



Dr. N.G.P ARTS AND SCIENCE COLLEGE

An Autonomous Institution Affiliated to Bharathiar University

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COIMBATORE - 641 048



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News Letter 2016 - 2017

DEPARTMENT OF BIOTECHNOLOGY

EDITOR'S DESK :

(DR.V.Shanmugaraju)

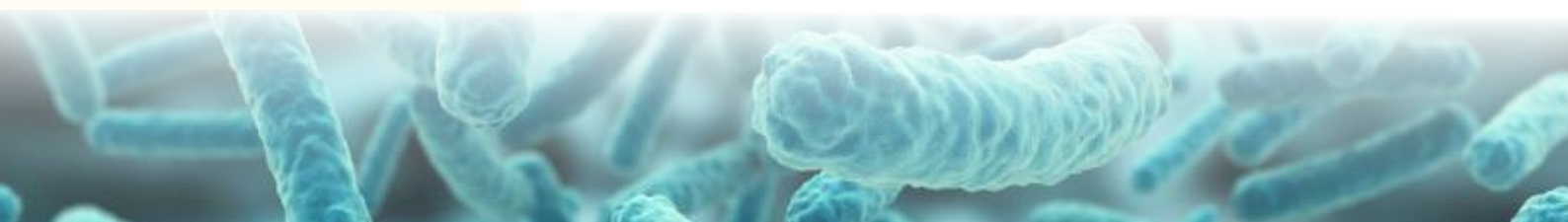
I am extremely happy to bring out the news letter of the Department for the academic year 2016-17. The modern scenario focuses much on new technologies like Biotechnology, Nanotechnology and Pharmaceutical Biotechnology. I strongly believe that this news letter will be of more use to the young readers in order to motivate the Bioscience community.

VISION

To improve the quality in education for research expansion and to construct excellent bio entrepreneurship for self reliance with societal development.

MISSION

The Department was established in the year 2002 with the goal of rendering innovative education to the learning aspirants. Biotechnology is being a fast growing arena of research and innovation, our department offers UG, PG, M.Phil and Ph.D programmes. The Department proves to be a good platform for the budding biotechnologists with excellent infrastructure and instrumentation facilities. At present the department is functioning effectively with 8 staff members and 205 students.



ACTIVITIES OF THE DEPARTMENT

Date	Activity
22.06.2016 & 23.06.2016	Orientation program for freshers
04.07.2016 & 05.07.2016	Bridge course on “Basics of Biology” for non Biology students.
18.07.2016 22.08.2016	The students of III B.Sc and II M.Sc were taken to Agriindex.
22.08.2016	The students of III B.Sc participated in National Symposium on “Genetics, Genomics and Proteomics – Application in Clinical Research” organized by Ganga Orthopaedic Research and Educational Foundation, Ganga Hospital, Coimbatore
26.08.2016	The students of II B.Sc participated in One day National Seminar on “Recent Innovations in Biosciences” organized by Dr. R. V. College of Arts and Science, Karamadai, Coimbatore
31.08.2016	One day State Level Training Programme on “Biochemical Techniques – Practical Approach” for the Faculty members of Vellalar college as a paid consultancy for Rs.5000/-
27.09.2016	One day Hands on Training Programme on “Immunology and molecular Biology techniques” by Dr. V. Saravana Perumal, Managing Director, Abbes Biotech, Chennai.
22.10.2016	Alumni Student Interaction on “Career opportunities in Biotechnology” by Dr. M.P. Ayyappa Das, Head, Department of Biotechnology, R.V.S. College of arts and Science, Coimbatore.
10.01.2017	Extension activity - Public Awareness Program on Mushroom Cultivation at Karupparayanpalayam
24.01.2017	Extension activity - Awareness Program on Open Defecation by Swatch Bharat Mission at Sathyamangalam
03.02.2017	The students of III B.Sc participated in One day International Conference on “Frontiers in Biotechnology” organized by Department of Biotechnology, Nandha College of Arts and Science, Erode.
07.02.2017	The students of I B.Sc and I M.Sc visited Institute of Forest Genetics and Tree Breeding, Coimbatore.
08.02.2017	The students of I B.Sc and I M.Sc visited Botanical Survey of India, Coimbatore
08.02.2017	Extension activity - Exhibition and Awareness Program on Nutrition and Healthcare for general public at Kurubampalayam
09.02.2017	Extension activity - Awareness Program on Open Defecation and Hygiene by Swatch Bharat Mission at Palladam
14.02. 2017	The students of III B.Sc attended Value Added Programme in Tamil Nadu Agricultural University on “Bee Keeping”.
23.02.2017 & 24.02.2017	The students of II B.Sc participated in Two day National Conference on “ Applications of Advanced Analytical techniques in Diverse Sectors of Biotechnology” organized by Department of Biotechnology, Bannari Amman Institute of Technology, Sathyamangalam
24.03.2017	The students of III B.Sc visited Pasteur Institute of India, Coonoor, The Nilgiris
25.03.2017	Student Development Programme on “Character Development”. DR. B. Selvaraj, Associate Professor, Department of Psychology, Government Arts College, Coimbatore

