the International Conference on Microorganisms in Environmental Management and Biotechnology for the oral presentation titled Biocompatible polymers from desert cyanobacteria for wound management by Laxmi

Parwani, Monica Bhatnagar, **Ashish Bhatnagar**, Vinay Sharma held at Barkatullah University Bhopal July 1-3, 2011

Third Best Poster Award to Laxmi Parwani for the poster paper titled A novel biocompatible wound dressing based on gum Acacia by Laxmi Parwani, Monica Bhatnagar, **Ashish Bhatnagar**, Vinay Sharma in the International Conference on Green Chemistry at Jaipur organized by Central University of Rajasthan December 7-9, 2011

Young Scientist (Bioenergy) Award, 2010: Society for Plant Research

COMMONWEALTH SCHOLARSHIPS

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Fax: +44 (0)207 387 2655

Dr. Ashish Bhatnagar
Assistant Professor, Microbiology
Maharshi Dyanand Saraswati University
Ajmer 305 009
Rajasthan
India

18 October 2007
INCF-2007-98

Dear Dr. Bhatnagar

Commonwealth Fellowships tenable in the United Kingdom 2007

I write further to my letter of 22 March 2007 by which you were informed that you had been provisionally selected as a reserve candidate for a Commonwealth Fellowship.

I regret to inform you that it will not be possible for the Commission to up-grade any of its reserve candidates this year.

I would like to thank you, on behalf of the Commonwealth Scholarship Commission, for your interest in the Commonwealth Fellowship scheme and to wish you success for the future.

Yours sincerely,

JOHN KIRKLAND
Executive Secretary
Commonwealth Scholarship Commission in the United Kingdom

Chair: Professor Trudy Harpham BA, PhD
Deputy Chair: Dr Hilary Perraton MA, PhD, DUniv
Executive Secretary: Dr John Kirkland BSc, PhD
Medical Awards Administrator: Dr Peter Beardillon FRCP

www.cscuk.org.uk

Commonwealth Academic staff fellowships Reserve list for the project titled Cyanobacterial Biofilms: Architecture and Response to Stress 2007

Rotary Club Ajmer Metro Certificate of Appreciation for outstanding performance in the field of education 2016

IARI Senior Research Fellow 1989-93 for Ph D in Microbiology
Qualified CSIR-UGC National Eligibility Testfor lecturership in Life Sciences 1990

IARI Gold medal 1989 for Overall performance in M.Sc. Microbiology

IARI Junior Research Fellow 1987-89 for M.Sc. in Microbiology

Aspee Gold medal 1987for obtaining maximum marks during B.Sc. (Ag) at JN Agriculture University Jabalpur in courses of Entomology and Plant Pathology

Bank of Baroda Cash prize 1987 for obtaining maximum marks during B.Sc. (Ag) at JN Agriculture University Jabalpur in courses of Economics

University Merit scholarship from 1984-1987 during B.Sc. (Ag) at JN Agriculture University, Jabalpur (M.P.)

Citations indices based on Google Scholar

	All	**Since 2011**
Citations	1227	1110
h-index	11	11
i10-index	12	12

Techniques developed

1. **US Patent Granted**
   Method and System of Culturing an Algal Mat. Das, Cannon, Bhatnagar and Chinnasamy 13 May 2014, US 8,722,389 B1 Method uses artificially generated fog to cultivate algae

US008722389B1

(12) **United States Patent**
Das et al.

(10) **Patent No.: US 8,722,389 B1**
(45) **Date of Patent: May 13, 2014**

(54) **METHOD AND SYSTEM OF CULTURING AN ALGAL MAT**

(75) Inventors: **Keshav C. Das**, Athens, GA (US); **Benjamin R. Cannon**, Watkinsville, GA (US); **Ashish Bhatnagar**, Rajasthan (IN); **Senthil Chinnasamy**, Tamilnadu (IN)

(52) **U.S. Cl.**
USPC **435/257.1**; 435/257.3; 435/257.5; 435/288.5

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

Pending US Patents 3

2. Using mixotrophic algae to grow in eutrophic wastewaters for remediation and produce Biofuel :Ashish Bhatnagar, Senthil Chinnasamy and Keshav C. Das. April 20,2009. Mixotrophic algae and their consortia for the production of algal biofuel feedstock in wastewater fed open ponds. S. No. 61/170,683. Docket No. (attorney): 222102-8880; UGARF No. 1454

US 20100267122A1

(19) **United States**
(12) **Patent Application Publication**
Chinnasamy et al.

(10) **Pub. No.: US 2010/0267122 A1**
(43) **Pub. Date: Oct. 21, 2010**

(54) **MICROALGAE CULTIVATION IN A WASTEWATER DOMINATED BY CARPET MILL EFFLUENTS FOR BIOFUEL APPLICATIONS**

(76) Inventors: **Senthil Chinnasamy**, Athens, GA (US); **Ashish Bhatnagar**, Ajmer (IN); **Ryan W. Hunt**, Athens, GA (US); **Ronald Claxton**, Athens, GA (US); **Mark Marlowe**, Dalton, GA (US); **Keshav C. Das**, Athens, GA (US)

Correspondence Address:
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
600 GALLERIA PARKWAY, S.E., STE 1500
ATLANTA, GA 30339-5994 (US)

(21) Appl. No.: **12/756,371**

(22) Filed: **Apr. 8, 2010**

Related U.S. Application Data

(60) Provisional application No. 61/170,164, filed on Apr. 17, 2009.

Publication Classification

(51) **Int. Cl.**
C12N 1/12 (2006.01)

(52) **U.S. Cl.** **435/257.3**; 435/257.1; 435/257.5

(57) **ABSTRACT**

The disclosure encompasses, among other aspects, mixed algal populations able to survive and proliferate on culture media that have a high proportion of carpet industry wastewater. Embodiments further encompass methods of cultivating mixed populations of freshwater and marine alga comprising a plurality of genera and species to provide a biomass from which may be extracted lipids, or converted into biodiesel by such procedures as pyrolysis. Lipid material extracted from the algae may be converted to biodiesel or other organic products. A combined stream of carpet industry untreated wastewater with 10-15% sewage was found to be a good growth medium for cultivation of microalgae and biodiesel production. Native algal strains were isolated from carpet wastewater inoculated with mixed populations derived from environments exposed to such wastewater. Both fresh water and marine algae showed good growth in wastewaters. About 65% of the algal oil obtained from the algal consortium cultured on carpet industry wastewater could be converted into biodiesel.

