The Scientistt
Exploring Science • Promoting Innovation

GSEBB2022

2nd Global Summit and Expo on Biotechnology and Bioscience

October 20, 2022 **Virtual**

The Scientistt
Bangalore, Karnataka, India
Contact: +91 8977940575
Email: contact@thescientistt.com

FOREWORD

Dear Colleagues,

It is a great pleasure to announce that The Scientistt will host the 2nd Global Summit and Expo on Biotechnology and Bioscience (GSEBB2022) will be held Virtual during October 20-22, 2022.

GSEBB2022 aims to bring together the renowned researchers, scientists and scholars to exchange ideas, to present sophisticated research works and to discuss hot topics in the field and share their experiences on all aspects of Biotechnology and Bioscience.

The GSEBB2022 will be a 3 days event that means to gather the key players of the Biotechnology and Bioscience community and related sectors. This event is launched with the aims to become an established event, attracting global participants, intent on sharing, exchanging and exploring new avenues of Biotechnology and Bioscience-related scientific and commercial developments.

A wide-ranging scientific program consisting of plenary lectures, keynote lectures, Invited lectures, parallel sessions, as well as poster sessions for young scientists covering all topics in Biotechnology and Bioscience will be scheduled. This conference provides a wonderful opportunity for you to enhance your knowledge about the newest interdisciplinary approaches in Biotechnology and Bioscience.

Moreover, the conference offers a valuable platform to create new contacts in the field of Biotechnology and Bioscience, by providing valuable networking time for you to meet great personnel in the field.

We look forward to seeing you at GSEBB2022 in Virtual (Webinar).

COMMITTEES

Organizing Committee

William Cho	Queen Elizabeth Hospital, Hong Kong
Pauk János	Cereal Research Non-Profit Ltd, Hungary
Ahmed Hegazi	National Research Center, Egypt
Seyed Ghorashi	Charles Sturt University, Australia
Sergey V Petoukhov	Russian Academy of Sciences, Russian Federation
Mirela OlympiaFagarasan Palmer	University of Southern California, USA
Jian-Jiang Zhong	Shanghai Jiao Tong University, China
Ranadhir Chakraborty	University of North Bengal, India
Maulin Shah	Environmental Microbiology Lab, India
Jianmin Chen	Fudan University, China
Ales Prokop	Vanderbilt University, USA
Vishnu Narayan Mishra	Indira Gandhi National Tribal University, India
Holger Mühlberger	Hamburg University of Applied Sciences, Germany
Nataliia Rzhevska	State Pedagogical University, Ukraine
Alex Kalamkarov	Dalhousie University, Canada
Mohiuddin Kabir	East West University, Bangladesh
Farid Menaa	University of California San Diego, USA
Peter Elias Kidibule	Autonomous University of Madrid, Spain
Yonathan Zohar	University System of Maryland, USA
Siti Aqlima Ahmad	Universiti Putra Malaysia, Malaysia
Sara Ravaioli	IRCCS, Italy

Virtual Presentations

M. Tanaka*

M. Tanaka*, S. Kobayashi, S. Nishimura, K. Nishida, S. Shiomoto, D. Murakami, T. Anada

Institute for Materials Chemistry and Engineering, Kyushu University, Japan
*Email: masaru_tanaka@ms.ifoc.kyushu-u.ac.jp

Design and Synthesis of Biocompatible Polymers base on the Intermediate Water Concept

Abstract

Water molecules play a crucial role in bio-interfacial interactions, including protein adsorption/desorption and cell adhesion behavior. To understand the role of water in the interaction of proteins and cells at biological interfaces, it is important to compare the states of hydration water with various physicochemical properties of hydrated biomaterials. Here, we present the fundamental concepts for determining the interactions of proteins and cells with hydrated materials along with selected examples corresponding to our recent studies, for example, poly(2-methoxyethyl acrylate) (PMEA), PMEA derivatives, zwitterionic polymers, poly(ethylene glycol), and poly(2-oxazoline)s, and other biomaterials including biomolecules/polymers (DNA, RNA, proteins, and polysaccharides). The states of water were analyzed by differential scanning calorimetry, in situ attenuated total reflection infrared spectroscopy, and surface force measurements. We found that intermediate water which is loosely bound to a biomaterial, is a useful indicator of the biocompatibility of material surfaces. This finding on intermediate water provides novel insights and helps develop novel experimental models for understanding protein adsorption in a wide range of materials, such as those used in biomedical applications.