FACULTY ACHIEVEMENTS :

DR. V. Shanmugaraju has received P. K. Das Memorial Best Faculty Award in Nehru Group of Institutions, Coimbatore on 15th December 2016. He has published a paper in International Journal. He has acted as resource person in one day National Seminar on "Perspectives of Bioprospecting" organized by Hindusthan College of Arts and Science, Coimbatore on 22nd August 2016 and also one day National Seminar on "Recent Innovations in Biosciences" organized by Dr. R. V. College of Arts and Science, Karamadai, Coimbatore on 26th August 2016. He has presented papers in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and in two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by the Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 8th March 2017. He has also participated and delivered a talk in Orientation Programme on "Quality Research in Biological Science" organized by Dharsan publishers on 6th and 7th March 2017.

Mr. Arun. P has presented papers in one day national seminar on "Recent Innovations in Biosciences" organized by Dr. R. V. College of Arts and Science, Karamadai, Coimbatore on 26th August 2016, in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and in two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 7th and 8th March 2017. He also participated in three days National workshop on "Data Science Research - Biological Data management" organized by Jamal Mohamed College, Trichy on 23rd - 25th January 2017. He has also participated in one day workshop on "Analysis of spectral data" on 30th January 2017 organized by Center for Research, Dr. N.G.P. Arts and Science College, Coimbatore. He also attended 21 days refresher course programme conducted by UGC-Human Resource Development centre, Bharathiar University from 10th May 2017 to 30th May 2017.

DR. P. Chidambara Rajan has presented papers in one day national seminar on "Recent Innovations in Biosciences" organized by Dr. R. V. College of Arts and Science, Karamadai, Coimbatore on 26th August 2016, in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and in two days

international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 7th and 8th March 2017.

DR. K. Arungandhi has presented papers in one day national seminar on "Recent Innovations in Biosciences" organized by Dr. R. V. College of Arts and Science, Karamadai, Coimbatore on 26th August 2016, in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and in two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 7th and 8th March 2017. He also participated in one day workshop on "Analysis of spectral data" on 30th January 2017 organized by Center for Research, Dr. N.G.P. Arts and Science College, Coimbatore.

Mrs.M.Shanmugavadivu has published a paper in International Journal . She has also presented papers in one day national seminar on "Recent Innovations in Biosciences" organized by Dr. R. V. College of Arts and Science, Karamadai, Coimbatore on 26th August 2016, in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and in two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 7th and 8th March 2017. She also participated in Science Academies' sponsored three days Lecture workshop on "Biodiversity and Bioresources: Conservation and Utilization" organized by Government Arts College, Karur on 8th - 10th February 2017. She has also participated in one day workshop on "Analysis of spectral data" on 30th January 2017 organized by Center for Research, Dr. N.G.P. Arts and Science College, Coimbatore.

DR.L.Nivetha has participated in one day national symposium on "Genetics, Genomics and Proteomics - Application in Clinical Research" organized by Ganga Orthopaedic Research and Educational Foundation, Ganga Hospital, Coimbatore on 22nd August 2016. She has presented papers in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for

Women, Tiruchengode on 7th and 8th March 2017. She has also participated in Science Academies' sponsored two days Lecture workshop on "Bio-Prospecting the Bio-Wealth" organized by Karpagam University, Coimbatore on 9th and 10th January 2017. She also participated in one day workshop on "Analysis of spectral data" on 30th January 2017 organized by Center for Research, Dr. N.G.P. Arts and Science College, Coimbatore.