US 20120028338A1

(19) **United States**
(12) **Patent Application Publication**
Bhatnagar et al.

(10) **Pub. No.: US 2012/0028338 A1**
(43) **Pub. Date: Feb. 2, 2012**

(54) **MIXOTROPHIC ALGAE FOR THE PRODUCTION OF ALGAE BIOFUEL FEEDSTOCK ON WASTEWATER**

(76) Inventors: **Ashish Bhatnagar**, Rajasthan (IN); **Senthil Chinnasamy**, Tamil Nadu (IN); **Keshav C. Das**, (US)

(21) Appl. No.: **13/257,351**

(22) PCT Filed: **Apr. 20, 2010**

(86) PCT No.: **PCT/US10/31683**

§ 371 (c)(1),
(2), (4) Date: **Sep. 19, 2011**

Related U.S. Application Data

(60) Provisional application No. 61/170,683, filed on Apr. 20, 2009.

Publication Classification

(51) **Int. Cl.**
C12N 1/12 (2006.01)

(52) **U.S. Cl.** **435/257.3**; 435/257.1; 435/257.6; 435/257.5

(57) **ABSTRACT**

The disclosure encompasses, among other aspects, mixed algal populations able to survive and proliferate on culture media that have a high proportion of an industry wastewater. In particular, at least one strain of an alga in the algal population proliferates mixotrophically. Embodiments further encompass methods of cultivating mixed populations of freshwater and marine alga comprising a plurality of genera and species to provide a biomass from which may be extracted lipids, or converted into biodiesel by such procedures as pyrolysis. Lipid material extracted from the algae may be converted to biodiesel or other organic products. Native algal strains were isolated from industrial and in particular agricultural wastewater inoculated with mixed populations derived from environments exposed to such wastewater. Both fresh water and marine algae showed good growth in wastewaters. About 65% of the algal oil obtained from the algal consortium cultured on an industry wastewater could be converted into biodiesel.

3. Use of Carpet industry wastewater for polishing the treated wastewater and producing feedstock for Biofuel: Senthil Chinnasamy, Ashish Bhatnagar, Ryan W. Hunt, Ronald Claxton, Mark Marlowe and Keshav C. Das, 2009. Renewable biomass, biofuel and bioproducts from carpet industry wastewater (treated and untreated) using mixotrophic alga(e). UGARF No. 1453.

4. Using poultry litter as a cheap source of nutrient to cultivate algae.: Keshav C. Das, Ashish Bhatnagar, Ryan W. Hunt and Senthil Chinnasamy. May 1, 2009. Animal waste derived organic plankton booster as low cost renewable nutrient source for algaculture to produce biofuels. UGARF No. 1455. EFS ID No.: 5257108, Application No. 61174512, Confirmation No. 1076.

5. First to indicate possibility for biosorptive removal of fluoride that generated a series of papers by Venkat Mohan et al. (Fluoride 33, 2000; Biotech Lett 24, 2002)

Fluoride Vol. 33 No. 2 55-65 2000 Research Review 55

ALGAL AND CYANOBACTERIAL RESPONSES TO FLUORIDE

Monica Bhatnagar[a] and Ashish Bhatnagar
Ajmer (Rajasthan), India

Biotechnology Letters **24**: 1079–1081, 2002.

Interactive biosorption by microalgal biomass as a tool for fluoride removal

Monica Bhatnagar*, Ashish Bhatnagar & Sapna Jha
Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer 305 001, Rajasthan, India
**Author for correspondence (Fax: 91-0145-787049; E-mail: aridgabga@hotmail.com)*

6. A novel method of interactive biosorption for anion (as fluoride) removal (Biotech Lett 24, 2002). Though majority of work on biosorption has been done by Voleski's lab, yet we set a priority on removal of anions that too by an interactive method removing by sorption, cations followed by anions.

7. Combination of plant hormones:1-naphthaleneacetic acid (NAA), gibberellic acid (GA) and zeatin shows significant growth improvement in algae (ABB 162, 2010)

Appl Biochem Biotechnol (2010) 162:2400–2414
DOI 10.1007/s12010-010-9012-2

Effect of Biochemical Stimulants on Biomass Productivity and Metabolite Content of the Microalga, *Chlorella sorokiniana*

Ryan W. Hunt · Senthil Chinnasamy · Ashish Bhatnagar · K. C. Das

Received: 11 February 2010 / Revised: 31 May 2010 / Accepted: 11 June 2010 /
Published online: 3 July 2010

Applied Energy 88 (2011) 3425–3431

Contents lists available at ScienceDirect

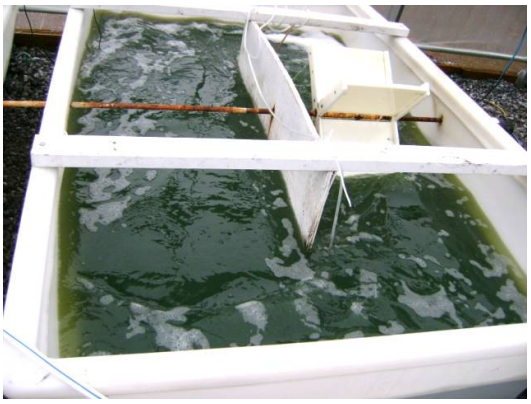
Applied Energy

journal homepage: www.elsevier.com/locate/apenergy

Renewable biomass production by mixotrophic algae in the presence of various carbon sources and wastewaters