Recent references about the Intermediate water in hydrated polymers

Biomacromolecules, 23, 2999 (2022). J. Phys. Chem. B, 126, 4143 (2022). Biomacromolecules, 23, 2999 (2022). Macromolecules, 55, 15 (2022). ACS Biomater. Sci. Eng., 8, 672 (2022). Langmuir, 38, 1090 (2022). Biomacromolecules, 22, 1569 (2022). J. Phys. Chem. B, 126, 1758 (2022). Science Advances, 7, eabi6290 (2021). Macromolecules, 54, 8067 (2021). Macromolecules, 54, 2862 (2021). ACS Biomater. Sci. Eng., 7, 2383 (2021). J. Phys. Chem. B, 125, 7251 (2021). Langmuir, 37, 8534 (2021). Macromolecules, 54, 8067 (2021). ACS Biomater. Sci. Eng., 6, 6690 (2020). Macromolecules, 53, 8570 (2020). ACS Appl. Polym. Mater., 2, 4749 (2020). ACS Biomater. Sci. Eng., 6, 3915 (2020). ACS Biomater. Sci. Eng., 6, 2855 (2020). ACS Appl. Bio Mater., 3, 1858 (2020). Biomacromolecules, 20, 2265 (2019). Langmuir, 35, 2808(2019). ACS Appl. Bio Mater., 3, 981(2019). ACS Appl. Bio Mater., 2, 4154 (2019). Adv. Healthcare Mater. 8, 1900130 (2019). Science Advances, 4, eaau2426 (2018). etc.

Biography

He worked for TERUMO Co. (Leading Medical Devices and Tissue Engineering Company) and designed novel biocompatible polymers and commercialized as medical devices such as catheters, and artificial lung and heart (Global market share No.1). In 2000 he moved to Hokkaido University and in 2007 he moved to Tohoku University. Stents covered with the self-organized porous 3D films are commercially available in the world clinical market (over 250 original patents). In 2009 he was awarded a full professorship at Yamagata University. He became a leader of Funding Program for Next Generation World-Leading Researchers (NEXT Program, Japan 2011-2014). Since 2015, he has been at Kyushu University as a full Professor. Thus far, he has published over 200 papers

in peer reviewed journals (H-index 56) and has received the Award for the Japanese Society for Biomaterials 2021 for his intermediate water concept for biomaterials discovery.

Hans-Uwe Dahms[1-3]

[1]Department of Biomedical Science and Environmental Biology, Kaohsiung Medical University, Kaohsiung City-807,Taiwan; e-mail: hansd@kmu.edu.tw
[2]Research Center for Environmental Medicine, Kaohsiung Medical University, Kaohsiung
[3]Department of Marine Biotechnology and Resources, National Sun Yat-Sen University, Kaohsiung

How valuable are Bioresource Information from Hydrothermal Vents (HVs)?

Abstract
Hydrothermal vents (HVs) are unique and ancient extreme environments that provide several advantages for the advancement of life sciences as well as for pharmacology and medicine. Subsurface HVs may provide a particular advantage to better understand evolutionary conditions of planet earth and future climate predictions since HVs share several similarities with early earth scenarios as well as with projected global and climate changes. This holds for general HV characteristics such as low oxygen and pH on the one side, but otherwise high temperature and high natural toxicant exposure, such as to nitrite, (hydrogen)sulfite, carbon dioxide, trace metals, and other trace elements. Three examples from our different research approaches high light the importance of shallow HVs for marine technologies and different applied research. In particular are shallow HVs, such as those at Kueishantao (Turtle Island) at the NE coast of Taiwan are providing useful natural laboratories and genetic resources for metabolites and molecular functioning. They are easily accessible for the harvest of biological samples and for short- and long-term experiments. These HVs are, therefore, intensively studied by several national and international research teams.

Keywords
Biomonitoring, oceanography, natural laboratory, physico-chemical factors, bioresource, evolutionary adaptation.

Biography
Dr. Hans-Uwe Dahms is a professor at Kaohsiung Medical University. He is interested in environmental health as it affects human public health, and particularly in responses to stressors at different integration levels. He, his colleagues and students study the causes, mechanisms, pathways, and prevention of pollution and the toxicology of stressors from physical, chemical, and biological sources, particularly in aquatic environments. He is equally interested in the spread and prevention, especially of infectious diseases and antibiotic-resistance, and in food and drink safety from water sources, particularly at a scenario of global and global climate change. His studies further include integrative and sustainable approaches in environmental and public health monitoring, risk assessment, remediation, and management. He advised more than 25 Ph.D. students in their research and was writing and publishing more than 300 papers in scientific journals. He served as a reviewer for more than 86 SCI journals and is editorial board member of 16 scientific journals, academic editor for Environmental and Public Health of PLosONE, and specialty chief editor for FRONTIERS in Marine Pollution.