DR.M.Poongothai has presented papers in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 7th and 8th March 2017. She has also participated in one day workshop on "Analysis of spectral data" on 30th January 2017 organized by Center for Research, Dr. N.G.P. Arts and Science College, Coimbatore.

DR. Radha Palaniswamy acted as resource person in three days International conference on "Herbal and Natural

Components as the Future of Pharmacology" and "7th Annual Meet of the National Society of Ethanopharmacology" organized by Avinashilingam Deemed university, Coimbatore on 27th February 2017 to 1st March 2017. She has also presented papers in one day international conference on "Frontiers in Biotechnology" organized by Department of Biotechnology, Nandha Arts and science College, Erode on 3rd February 2017 and in two days international symposium on "Bioscience research for present and future" (Biomillennium'17) organized by Department of Biotechnology, Vivekanandha College of Arts and Science for Women, Tiruchengode on 7th and 8th March 2017. She also participated in one day workshop on "Analysis of spectral data" on 30th January 2017 organized by Center for Research, Dr. N.G.P. Arts and Science College, Coimbatore.

CONFERENCE-MARINA'16

Our Department has organized One Day National Conference on "Genomics and Proteomics in Bioprospecting-Role in Healthcare Development" on 21st December 2016 sponsored by Indian Council of Medical Research, New Delhi, Department of Biotechnology, New Delhi and Kovai Medical Centre and Hospitals Coimbatore.

Name of the Resource Person	Address	Topic
DR.G.N.Hariharan	Director Department of Biotechnology MS Swaminathan research Foundation, Chennai.	Bioprospecting of Lichens -Potential Basket of Therapeutically important Biomolecules.
DR. M. Palanisamy	Scientist 'C', Southern Regional Center, Botanical Survey of India Coimbatore.	Seaweed Resources of Indian Coast - Role in Bioprospecting
DR. S.Kaliamoorthy	Scientist 'C', Southern Regional Center, Botanical Survey of India Yercaud.	Plant Biodiversity & Conservation with a Special note on Orchids
DR. P. Sundaresan	Senior Scientist, Department of Genetics, Aravind Medical Research Foundation, Madurai.	Role of Genomics in Curing Ocular Diseases
DR. Modhumita Dasgupta	Scientist F, Division of Plant Biotechnology, Institute of Forest Genetics and Tree Breeding Coimbatore.	Harnessing Genomic Resources in Tree Species : Challenges and Opportunities
DR. Prakash Motiram Halami	Senior Principle Scientist CSIR – Central Food Technological Research Institute (CFTRI), Mysore.	Bioprospecting of Microorganisms for Value addition in Food
DR. Ranjith N Kumavath	Assistant Professor, Department of Genomic Science, School of Biological Science, Central University Kerala, Kasargod, Kerala.	Next Generation Bioactive Peptides from Microbes
DR.Chitraa Thangavel	Research Co-ordinator, Ganga Orthopedic Research and Education Foundation (GOREF) Coimbatore.	Proteomics of Disc Degenerative Disorders

Invited Lectures/Talks

08.08.2016	DR. K. S. G. Arulkumaran Vice Principal KMCH College of Pharmacy Coimbatore - 641 048.	Seed Galactomannans: an overview of production and Industrial applications
09.08.2016	Mr. Prince Daniel Managing Director Smart Choice Jobs,Ooty	Career Opportunities for Life Science Students
10.08.2016	Dr. R. T. Rajendra Kumar Associate professor Department of Nanoscience and Technology Bharathiar University Coimbatore - 641 046.	Applications of Nanotechnology
11.08.2016	Mrs. N. Mangaleshwari Manjari Assistant Professor KMCH Institute of Health Sciences Coimbatore.	Mental Well Being
09.09.2016	DR. Prakash M. Halami Senior Principal Scientist & Professor, Department of Microbiology & Fermentation Technology, CSRI- Central Food Technology Research Institute Mysore.	New trends for Biotechnology career Development
17.02.2017 (FN)	Dr. G. Kalyan Kumar, Technical Manager and Head, Department of Toxicology, Vanta Biosciences, Kemin Industries South Asia Pvt.Ltd Chennai.	Perspectives of Drug Discovery and its Opportunities
17.02.2017 (AN)	Dr. A. Balamurugan, Manager Field evaluation-Agro products & Exports, T Stanes Company Limited Coimbatore.	Development of Biocontrol agent in Agriculture