Ashish Bhatnagar[b], Senthil Chinnasamy[a], Manjinder Singh[a,*], K.C. Das[a]
[a] *Biorefining and Carbon Cycling Program, Department of Biological and Agricultural Engineering, The University of Georgia, Athens, GA 30602, USA*
[b] *Algae Biofuel & Biomolecules Centre, Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer 305 009, India*

8. Developed a cheap medium to cultivate mixotrophic algae using extracts of poultry litter (AE 88, 2011)



Mechanism deciphered

International Journal on Algae, 2014, 16(1): 68–85

Solid Surfaces Alleviate Thermal Stress in Desert Microalgae*

Bhatnagar A.[1], Bhatnagar M.[1] & Garg M.K.[2]

[1]Algae Biofuel and Biomolecules Centre (ABBiC), Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer 305 009 (Rajasthan), India
e-mail: bhatnagarashis@gmail.com; e-mail: monicaajmer@gmail.com

[2]Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer 305 009 (Rajasthan), India
e-mail: mukeshgarg1@rediffmail.com

* Originally published in Algologia, 2013, 23(4), pp. 370–379

ISSN 1521–9429

1. Resistance of green algae and susceptibility of cyanobacteria to fluoride (Fluoride 33, 2000)

2. Survival mechanisms against thermal stress in desert algae are triggered when undergoing matric stress and not osmotic stress (IJA 16, 2014).

3. A quicker healing of wounds might have been triggered by ROS control by the biopolymers of Acacia, Moringa and Cyanobacteria (IJPPS, JAP)

Management cues suggested

1. Fitted r- and K-selection model to the waste stabilization pond process implicating that the closed agitated bioreactors must use single celled organisms and semi natural remediation ponds shall use a consortium that utilizes all spatial niches (JEB 20, 1999)

Journal of Environmental Biology
20 (2), 115 – 120 (1999)

ISSN : 0254-8704

Development of r-and K- selection model in the waste stabilization pond system.

ASHISH BHATNAGAR
Microbial Ecology & Environmental Biotechnology Laboratory, Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer - 305 009 (India)

[Received : 24 January 1998; Accepted : 23 July, 1998).

ELSEVIER

Journal of Arid Environments 72 (2008) 73–83

Journal of Arid Environments
www.elsevier.com/locate/jaridenv

Community structure and diversity of cyanobacteria and green algae in the soils of Thar Desert (India)

A. Bhatnagar*, M.B. Makandar, M.K. Garg, M. Bhatnagar
Satellite Centre for Microalgal Biodiversity in Arid Zones of Rajasthan, Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer, 305 009 Rajasthan, India

Received 9 August 2006; received in revised form 18 April 2007; accepted 7 May 2007
Available online 9 July 2007

2. Plant diversity in deserts needs to be conserved for conservation of cyanobacterial diversity (JAE 72, 2008)

3. Cell rupturing gives better lipid extraction from algae without altering the FAME composition. (BT 126, 2012)

Bioresource Technology 126 (2012) 131–136

Contents lists available at SciVerse ScienceDirect

Bioresource Technology

journal homepage: www.elsevier.com/locate/biortech

Effect of cell rupturing methods on the drying characteristics and lipid compositions of microalgae

T. Viswanathan[a], S. Mani[a,*], K.C. Das[a], S. Chinnasamy[b], A. Bhatnagar[c], R.K. Singh[d], M. Singh[a]

[a]Biological and Agricultural Engineering Department, University of Georgia, Athens, GA 30602, United States
[b]ABAN Infrastructure Pvt. Ltd., Biotechnology Division, Chennai, India
[c]Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer, India
[d]Department of Food Science & Technology, University of Georgia, Athens, GA 30602, United States

Bioresource Technology 101 (2010) 3097–3105

Contents lists available at ScienceDirect

Bioresource Technology

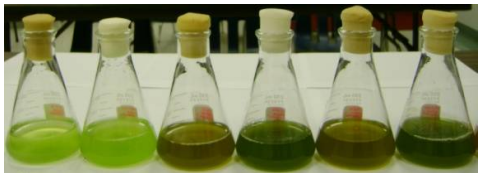
journal homepage: www.elsevier.com/locate/biortech

Microalgae cultivation in a wastewater dominated by carpet mill effluents for biofuel applications

Senthil Chinnasamy[a,*], Ashish Bhatnagar[a,b], Ryan W. Hunt[a], K.C. Das[a]

[a]Bioenergy and Carbon Cycling Program, Department of Biological and Agricultural Engineering, The University of Georgia, Athens, GA 30602, USA
[b]Arid Algae Cyanobacteria Biodiversity and Biofuel Laboratory, Department of Microbiology, Maharshi Dayanad Saraswati University, Ajmer 305 009, India

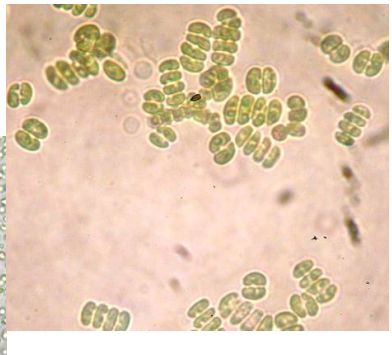
4. Wastewater from carpet mills can be used to grow algae for fuel (BT 101, 2010)



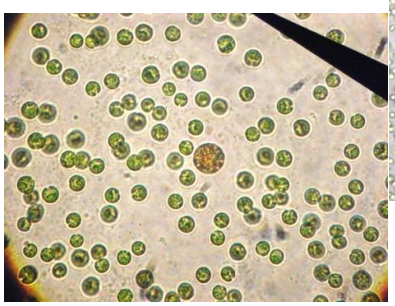
Discovered

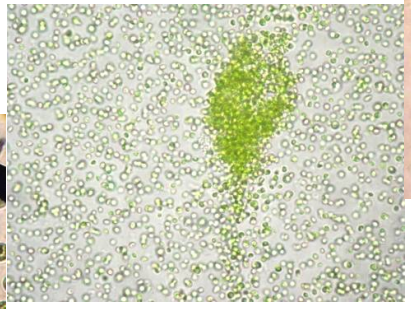
1. Thermal stress is alleviated when grown attached to the solid surfaces (IJA 16, 2014)