Siva Kumar Manickam

Professor of Chemical and Nanopharmaceutical Process Engineering
Department of Petroleum and Chemical Engineering,
Deputy Dean (Research), Faculty of Engineering
Universiti Teknologi Brunei (UTB)

Email: manickam.sivakumar@utb.edu.bn

Cavitation: A Technological Solution for the Generation of Pharmaceutical Nanoemulsions and Functionalized Carbon Nanomaterials

Abstract

An increasing number of newly developed drugs are sparingly soluble in water and are often also insoluble in organic solvents. Thus, the formulation of these drugs impedes their clinical application. Due to their exceedingly low solubility, these drugs frequently possess poor bioavailability. Common ways of solving this problem include using solubilisers, cyclodextrins, and mixtures of solvents. However, these methods have various shortcomings. An alternative in attempts to overcome the obstacles existing with these methods is the formulation of drugs as nanoemulsions induced by simple processing, as any new process technology in the generation of nanoemulsions will have a direct impact and great promise for the future of cosmetics, diagnostics, drug therapies and biotechnologies. Cavitation offers a simple way to generate various pharmaceutical nanoemulsions. Besides nanoemulsions, cavitation is also very powerful in generating functionalised carbon nanomaterials to be employed in the pharmaceutical area. Where cavitation seems promising in reducing the time, avoiding toxic or complicated agents, reducing the amount of stabilisers/ surfactants and reducing the separation/purification problems. In the case of Graphene, it results in an exceptionally stable dispersion. Whereas, for CNTs, cavitation renders them dispersing into the water and stabilises them longer. For Fullerene, it enhances the number of hydroxyl groups on the surface, increasing water solubility. Overall, employing cavitation provides a facile strategy to overcome the inherent disadvantages existing with the traditional methods in the generation of nanoemulsions and in the functionalisation and dispersion of carbon nanomaterials, the resultant of which are very useful in drug delivery and biosensing.

References

1. State of the Art and Recent Advances in the Ultrasound-assisted Synthesis, Exfoliation and Functionalisation of Graphene Derivatives, Kasturi Muthoosamy and Sivakumar Manickam, Ultrasonics Sonochemistry, 39, 478-493, 2017.
2. Acoustic cavitation induced generation of stabiliser-free, extremely stable reduced graphene oxide nanodispersion for efficient delivery of paclitaxel in cancer cells, Renu Geetha Bai, Kasturi Muthoosamy, Fiona Natalia Shipton and Sivakumar Manickam, Ultrasonics Sonochemistry, 36, 129-138, 2017.
3. Sonochemical and Sustainable Synthesis of Graphene-Gold (G-Au) Nanocomposites for Enzymeless and Selective Electrochemical Detection of Nitric Oxide, Renu Geetha Bai, Kasturi Muthoosamy, Meifang Zhou, Muthupandian Ashokkumar, Nay Ming Huang and Sivakumar

Manickam, Biosensors and Bioelectronics, 87, 622-629, 2017.
4. Conjugation of Insulin onto the sidewalls of single-walled carbon nanotubes (SWCNTs) through functionalisation and diimide-activated amidation, Chee Meng Ng, Kasturi Muthoosamy, Nanthini Sridewi and Manickam Sivakumar, International Journal of Nanomedicine, 11, 1607-1614, 2016.
5. Functionalized Fullerene (C60) as a potential Nanomediator in the fabrication of highly sensitive Biosensors, Sadia Afreen, Kasturi Muthoosamy, Sivakumar Manickam and Uda Hashim, Biosensors and Bioelectronics, 63, 354-364, 2015.
6. Improved Functionalisation and Recovery of Carboxylated Carbon Nanotubes using the Acoustic Cavitation approach, Chee Meng Ng and Manickam Sivakumar, Chemical Physics Letters, 557, 97-101, 2013.
7. Curcumin-loaded sterically stabilised Nanodispersion based on non-ionic colloidal system induced by Ultrasound and Solvent Diffusion-Evaporation, Tan Khang Wei, Siah Ying Tang, Renjan Thomas, Vasanthakumari Neela and Manickam Sivakumar, Pure and Applied Chemistry, 88(1-2), 43-60, 2016.
8. Cavitation Technology – A Greener Processing Technique for the Generation of Pharmaceutical Nanoemulsions, Ultrasonics Sonochemistry, Sivakumar Manickam, Siah Ying Tang and Tan Khang Wei, 21(6), 2069-2083, 2014.
9. Generation and optimisation of palm oil-based oil-in-water (O/W) Submicron emulsions and encapsulation of curcumin using liquid whistle hydrodynamic cavitation reactor (LWHCR), Shridharan Parthasarathy, Tang Siah Ying and Sivakumar Manickam, Industrial and Engineering Chemistry Research, 52(34), 11829-11837, 2013.
10. A Novel and Facile Liquid Whistle Hydrodynamic Cavitation Reactor to Produce Submicron Multiple Emulsions, Siah Ying Tang and Sivakumar Manickam, American Institute of Chemical Engineering Journal (AIChEJ), 59(1), 155-167, 2013.
11. Anti-inflammatory and Analgesic activity of novel oral Aspirin-loaded Nanoemulsion and Nano multiple emulsion formulations generated using Ultrasound Cavitation, Siah Ying Tang, Sivakumar Manickam, Angela Min-Hwei Ng and Parthasarathy Shridharan, International Journal of Pharmaceutics 430, 299-306, 2012.
12. Formulation Development and Optimisation of a Novel Cremophore EL-based Nanoemulsion using Ultrasound Cavitation, Siah Ying Tang, Manickam Sivakumar, Tan Khang Wei and Nashiru Billa, Ultrasonics Sonochemistry, 19(2), 330-45 (2012).
13. Ultrasound cavitation as a Green Processing Technique in the Design and Manufacture of Pharmaceutical Nanoemulsions in drug delivery system, M. Sivakumar, Siah Ying Tang and Khang Wei Tan, In Green Chemistry for Environmental Remediation, Eds., R Sanghi and V Singh, Scrivener, Wiley, Chapter No: 7, Page No: 155-208, 2012.