University Rank Holders (April 2016)

B.Sc Biotechnology

G.Sandhiya - IX Rank

STUDENTS ACHIEVEMENTS :

Name of the Student	Date	Competition	Venue	Prize
J.Niranjana	20.07.2016	Essay Writing	Department of MHM Dr.N.G.P Arts and Science College	II Prize
Abilash. G	21.07.2016	English Speech	Department of MHM Dr.N.G.P Arts and Science College	III Prize
B.Chandra Priya Alice Keerthana	17.08.2016	Poster presentation	Brave Bharath Department of MIB Dr.N.G.P Arts and Science College	III Prize
J.Niranjana R.Sarjun	17.08.2016	Poster presentation	National Conference organized by Department of Food and Nutrition Dr.N.G.P Arts and Science College	II Prize
J.Niranjana	23.08.2016	Paper presentation	Bio zenith Department of Biochemistry Dr.N.G.P Arts and Science College	II Prize
J.Niranjana P.Suganya R.Sownthariya B.Rejesh	23.08.2016	Treasure Hunt	Bio zenith Department of Biochemistry Dr.N.G.P Arts and Science College	I Prize
N.A. Gowtham	26.08.2016	Professional Hunt	Memonic dynamics Department of B.Com (PA) Dr.N.G.P Arts and Science College	I Prize
M.Vignesh	26.08.2016	Professional Hunt	Memonic dynamics Department of B.Com (PA) Dr.N.G.P Arts and Science College	II Prize
K.K. Priyadharshini	03.10.2016 & 04.10.2016	Intercollegiate Ball Badminton	Nirmala College for women Coimbatore	III Prize
K.K. Priyadharshini	03.10.2016 & 04.10.2016	Intercollegiate Ball Badminton	Nirmala College for women Coimbatore	III Prize
K.K. Priyadharshini	05.10.2016	Tennis	Bharathiar University	III Prize
S.A. Shahul Hameed	18.10.2016	Intercollegiate Ball Badminton	Pollachil	V Place

R.Surya	23.12.2016	Solo Song	Inter Department Competition Dr.N.G.P. Arts and Science College	III Prize
U. Deepak Kumar	30.01.2017	Taekwondo	Inter-Collegiate Tournament CMS College of Arts and Science, Coimbatore	III Place
J.Niranjana B.Rejesh	24.02.2017	Paper Presentation	Department of Biochemistry Dr.N.G.P Arts and Science College	I Prize
Ayushi Somvanshi	08.03.2017	Poster Making	Department of Nutrition and Dietetics, Dr.N.G.P Arts and Science College	II Prize
J.Niranjana B.Rejesh	09.03.2017	Paper Presentation	Department of MBA Dr.N.G.P Institute of Technology	II Prize
J.Niranjana R.Sarjun	09.03.2017	Paper Presentation	Department of CLT Dr.N.G.P Arts and Science College	I Prize



Invited lecture on “Applications of Nanotechnology” by Dr. R. T. Rajendra Kumar, Associate Professor, Department of Nanoscience and Technology, Bharathiar University, Coimbatore-641046 on 10.08.2016

One day State Level Training Programme on “Biochemical Techniques – A Practical Approach” conducted by Department of Biotechnology, Dr.N.G.P. Arts and Science College, Coimbatore on 31.08.2016



One day Hands on Training Programme on “Immunology and Molecular Biology Techniques” by Dr. V. Saravana Perumal, Managing Director, Abbes Biotech, Chennai on 27.09.2016



9th National Conference on “Genomics and Proteomics in Bioprospecting – Role in Healthcare Development” on 21.12.2016. The conference was sponsored by Indian Council of Medical Research, Department of Biotechnology, New Delhi and Kovai Medical Center & Hospital, Coimbatore.