2. *Chroococcuscohaerens* (2412), an isolatefrom sedimentary rock grit, - a true osmophile requiring -0.5 MPa osmotic waterpotential for optimal growth (IJA 16, 2014)



3. Mixotrophic strains of *Chlorella minutissima* (ABB 161, 2010),





Scenedesmus bijuga and *Chlamydomonas globosa*(BT 101, 2010)

Bioresource Technology 101 (2010) 6751–6760

Contents lists available at ScienceDirect

Bioresource Technology

journal homepage: www.elsevier.com/locate/biortech

Biomass and bioenergy production potential of microalgae consortium in open and closed bioreactors using untreated carpet industry effluent as growth medium

Senthil Chinnasamy[a,*], Ashish Bhatnagar[a,b], Ronald Claxton[a], K.C. Das[a]

[a]Biorefining and Carbon Cycling Program, Department of Biological and Agricultural Engineering, The University of Georgia, Athens, GA 30602, USA
[b]Arid Algae Cyanobacteria Biodiversity and Biofuel Laboratory, Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer 305 009, Rajasthan, India

Appl Biochem Biotechnol (2010) 161:523–536
DOI 10.1007/s12010-009-8771-0

Chlorella minutissima—A Promising Fuel Alga for Cultivation in Municipal Wastewaters

Ashish Bhatnagar · Monica Bhatnagar · Senthil Chinnasamy · K. C. Das

Received: 22 May 2009 / Accepted: 3 September 2009 /
Published online: 1 November 2009

4. *Chlorella minutissima*is a versatile and potent wastewater remediation agent* (Book, ABB 161, 2010)

5. Majority of lithophytic cyanobacteria produce emulsifying molecules (turbidity at 30' varied from 11-37% of 0 min)

6. Cyanobacteria are more susceptible to fluoride than green algae (Fluoride 33, 2000)

7. Wide spread fluoride tolerance in cyanobacteria and green algae (IJM 44, 2004)

Indian Journal of Microbiology Vol 44, No. 2, June 2004, pp 125-128

pH dependent fluoride toxicity in algae and cyanobacteria

Monica Bhatnagar[1]*, Ashish Bhatnagar[1] and S. K. Goyal[2]
[1]Department of Microbiology, Maharshi Dayanand Saraswati University, Ajmer, Rajasthan 305 009
[2]National Centre for Conservation and Utilisation of Blue Green Algae, Indian Agricultural Research Institute, N

Research Article

International Journal of Bioassays
ISSN: 2278-778X
www.ijbio.com

DETERMINATION OF SORPTION POTENTIAL OF FERMENTATION INDUSTRY WASTE FOR FLUORIDE REMOVAL

Hemraj Chhipa*, Ruchi Acharya, Monica Bhatnagar and Ashish Bhatnagar
Department of Microbiology, Maharshi Dayanand Saraswati University Ajmer, India-305009

Received for publication: November 19, 2012; Accepted: January 09, 2013.

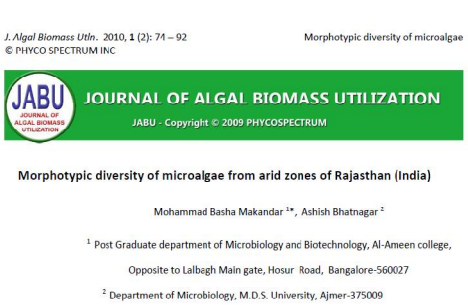
8. Waste from fermentation industry can be used for sorptive removal of fluoride (IJB 2, 2013)

9. Physical disintegration and dissolution of limestone by edaphic cyanobacteria (NSCNF, 1992)

10. Chlorophyll a is a deceptive parameter to determine survival under desiccation (IJA 16, 2014).

11. Cyanobacteria are known to avoid plant vicinity in general but since plant cover in desert does not create shade, the diversity increases near plants (JAE 72, 2008) Rajasthan is a big treasure house of mucilagenous, filamentous and heterocystous cyanobacteria (JAE 72, 2008)

12. Desert has low species richness of cyanobacteria but microscale habitat variation adds more and more new forms (JAE 72, 2008)



J. Algal Biomass Utln. 2010, **1** (2): 74 – 92 Morphotypic diversity of microalgae
© PHYCO SPECTRUM INC

JABU JOURNAL OF ALGAL BIOMASS UTILIZATION
JABU - Copyright © 2009 PHYCOSPECTRUM

Morphotypic diversity of microalgae from arid zones of Rajasthan (India)

Mohammad Basha Makandar [1*], Ashish Bhatnagar [2]

[1] Post Graduate department of Microbiology and Biotechnology, Al-Ameen college, Opposite to Lalbagh Main gate, Hosur Road, Bangalore-560027

[2] Department of Microbiology, M.D.S. University, Ajmer-375009

J. Algal Biomass Utln. 2010, 1 (3): 54 – 69 Biodiversity of Microalgae and Cyanobacteria
© PHYCO SPECTRUM INC

JABU JOURNAL OF ALGAL BIOMASS UTILIZATION
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Biodiversity of Microalgae and Cyanobacteria from freshwater bodies of Jodhpur, Rajasthan (India)

Mohammad Basha Makandar[1*], Ashish Bhatnagar[2]

1. Department of Microbiology and Biotechnology, Al-Ameen Arts, Science and Commerce College, Opp. Lalbagh Main gate, Hosur Road, Bangalore-560027
2. Department of Microbiology, M.D.S. University, Ajmer 305009

13. Extent of morphotypic diversity of cyanobacteria in Thar desert (JAE 72, 2008), saline playas (JABU 1, 2010) and exposed rock surfaces and outcrops (First estimate of diversity)

14. CO_2 increase ameliorates effect of thermal stress in *Chlorella vulgaris*(IJMS 10, 2009) and *Anabaena fertilissima* (JFE 24, 2009).