Biography

Professor Sivakumar Manickam is a Chemical Engineer specializing in the process engineering of nanomaterials, especially nanopharmaceuticals. Currently, he is working with UTB, Brunei; earlier, he worked with the University of Nottingham, International Campus, Malaysia. His research focuses on the process development of cavitation-based reactors towards technologically important nanomaterials, greener extraction of natural products, water treatment, development of pharmaceutical nanoemulsions and utilizing novel carbon nanomaterials to design biosensors for the earlier detection of cancer and diabetes. He took various leadership roles at the University of Nottingham, including Director of Research, Founding Director for the Centre for Nanotechnology and Advanced Materials, Head - Manufacturing and Industrial Research Division and Associate Dean for Research and Knowledge Exchange. He is also the Deputy Dean (Research) of the Faculty of Engineering at UTB. He has completed over 20 industrial and government-funded projects and supervised more than 50 research students. He has published ~250 peer-reviewed journal and

conference papers. His h-index is 52 (scholar google). He is also the Executive Editor of Ultrasonics Sonochemistry (Elsevier, Q1, IF 9.3) Journal. He serves as a board member of the Asia Oceania Sonochemical Society (AOSS), as well as the Fellow of Higher Education Academy (UK) and Fellow of the Royal Society of Chemistry (FRSC).

Chee Kong Yap*
[1]Department of Biology, Faculty of Science, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.
*Corresponding author: yapckong@hotmail.com ; yapchee@upm.edu.my

From Biomonitoring to Human Health Risk Assessments of Potential Toxic Metals on the Commercial Marine Mussels

Abstract
For 40 marine green-lipped mussel Pernaviridis populations collected (2002–2009) from 20 geographical sites located in two busy shipping lanes, namely the Straits of Malacca (10 sites; 16 populations) and the Straits of Johore (8 sites; 21 populations), as well as three populations (2 sites) on the east coast of Peninsular Malaysia, concentrations of six potentially toxic metals (Cd, Cu, Fe, Ni, Pb, and Zn) were determined. The maximum permissible limits (MPLs) specified by current food safety standards were not reached for any of the metal concentrations detected in any mussel populations. None of the studied metals (aside from Pb) were likely to become limiting factors or to pose a risk for the consumption of mussel populations based on the provisional tolerable weekly intake established by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the oral reference doses (ORDs) established by the USEPA. For average level mussel (ALM) and high level mussel (HLM) users of mussels, the estimated daily intake (EDI) of Cd, Cu, Fe, Ni, and Zn was lower than the ORD standards. The target hazard quotient (THQ) was found in some sites to be larger than 1 for HLM customers but less than 1 for ALM customers. Therefore, ALM's eating of mussels did not pose any risks to human health. However, for Pb THQ values, the Pb concentrations in some mussel populations may be hazardous to human health. The current findings suggest that HLM users should limit their consumption of mussels in order to reduce any potential health risks brought on by heavy metals.

Keywords
Mussel; Health Risks; Biomonitor; Consumption.