Extension Activity - Awareness program on Mushroom cultivation to the public of Karuparayanpalayam village Coimbatore on 10.01.2017



Nano carriers for micro RNA delivery in cancer medicine

The number of deaths caused by cancer is increasing due to the lack of selectively and undesirable systemic effects of current treatments. Advance in the understanding of micro RNA (mi RNA) function and the ideal properties of nanosystems have brought increase in attention to the application of nanomedicine to cancer. This covers the different miRNA therapeutic strategies and delivery challenges for its application in cancer medicine. Current trends are in inorganic, polymeric and lipid nano carrier development.

To achieve clinical success in deep knowledge of the effects of the promotion or inhibition of specific mi RNAs is required. The dose and length of treatment is fixed by studying the duration of gene silencing. Additional effort should be given to develop specifically targeted delivery systems to cancer cell to reduce doses and unwanted effects. In the near future the combination of mi RNA with other therapeutic approaches is likely to play an important role in addressing the heterogeneity of cancer.

J. MATHRI DEVI, II-B.Sc Biotechnology

Synthetic immunology-Hacking immune cells to expand their therapeutic capabilities

The ability of immune cells to survey tissues and sense pathologic insults and deviations makes them a unique platform for interfacing with the body and disease. With the rapid advancement of synthetic biology, we can now engineer and equip immune cells with new sensors and controllable therapeutic response programs to sense and treat diseases that our natural immune system cannot normally handle. The current state of engineered immune cell therapeutics and their unique capabilities compared to small molecules and biologics. How engineered immune cells are being designed to combat cancer, focusing on how new synthetic biology tools are providing potential ways to overcome the major roadblocks for treatment. Finally, a long-term vision for the use of synthetic biology to engineer immune cells as a general sensor-response platform to precisely detect disease, to remodel disease microenvironments, and to treat a potentially wide range of challenging diseases. Engineered cells have the potential to operate as much smarter therapeutics compared to traditional small molecules and biologics. Small-molecule and macromolecular drugs are designed to disrupt the function of a specific target molecule. In contrast, living cells-particularly immune cells-can execute more comprehensive response programs. They are able to detect combinatorial environmental inputs and use this information to initiate equally complex, nuanced, and controlled therapeutic responses.

N.BHARATHI, II-B.Sc Biotechnology

Predicting toxicity of cancer drugs using Human "Heart cells"

The human heart cells that are generated from the adult stem cells are used by the Researchers to find out how toxic Tyrosine kinase inhibitor (TKI ?s) which is used as Cancer Drug to human cells. The 26 TKI ?s which are used to treat cancers affects the patient in heart and causes disorders like irregular heart beat or heart failure. A study in Science Translational Medicine, used stem cells- derived from heart cells to develop a "Cardiac Safety Index" that measures that to which extent TKI's kill or alter the function of heart cells. These studies were preceded using stem cells derived from heart cells which were taken from women affected with Breast cancer. With the help of these studies one can predict how sensitive each women's heart cells are to these kinds of drugs. Tests could ultimately help the Pharmaceutical Industries to identify drugs that causes heart related side effects by the Drug Development Process and help the FDA (Food and Drug Administration) during the drug review and approval processes.

B.CHARDRAPRIYA

II-B.Sc Biotechnology

DNA Barcoding

DNA bar coding is a tool for rapid species identification based on DNA sequences. In 2003, Paul Herbert, University of Guelph in Ontario, Canada proposed "DNA Barcoding" and published a paper titled as "Biological identification through DNA barcodes". DNA barcodes uses a very short segment of DNA as a standard region . DNA barcoding is similar to UPC (Universal Product Code). The standard barcode of animal group is 648bp region in Mitochondrial cytochrome Coxidase gene (CO1) but in plants, there are two regions in the Chloroplast matK and rbcL which has been approved as barcode region for plant. The barcode region is isolated , replicated using a process called PCR Amplification and then sequenced as ATGC. Once barcode sequence has been obtained, it is placed in the Barcode Of Life Data system (BOLD). BOLD is a reference library of DNA barcodes that can be used to identify unknown species . There are many researchers involved in constructing comprehensive DNA barcode library for Eukaryotic life. The iBOL (International Barcode Of Life) project seeks to stimulate development of a portable device to support on site analysis quickly and cheaply in future.