Int. J. Mol. Sci. **2009**, *10*, 518-532; doi:10.3390/ijms10020518

OPEN ACCESS
International Journal of
Molecular Sciences
ISSN 1422-0067
www.mdpi.com/journal/ijms

Article

Biomass Production Potential of a Wastewater Alga *Chlorella vulgaris* ARC 1 under Elevated Levels of CO_2 and Temperature

Senthil Chinnasamy [1,*], Balasubramanian Ramakrishnan [2], Ashish Bhatnagar [1] and Keshav C. Das [1]

[1] Department of Biological and Agricultural Engineering, The University of Georgia, Athens, GA 30602, USA; E-mails: bhatnagarashis@gmail.com (A.B.); kdas@engr.uga.edu (K.C.D.)
[2] Laboratory of Soil Microbiology, Division of Soil Science and Microbiology, Central Rice Research Institute, Cuttack 753006, Orissa, India; E-mail: ramakrishnanbala@yahoo.com

Publications: 45

DNA Sequences submitted to NCBI: 30

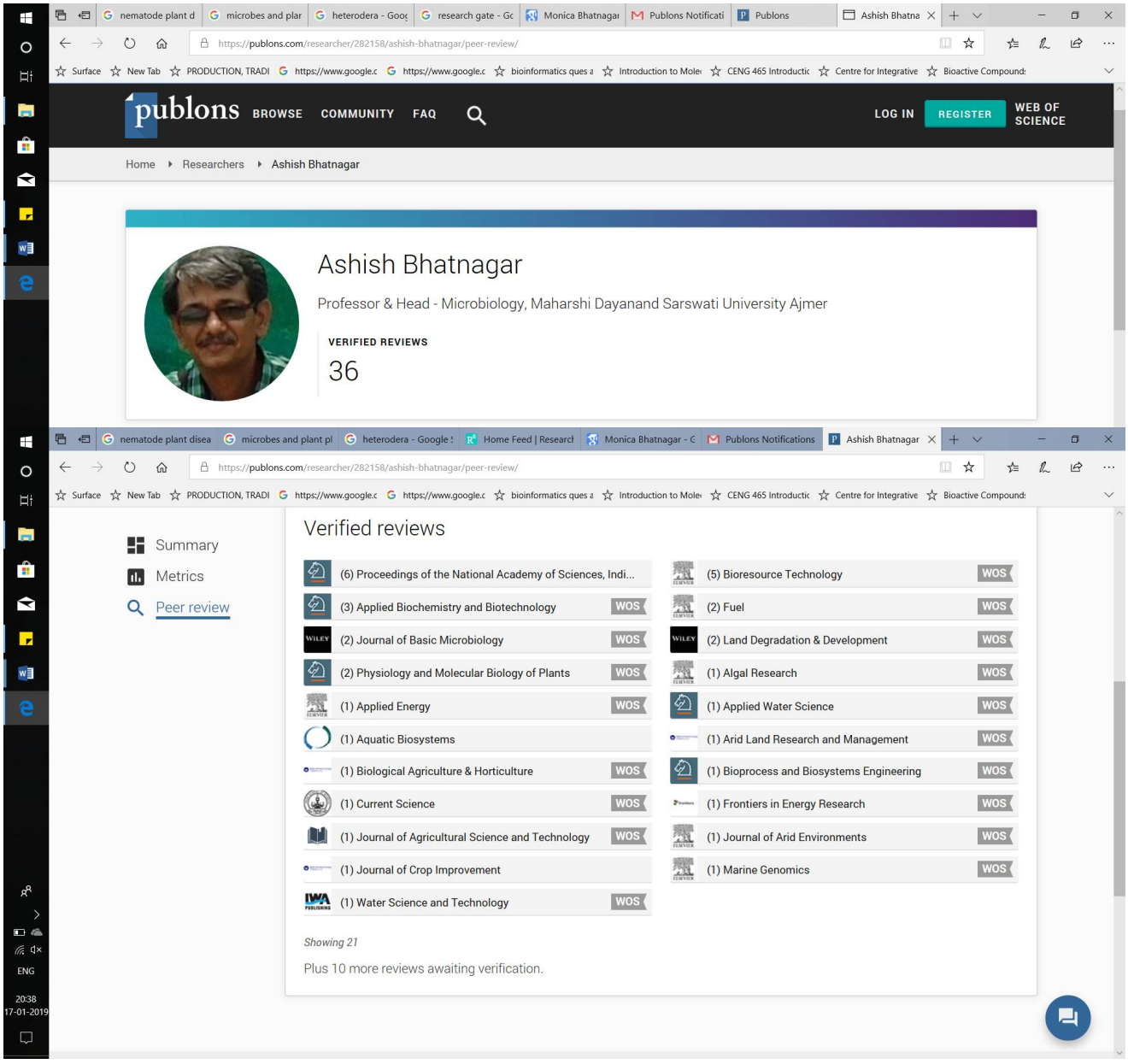
Papers Reviewed

1	**Journal of Indian Botanical Society**: No. JIBS 91.9.01 UV absorbing pigments in terrestrial cynobacteria from various archaeological monuments of India 2001
2	**Phykos**: 7.10.2001: The relationship between phytoplankton and physicochemical variables in two ponds of Bakerganj, Bangladesh.
3	**Phykos**: MS No. 803/99 dtd 5.3.1999
4	**Phykos**: dtd 1.8.95
5	**Current Science** P 349 RAPD Analysis of Soil Microbial Diversity in Western Rajasthan 27.7. 2007
6	**Applied Biochemistry & Biotechnology:** ABAB-1541 Light regime characterization in an airlift photobioreactor for production of microalgae with high starch content dtd 20.7.2010
7	**Arid Land Research and Management:** UASR-2010-0643 - Distribution and composition of cyanobacteria and microalgae associated with biological soil crusts in the Gurbantunggut Desert, China dtd 15.8.2010
8	**Bioresource Technology:** BITE-D-10-00602 Algal Biomass Production of High Rate Pond with Natural Water for Biofuel Bioresource Technology dtd 15.8.2010
9	**Bioresource Technology**: Application of rbcL based molecular diversity analysis to algae in wastewater treatment plants 25.10.2010
10	**Bioresource technology:**BITE-D-10-02398 Molecular Diversity of Algae Assemblages at Wastewater Treatment Plants dtd. 8.11.10
11	**Saline Systems:** dtd 30.1.2012
12	**African Journal of Biotechnology:** Antibacterial activities of the extracts of cyanobacteria and green algae isolated from desert soil in Riyadh, Kingdom of Saudi Arabia dtd 8.2.12
13	**Aquatic Biosystems:** A preliminary estimation of the algal feedstock production potential of Tampa Bay utilizing carbon dioxide emissions and wastewater effluent by Dalrymple et al. dtd 19.2.2012
14	**Taylor & Francis Book Chapter:** Harvesting of Microalgal Biomass 15.6.2012
15	**Journal of Crop Improvement** WCIM-2012-0139Potential evaluation of Pseudomonas for improving phosphorus availability in soil under pearl millet 21.9.12
16	**Journal of Agricultural Science and Technology:** Microalgae Harvesting Using Electroflocculation" J. 2684-90 dtd 7.11.12
17	**Applied Energy:** Application Prospects of Microalgae Cultivation Technology in Comprehensive Utilization of Sewage, CO2 Emissions and Discharged Heat dtd 20.1.13
18	**Journal of Applied Phycology:**JAPH-D-13-00038 Effect of water extracts of seaweeds on the growth of seedling roots of buckwheat (Fagopyrum esculentumMoench) dtd 19.2.13
19	**Biological Agriculture & Horticulture:**TBAH-2013-0062 Deciphering the biochemical spectrum of novel cyanobacterium based biofilms for use as inoculants dtd 28.2.13
20	**PNAS India, Section B; biological Sciences:** NASB-D-13-00057 Scope for Algae Based Ponds for Economical Treatment of Municipal Wastewater dtd 18.3.2013
21	**IIS University Journal:** An Evaluation of Physicochemical properties to Assess Quality of Treated Effluents from Jaipur Dairydtd. 15.4.13
22	**Desalination & Water Treatment:** TDWT-2013-0293. Wastewater valorization adopting the microalgae accelerated growth. Dtd 19.5.2013
23	**J Arid Environment:** JAE08-273R2 Distribution and community structure of algal morphotypes in the Hexi Gobi Desert of China dtd 1.6.13