Biography
Chee Kong Yap is working as a full professor at Universiti Putra Malaysia (UPM) since 2021. Prof Yap is an academician for more than 19 years at UPM and 24 years as a researcher. Prof Yap has supervised more than 80 undergraduates and 31 postgraduate students in the fields of ecotoxicology, environmental biology, environmental sciences, water quality and ecotoxicological genetics. Prof Yap has published more than 330 papers in refereed academic journals, 5 books (three of them published in NOVA Science Publishers, USA) and 32 book chapters. Until September 2022, 218 of them have now been indexed in Elsevier's Scopus with an H-index of 32(> 3130 citations).Prof Yap has also been invited in honorary as Editorial Board member for more than 30 international academic journals. Prof Yap has been an invited visiting researcher at the National Institute of Environmental Studies, Tsukuba (Japan). Internationally, Prof Yap has been an invited visiting scholar at Nihon University (Japan) and Hokkaido University (Japan), and an invited visiting researcher at Kobe University (Japan) and Kobe College (Japan). He has been invited to more than 20 international conferences as a keynote or plenary speaker. He has one accepted patent in the Phytoremediation method. He has also been listed as World's Top 2% Scientists (The Career Achievement). Starting June 2022, Prof Yap has been officially appointed as an Adjunct Professor

at the INTI International University Malaysia. Prof Yap is the recipient of the International Advanced Materials (IAAM) Medal in recognition for his contribution to “Chemical Safety and Sustainability” in 2022. He is currently International Associate Member of Japan Society of Water Environment and a Lifetime Fellow Member of the International Society for Development and Sustainability (ISDS) of Japan. His profile has been recognized as ‘Award for Outstanding Contribution to Education’ by International Research and Development Centre for Publication (IRDCP), India 2022.

Azli Yahya

School of Biomedical Engineering & Health Sciences, Faculty of Engineering
Universiti Teknologi Malaysia

Post Pandemic Research in Field of Biomedical Engineering

Abstract

COVID-19 or Coronavirus Disease – 2019 was first reported in Wuhan, China. The disease caused by a highly contagious viral infection due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus causes many symptoms, such as fever, shortness of breath and cough. It was then spread throughout the world and has been declared a global pandemic, infecting millions of people as well as deaths worldwide. As a results, almost all countries imposed a lockdown in order to curb the spread of the virus. People has stayed at home for a long period of time, companies have been forced to shut down, which result in a downfall of local economic. The people's ecosystem has been badly affected by this pandemic. To date, the complete cure for the virus is yet to be found. However, preventive measures have been introduced by academies, industries, societies and communities as to limit the spread of the virus. This paper attempts to review some of the research activities that related to the post pandemic recovery research in field of Biomedical Engineering and Health Sciences particularly in Asean countries.

Face mask has become one of the effective ways to limit the spread of the virus. From clinical point of view, face mask is capable to protect both the user and the people within the surrounding area. A number of researches have been conducted by researchers recently as to provide a safety measure for the mankind. F.A. Aziz et.al (2021) reported that the medical face mask can be checked for properly worn by covering both the nose and mouth completely using the Convolutional Neural Network (CNN) models via images. Meanwhile, S.Osman et.al (2021) proposed a framework system's to recognize masked faces in healthcare facilities. The system uses CNN method for facial recognition phase. A similar system has been reported by A.S. Nainggolan et.al (2021) using a computer vision. The model has been tested with 100 form of images and managed to classify with 99% accuracy. Furthermore, the application has been tested in real time at a bookstore in Pekan Baru, Indonesia.

In healthcare industries, Y. Hassan et.al (2021) proposed a new design of hospital in Malaysia to accommodate the deficiency in services and the healthcare facilities due to the unexpected pandemic such as COVID-19. The future hospital should be designed to adapt the threat from new pandemic, bioterrorism, climax change and mass casualties. According to P.J. Acacio-Claro et.al (2021), since 2017, the primary health facilities in Philipines has been mandated to adopt the Electronics Medical Records (EMRs) in order to improve the clinical management and well-coordinated interactions among care provider, patients and others healthcare related. The study examines selected rural health facilities interacted with EMRs before and during the pandemic COVID-19 as to understand the adoption based on specific EMRs features and the time spent. The results demonstrate that the usage of EMRs in rural health facilities is progressive from basic to complete depends on the users and competence in technology.

In conclusions, the review focuses on biomedical engineering field, however it is not limited to others field of research such as Natural Sciences, Management and Education.

Biography

Azli Yahya is an Associate Professor in Universiti Teknologi Malaysia since 2015 until now. He is also a Chartered and Professional Engineer. He holds a Degree in Electro-Mechanical Power System and Masters Degree in Electronic Production from Glamorgan University, UK. He is a doctorate of Loughborough University, UK specializing in Power Electronic System. His areas of researches are Analog/Digital Circuit Design, Power Supply, Electrical Discharge Machining and Biomedical Instrumentation.