APPLICATION

Controlling Agricultural pest, Identifying disease vectors, Sustaining natural resources, Protecting endangered species Monitoring water quality, Routine authentication of natural health products, Identifying of plant leaves even if flowers or fruits are not available, Identification of medicinal plants.

S.KIRUTHIKA

II-B.Sc Biotechnology

Knock down of the myostatin gene by RNA interference increased body weight in chicken

Myostatin is a negative regulator of muscular growth in poultry and other animals. Of several approaches, knocking down the negative regulator is an important aspect to augment muscular growth in chicken. Knock down of myostatin gene has been performed by shRNA acting against the expression of gene in animals. Two methods of knock down of gene in chicken such as embryo manipulation and sperm mediated method have been performed. The hatching percentage in embryo manipulation and sperm mediated method of knock down was 58.0 and 41.5% respectively. The shRNA in knock down chicken enhanced body weight at 6 weeks by 26.9%. The dressing percentage and serum biochemical parameters such as SGPT and alkaline phosphatase differed significantly ($P < 0.05$) between knock down and control birds. It is concluded that knocking down the myostatin gene successfully augmented growth in chicken.

OVIYASHRI .B

I - B.Sc Bio technology

Plant Extract Mutes Germs to Fight Infections

People need catheters for a variety of reasons, mainly for being unable to control bladder or some types of surgery can make it painful to pee. Catheter can pick up germs when they are inserted into the body. One of the most common species they pick up is *Staphylococcus epidermis*. This microbe inside the body finds far friendlier growth conditions. It is warm and moist and they are protected. This permits the bacteria to multiply. When they proliferate into mobs, their behavior changes worsely. The germs send chemical signals to each other in a process called Quorum sensing. Biofilms stick to surfaces, including catheters. The slimy film protects a community of germs, making it difficult for the body - or drugs - to kill. The tubing of the catheter is often made from flexible polymers such as silicones. One common type is PDMS (polydimethylsiloxane).

The plant extracts of the sweet chestnut tree (*Castaneasativa*) interfere with quorum sensing among *Staphylococcus* germs. It grows from Europe to Southwestern Asia. So the extract of this plant can be used as a part of the material used to make catheters. The dried leaves of this plant are ground and soaked them in ethanol for 24 hours. The leaves are filtered out and collected the liquid, which is the extract. This extract is diluted with different amounts of water to make different concentration solutions. To the small disks of PDMS, various amounts of extracts were added and mixed. Experiment was also carried out using silver nanoparticles instead of extract. The materials were in the weight ratio 10:1:1 (weight of PDMS:weight of the liquid:weight of the extract/nanosilver). A control was also maintained with water instead of extract/nanosilver.

The silicone disks were placed in mixtures of urine and bacteria. It was heated at 37°C. After a while incubation, a stain was added to the mix. It would glow in certain types of light if the bacteria had formed biofilms. It was observed that PDMS disk with silver nanoparticles stifled biofilm growth. The disks with weakest solutions of the extract and the plain water did not. The full strength extract cut the biofilm growth even more, to just 3% of what fouled the untreated disks. These results hint that the plant extract could be used to retard bacterial growth in all sorts of medical devices. It is also cost effective on comparing with nanoparticles.

SURYA R

I- M.Sc Biotechnology

Allium cepa (Onion) as herbal drug for the treatment of Diabetes Mellitus.

Diabetes is a popular human ailment affecting many from various walks of life in different countries. Many researchers are working on the anti-diabetic properties of various herbal and synthetic drugs to reduce diabetes and its secondary complications. Rather than the synthetic drugs, the herbal and naturally derived drugs are preferred at the present scenario due to lesser side effects and low cost. There are many herbal drugs used in the treatment of diabetes mellitus, one among them which is at its early phase of discovery is *Allium cepa* (onion). Onion affects blood sugar in humans i.e., onions have hypoglycemic effect for the people with diabetes. The sulfur compound called allyl propyl disulphide may result in increased insulin production and lower blood glucose levels. The compounds are isolated from seedling, seeding parts and callus cultures of onion and are tested for antidiabetic activity by feeding the tissue-extracts to diabetic rats. It was observed that the callus culture showed much higher antidiabetic activity than natural bulbs of onion.