24	**Bioresource Technology:**BITE-D-13-02285R1: FT-IR/ATR Univariate and Multivariate Calibration Models for *in situ* Monitoring of Sugars in Complex Microalgal Culture Media dtd. 1.6.2013
25	**Bioprocess & Biosystems Engineering:** BPBSE 13-0165. Carbon dioxide sequestration and biofuel production using microalgae: A review of current work dtd. 5.6.2013
26	**NRCSS Journal:**MS 37. Microbiological profile of coriander (*Coriandrum sativum* L.) crop rhizosphere in Rajasthan and screening for auxin producing rhizobacteria dtd 4.8.13
27	**Current Science** 5987-11790-1-RV Adapting technologies for efficient feedstock production from microalgae for biodiesel 25.1.14
28	**PNAS India, Section B; biological Sciences:**NASB-D-14-00172 Role of Blue Green Algae in Crop protection 29.6.2014
29	**Frontiers in Energy Research** Design, Construction and Validation of Internally-Lit Air Lift Photobioreactor for Growing Algae 2.10.14
30	**Algal Research:** ALGAL-D-14-00204 Naturally floating microalgal mat for insitu bioremediation and potential for biofuel production 5.10.14
31	**Saudi Journal of Biological Sciences** SJBS-D-14-00350 Improvement of antioxidant and defense properties of Tomato (var. Pusa Rohini) by application of augmented compost 17.10.14
32	**Environmental Monitoring and Assessment** EMAS-D-15-00076 Identification and analysis of polyaromatic hydrocarbons (PAHs)- biodegrading bacterial strains from refinery soil of India 9.2.15
33	**IIS University Journal:** Absolute quantification of Heat Shock Protein 70 gene in Jamunapari goat breed11.4.15
34	**Applied Water Science** AWSC-D-15-00060 Experimental study for strategic enhancement of Desertifilumtharense MSAK01 on Dairy Wastewater: An integrated approach for waste treatment and enriching biomass 27.4.15
35	**PNAS India, Section B; biological Sciences:NASB-D-15-00350** Microalgal biodiesel production: economic,

	environmental and social sustainability Aspects 14.6.15
36	**Fuel**. JFUE-D-15-02138 Mixotrophic cultivation of Nephroselmis sp. using industrial wastewater for enhanced microalgal biomass production. 4.9.2015
37	**Journal of Basic Microbiology.** jobm.201500558 Efficacy of two versatile rhizobacteria (Stenotrophomonas maltophilia and Burkholderiacepacia) isolated from soils of Northern Western Himalaya's. 9.9. 2015
38	**Marine Genomics. MARGEN D-15-00186** De-novo assembly and characterization of Chlorella minutissima UTEX2341 transcriptome by paired-end sequencing and the identification of genes related to the biosynthesis of biofuels 15.10.15
39	**Applied Biochemistry & Biotechnology**. ABAB-D-16-00634 Enhancement of Lipid Production of Chlorella Pyrenoidosa Cultivated in Municipal Wastewater by Magnetic Treatment 15.5.16
40	**Land Degradation and Development:** SHIFTING CYANOBACTERIAL DIVERSITY IN RESPONSE TO AGRICULTURAL SOILS ASSOCIATED WITH DUST EMISSION 28.8.16
41	**IIS University Journal:**The effect of some location specific Rhizobialstrains on Dry weight and Nitrogen content of Urid bean (*Vigna mungo*(L.) Hepper from Marathwada 26.10.16
42	**Applied Water Science:** Strategic enhancement of Desertifilumtharense MSAK01 on dairy wastewater: an integrated approach for remediation and biomass production 27.11.2016
43	**Frontiers in Energy Research**. Phycospheric native bacteria Pelagibacabermudensis and Stappia sp. Ameliorate biomass productivity of Tetraselmisstriata (KCTC1432BP) in co-cultivation system through mutualistic interaction. 2.1.17
44	**Current Science:** Current Status of Algal Biodiesel: A Review 7.3.17
45	**Water Science & Technology:** Formulation of a minimal nutritional medium for enhanced lipid productivity in Chlorella sp. and Botryococcus sp. using Response Surface Methodology 28.6.2017
46	**Bioresource Technology** BITE-D-18-01383R1 Lipid accumulation of Chlorella pyrenoidosa under mixotrophic cultivation using acetate and ammonium 23.4.2018
47	**Physiology and Molecular Biology of Plants** PMBP-D-18-00164 Evaluation of carbon capture in competent microalgae consortium for enhanced biomass, lipid and carbohydrate production 2.6.2018