M. M. Kabir[1]
M. M. Kabir[1*], M. R. Imam[1] andC. F. Hossain[2]

[1]Department of Genetic Engineering & Biotechnology, East West University, Dhaka, Bangladesh.
[2]Department of Pharmacy, East West University, Dhaka, Bangladesh.
*Email: mmkabir@ewubd.edu

Enzyme based Drugs for Treatment of Certain Lymphomas and Leukemias

Abstract
Although the enzyme L-asparaginase (L-ASNase) from E. coli, Erwinia and Serratia has been applied to treat certain lymphomas and leukemias, several medical complications such as severe immunological responses leading to hypersensitivity, anaphylaxis, etc. have limited its application [1, 2]. The researchers have documented that such impediments are due to the different biochemical and kinetic properties of L-AS Nase, which are directly dependent on the genetic variations in microbial strains. Therefore, there is a compelling need to explore the novel L-AS Nase producing microorganisms that would exhibit different serological properties while retaining similar and/or better therapeutic effects against the cancer cells. Since, there are no reports of L-AS Nase producing bacterial strains from Bangladesh so far, our research works have been employed to find them from the unexplored and ecologically different habitats that could lead to develop a potential therapeutic drug with less immunological responses and side effects over the existing drugs to treat the cancer patients in near future. In our study, two strains of Pseudomonas aeruginosaEWUKR-1 and EWUKR-2 (NCBI accession numberOK446669 and OL307081) have been isolated from the sedimentary soil from a lake in Dhaka. The L-ASNase enzymes were precipitated using ammonium sulfate followed by dialysis and concentrated using Vivaspin-20 (30 MWKO). Thespecific enzyme activity ofP. aeruginosaEWUKR-1 and EWUKR-2 was35.1 and 46.8 U/µg protein, respectively that might be used for the treatment of cancers.

Keywords
Bangladesh, L-asparaginase, soil, bacteria, therapeutic drugs, cancer.

References
O. B.Eden, M. P. Shaw, J. S. Lilleyman, S.Richards, Med. Pediat. Oncol.,18,497-502 (1990).
A. Agarwal, S. Kumar, V. D.Veeranki, Lett. Appl. Microbiol.,52, 307-313 (2011).

Biography
Dr. Mohiuddin Kabir completed his both B. Sc. (Honours) and M. Sc. (Thesis) degrees from the Department of Microbiology, University of Dhaka, Bangladesh, and obtained “Dean’s Award” during his undergraduate study. After graduation, he acquired the Russian Government Postgraduate Fellowship to study at the Kazan State University, Kazan, Russia where the selection was governed by the Bangladesh Ministry of Education.

Dr. Kabirearned “Doctor of Engineering” degree in 2003 from the Department of Bioscience and Bioinformatics, Kyushu Institute of Technology, Iizuka, Japan. After completing his doctoral degree, he was employed as an Assistant Professor (Joshu) at the same Institute. In 2005, Dr. Kabir migrated to USA by accepting a Postdoctoral Staff Member position at the Lawrence Livermore National Laboratory, CA. He had also worked as a Research Scientist at the SETI Institute, NASA Ames Research Center (CA, USA) and the University of Wisconsin-Madison (WI, USA). He is currently

working as an Associate Professor in the Department of Genetic Engineering and Biotechnology, East West University, Bangladesh.

Ilaria Cacciotti
Engineering Department, University of Rome "Niccolò Cusano", via Don Carlo Gnocchi 3 00166 Rome, Italy
Email id: ilaria.cacciotti@unicusano.it

3D Printing and Bioprinting in the Biomedical Sector: A Promising Custom made Approach

Abstract
Recently the custom made approach has gained a lot of interest for application in several sectors, such as the neurosurgery, odontoiatric, ortophedic and craniomaxillofacial ones [1]. In this context, the additive manufacturing has been proposed as an efficient alternative to the traditional manufacturing approach, presenting several advantages: better correspondence between the custom made implant and the defect contours, shortened operation time, reduced morbidity of surgical interventions, less blood loss, less infection/inflammation occurrence, higher aesthetical results [2]. Five main biomedical applications can be cited [3]: the production of medical models (presurgery training [4]), surgical implants, surgical guides, external aids, bio-manufacturing.
Currently, the gap between the scientific research about the additive manufacturing use in the biomedical sector and its translation to the clinical practice is still very big [5], despite the promising results achieved in many in vitro and in vivo studies. The situation has been worsened and aggravated by the complex regulation aspects and the recent EU Regulation on medical devices and on in vitro diagnostics. Concerning the future perspective and the next-generation of AM processes, two main challenges need to be addressed: the development of new 3D printing materials with tunable mechanical, chemical, physical properties, and the improvement of the AM processes, in terms of speed and resolution, and energy consumption.
Finally, nowadays, many efforts are devoted to the reduction of the overall costs, decreasing prices of both the 3DP hardware and of the used materials.