S. PRIYANGA

I M.Sc Biotechnology

Zika Grabs Neural Stem Cell Protein to Cause Damage

When the Zika virus enters neural stem cells, a protein called Musashi-1 (MSI1) latches on to the virus's RNA genome, somehow promoting viral replication. Blocking the cells' ability to produce MSI1 significantly inhibits Zika's ability to reproduce, according to an *in vitro* study published today in Science. The interaction between the virus and the human protein appears to make the neural stem cells more vulnerable to cell death. Moreover, by binding to the Zika genome, MSI1 was less likely to bind its natural targets within the neural stem cells to properly direct brain development, as evidenced by differences in the cells' gene expression. The results provide clues as to how Zika causes microcephaly in fetuses whose mothers were infected while pregnant. Indeed, the team also found that a rare type of inherited microcephaly called autosomal recessive primary microcephaly is associated with mutations in MSI1. We've shown for the first time this interaction between Zika and MSI1-with MSI1 getting exploited by the virus for its own destructive life cycle, turning MSI1 into the enemy within," coauthor Fanni Gergely from the University of Cambridge says in a press release. "We hope that in the future this discovery could lead to ways of generating potential Zika virus vaccines. This is the first study to show a clear link between a specific protein, the Zika virus, and microcephaly," adds Mike Turner, head of Infection and Immuno biology at the Wellcome Trust, which partly funded the study. "This new finding really helps to explain why neural stem cells are so vulnerable to Zika infection and I hope this can be a first step in determining how we could stop this interaction and disease.

VISHNU. B

I - B.Sc Biotechnology

Molecular Farming

Molecular farming is a new technology that uses plants to produce large quantities of Pharmaceutical substance such as vaccines and antibodies. A number of vaccines, antibodies. And other therapeutic substances are made in plants such as tobacco, maize, potato and carrot. Some of them are already commercially available or in advanced clinical trials. Producing pharmaceutical components plants is easy and efficient compared to conventional production methods. Typically, animals or microbial cell cultures are used to produce vaccines but costs associated with maintenance, safety, storage and transport are 80% higher compared to plants- derived vaccines. Molecular farming to make vaccines cheap and easy to access where it is most needed has proved difficult. Economic benefits of this production system will enable production of more recombinant antibodies in this manner in the future.

S.S.SHIRAKSHAYA

II- B.Sc Biotechnology

Development of Biodegradable Nanocarriers Loaded with Monoclonal Antibody for cancer treatment

Treatments utilizing monoclonal antibody therapeutics against intracellular protein-protein interactions in cancer cells have been limited to targeting extracellular or secreted antigens because in the infrequent event that non-receptor mediated endocytosis of an antibody occurs the antibody will be destined for the harsh environment of the lysosome and thus rendered inactive. One strategy to overcome this obstacle and achieve intracellular delivery of antibodies is to encapsulate the antibody molecules within polymeric nanoparticles. The nanoparticles can protect the antibody while in transit through the circulation and when the nanoparticles are endocytosed by the cancer cells they have the ability to rapidly escape from the lysosomal compartment, degrade, and release the antibody molecules inside the cancer cell's cytoplasmic compartment. This work examines the feasibility of encapsulating monoclonal antibodies within poly (lactic-co-glycolic acid) (PLGA) nanoparticles using a water/oil/water double emulsion solvent evaporation technique. This method can be used to prepare protective polymeric nanoparticles for transporting functional antibodies to the cytoplasmic compartment of cancer cells. Nanoparticles were formulated and then characterized using a number of physical and biological parameters. The average nanoparticle size ranged from 221 to 252 nm with a low polydispersity index. The antibody molecules were released from the nanoparticles in a sustained manner and upon release maintained functionality. Therefore it indicates that a PLGA-based antibody nano-formulation is a promising intracellular delivery vehicle for a large number of new intracellular antibody targets in cancer cells.

VIDHYA.J

I - M.Sc Biotechnology



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