Project proposals evaluated

1. **UGC** major research project: Biomonitoring and phytoremediation of radioactive pollution. PI: Dr. BL. Jagetiya, MLV College, Bhilwara 25.9.2001
2. **Department of Biotechnology, GOI**: DO No. BT/PR6404/BCE/08/418/2005 dtd 30.9.2005. Carbon sequestration by Azolla-Anabaena symbiotic system by Dr. S. Thiyagarajan
3. **Department of Science & Technology, Rajasthan** Travel Grant proposal for Banasthali Vidyapeeth, Banasthali
4. **Department of Science & Technology, Rajasthan** Major Research projects of Veena Sharma, Arti Prasad, RK Gothwal, Shilpa Rijhwani, Sonica Saxena, Shruti Mathur and Poonam Narula
5. **Department of Biotechnology, GOI**: Carbon Sequestration and Industrial Wastes Utilization for Biofuels (Biohydrogen and Biodiesel) Production by Microalgal Diurnal Metabolic Cycle Arun and Karuppuchamy
6. **The Rajiv Gandhi Science & Technology Commission (RGSTC), Govt of Maharashtra** 2014: Prevalence, awareness and treatment of malnutrition among children in tribal area of Shirpur; Role of students as a community pharmacist for nutrition development in children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VERIFIED REVIEWS
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Verified reviews
(6) Proceedings of the National Academy of Sciences, Indi...
(3) Applied Biochemistry and Biotechnology WOS
(2) Journal of Basic Microbiology WOS
(2) Physiology and Molecular Biology of Plants WOS
(1) Applied Energy WOS
(1) Aquatic Biosystems
(1) Biological Agriculture & Horticulture WOS
(1) Current Science WOS
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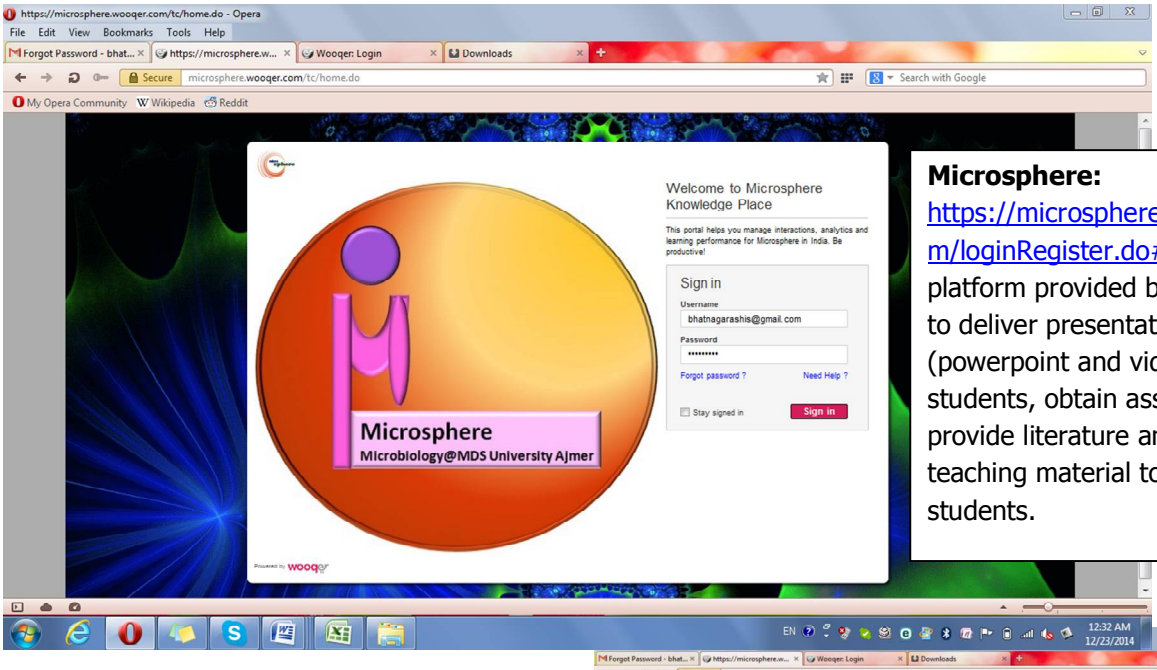

Microsphere: https://microsphere.wooqer.com/loginRegister.do# A platform provided by Wooqer to deliver presentations (powerpoint and video) to the students, obtain assignments, provide literature and extra teaching material to the students.