Keywords
Additive manufacturing, 3D printing, Bioprinting, Custom made approach, Biomedical applications.

References
[1] Murtezani, I., Sharma, N., & Thieringer, F. M. Annals of 3D Printed Medicine, 100059, (2022).
[2] Al-Moraissi, E. A., El-Sharkawy, T. M., Mounair, R. M., & El-Ghareeb, T. I. International journal of oral and maxillofacial surgery, 44(4), 470-482, (2015).
[3] Tuomi, J., Paloheimo, K. S., Vehviläinen, J., Björkstrand, R., Salmi, M., Huotilainen, E., ... & Mäkitie, A. A. Surgical innovation, 21(6), 553-559 (2014).
[4] Saceleanu, V., Paz, R., García, J., Rivero, Y., Cîndea, C. N., Cacciotti, I., & Monzón, M. Applied Sciences, 11(24), 11823 (2021).
[5] Di Piazza, E., Pandolfi, E., Cacciotti, I., Del Fattore, A., Tozzi, A. E., Secinaro, A., & Borro, L. J Environmental Research and Public Health, 18(20), 10806 (2021).
Acknowledgements
The Author acknowledges the project POR FESR 2014–2020 'Gruppi di Ricerca', titled 'Sistemi Innovativi sensorizzati mediante Manifattura Additiva per la Cranioplastica" (SISMAC), financed by Lazio Region.
Biography
Ilaria Cacciotti is Full Professor of Biomaterials & Tissue Engineering and Materials Science & Technology at University of Rome "Niccolò Cusano". She graduated in Medical Engineering at the

University of Rome “Tor Vergata” (Master of Science Award ‘Fondazione Raeli’), completed the Ph.D in Materials Engineering (Ph.D Thesis Award ‘Marco Ramoni 2011, Ph.D Thesis AIMAT Award 2012) and obtained the II Level Master degrees in “Forensic Genetics” and in “Protection against CBRNe events”. She is expert in the synthesis/processing/characterization of biocompatible nanostructured materials, particularly for applications in the biomedical/environmental/agri-food sectors. She is member of the Editorial Board of several international journals, including Applied Science-MDPI, Applied Surface Science Advances-Elsevier, Frontiers in Biomaterials, Open Journal of Materials Science-Bentham Science.

For her research activity, she received more than 20 awards, including the European Biomaterials and Tissue Engineering Doctoral Award 2011, ”Young Researcher Award Elsevier Mater Sci Eng C” 2014, “L’ORÉAL-UNESCO Italy for Women and Science 2011” “Women Researcher Award-International Scientist Awards on Engineering, Science and Medicine 2021”.

Hana Soualah Alila
Hana SoualahAlila[(a)(b)] , Katia DJENADI [(c) (d)] , ManelBouloudenine[(b)(e)]
[(a)]Mohamed-CherifMessaadia University-Souk Ahras, Souk-Ahras 41000, Algeria.
[(b)]Centrede Recherche en Environnement, Annaba (Algeria)
[(c)]Laboratoire de Biochimie Appliquée, Faculté des Sciences de la Nature et de la Vie, Université de Bejaia, 06000 Bejaia, Algeria.
[(d)]Faculté des Sciences de la Nature et de la Vie et des Sciences de la Terre, Université de Bouira, 10000 Bouira, Algeria.
[(e)]LEREC Laboratory, University BadjiMokhtar-Annaba, BP 12, Annaba 23000, Algeria.

Nanoparticules : Alternative Antimicrobial Approach Against Pathogenic Bacteria

Abstract
Resistance of bacteria to bactericides and antimicrobial agents has increased in recent years. Some antimicrobial agents are extremely toxic and irritant. Nano particles interaction with biomolecules and microorganisms is expanding the field of research. Despite the important number of existing potent antibiotics molecules and other antimicrobials agents, but humanity faced to clinical threat: morbidity and mortality induced by pathogenic bacteria and bacterial resistance. Nowadays, scientists are investigating on new alternative molecule including nanoparticles to fight this antibiotic resistance dilemma and treat pathogenic infection. The aim of your investigation is to screen the antibacterial activities of various nanoparticles.