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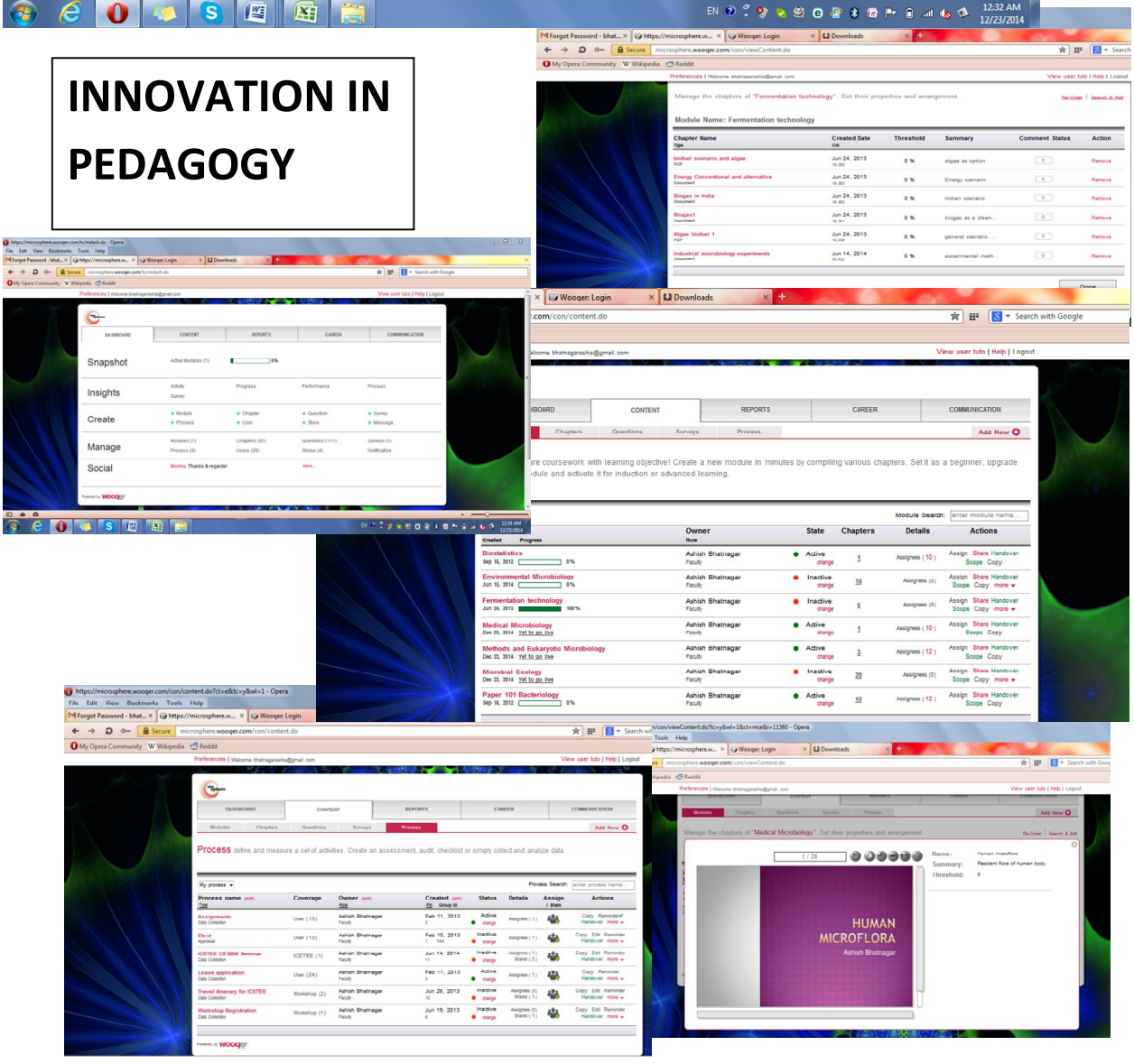


Research Projects

1. Principal Investigator in Department of Biotechnology, Government of India funded **Satellite Centre for Microalgal Biodiversity in Arid Zones of Rajasthan**. Outlay: Rs. 1.9 million (completed on 31.10.02).

2. Co- Principal Investigator in Ministry of Environment & Forests funded **Prosthecate Bacteria & Micrococcus Centre (ProMiC)**, Outlay: Rs. 2.5 million 2012.

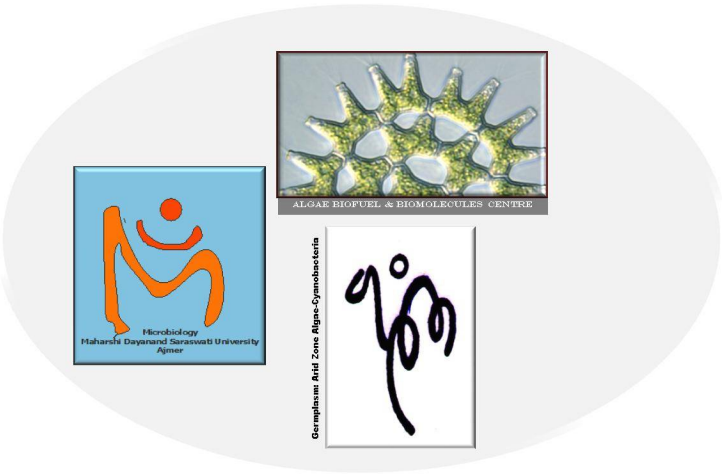
3. Director **Algae Biofuel & Biomolecules Centre:**A Study Centre established for Interdisciplinary Research& Outreach Program involving Faculty from Microbiology, Food Science & Nutrition, Environmental Science, Economics and Management

4.

Ph.D. projects (supervised and awarded)

S No	Name of Research Scholar	Topic	Date of Registration	Awarded
1	Mukesh K. Garg	Ecophysiological studies on some edaphic and lithic microalgae of Rajasthan	3.5.2001	2006
2	Md. Basha Makandar	Morphotypic and functional diversity of some microalgae in arid zones of Rajasthan	16.5.2001	2007
3	Jaspreet Singh CSIR JRF	Diversity and physiology of bacteria tolerant to nutritional extremes	8.12.2004	2012
4	Hemraj Chhipa	Bioaccumulation and interactive ion sorption in fungi as a means to remove fluoride	11.9.2006	2012

Establishment



- the **FirstDepartment of Microbiology** in the State of Rajasthan at Maharshi Dayanand Saraswati University Ajmer with a motto **'Unveil the hidden strength'.** The Department exposes the students to their hidden talents and emphasizes on their improvement and also to unearth our subject that deals with organisms not visible to the naked eye.

- An Interdisciplinary Research Centre: **Algae Biofuel & Biomolecules Centre,**
- **Resource Centre**: Germplasm collection of desert algae and cyanobacteria (46 strains)