In our investigation we tested CoFe2NPs, CuNPs, ZnNPs, AgNPs, TiNPs, SiNPs nanoparticles against numerous bacteria strains, including: Salmonella sp, Klebsiellapneumoniae, Enterococcus faecalis, Pseudomonas aeruginosa, Acenitobacterbaumannii0), Methicillin-resistant Staphylococcus aureus, Bacillus subtilis, Staphylococcus epidermidis, Escherichia coli and Staphylococcus aureus. Our finding reveal that in vitro antibacterial activity of tested nanoparticles differing between Gram positive and Gram negative tested bacterial. The CoFe2NPs molecules express an activity against pathogenic Gram-negative bacterial strains, including Salmonella spp, Pseudomonas aeruginosa and Acenitobacterbaumanni. However, CoFe2NPs molecules express weak activity against Gram-positive foodborne strains (Staphylococcus aureus). On the other hand, CuNPs have an effect on Staphylococcus epidermidis and MRSA as Gram-positive strains and on Salmonella spp as Gram-negative strains. The TiNPs express activities against all tested strains expect MRSA and Bacillus cereus. The SiNPs and ZnO2 have low effect on all tested strains. However, AgNPs express an interesting effect on tested strains, with higher sensitivity on Gram positives strains.

The obtained results reveal that we may select the tested nanopaticules to use them as antimicrobial agents, in order to prevent the development of pathogenic bacteria even in alimentary and medical applications.

Biography
Hana Soualah-Alila, Pr, PhD, research professor working on Wildlife Biodiversity and Environnement Health at University of Souk Ahras (Algeria). My role in this position is to investigate the epidemiology

of diseases at the wildlife -human interface and interdisciplinary about nanoparticles. Nanotechnology is an interdisciplinary field of science which is required to manage, produce and develop novel opportunities for application of different sciences supporting both human and environmental health. Among various metals utilized for the production of nanoparticles, paid the attention of researchers owing to the extensive applications because of their unique properties as chemical stability and good conductivity. As a part of Interdisciplinary team, allows for a better understanding of the problems.

Uroosa Ejaz

[1]Department of Biosciences,Shaheed Zulfikar Ali Bhutto Institute of Science and Technology - Karachi Campus, Pakistan
Email id: uroosaejaz24@gmail.com; uroosa.ejaz@szabist.edu.pk

Cellulose Extraction from Methyl Trioctylammonium Chloride Pretreated Sugarcane Bagasse and Its Application

Abstract

Cellulose, the most abundant feedstock of chemicals and energy is extracted from various agro-industrial wastes, such as sugarcane bagasse (SB). Pretreatment of SB with ionic liquids improves extraction of cellulose, yet the use of ionic liquid is hindered by its high cost. In this study, cellulose was extracted from SB pretreated with methyltrioctylammonium chloride under relatively mild conditions. The extracted cellulose from pretreated SB (PTB) and untreated SB (UTB) was characterized by scanning electron microscopy and FTIR. Fermentation of cellulose extracted from PTB by a thermophilic bacterium, Bacillus aestuarii UE25, yielded 245.16% higher titers of cellulase than cellulose extracted from UTB. The recyclability of the IL was assessed to make the pretreatment process cost effective and was monitored through TLC and FTIR. The results of this research demonstrated the potential of ionic liquid pretreated SB for cellulose extraction and for its subsequent utilization in thermostable cellulase production.

Biography

Ms. Uroosa Ejaz (Lecturer at Shaheed Zulfiqar Ali Bhutto Institute of Science And Technology (SZABIST), Karachi Campus & PhD scholar at Department of Microbiology, University of Karachi) Ms. Uroosa Ejaz is a young PhD scholar and lecturer. Her six years of research career shows her potential. She has published 18 articles in well-reputed International Journal. She also wrote 5 book chapters published by Springer and Elsevier. She has work experience from Aga Khan University and Hospital, Patel Hospital, Bahria University and University of Karachi. She worked as a research assistant in HEC funded project NRPU 6579.

L.Bondareva

S. Kuzmin, L.Bondareva* and N.Fedorova

Federal Scientific Centre of Hygiene named after F.F. Erisman, Semashko Street, 2, Mytischi, 141014, Russia
*Email-address: lydiabondareva@gmail.com

To Study of Influence of the Transuranium Radio nuclides 241Am and Isotopes Pu on the Freshwater Aquatic Plants – Elodes Canadensis

Abstract

Radioactive contamination of the Yenisei River bottom and (including the contamination with transuranium elements) is the result of long-term operation of the Mining and Chemical Combine, which manufactures plutonium for weapons. The study considers the behavior of a submerged macrophyte Elodea Canadensis, one of the most widely spread species of aquatic plants in the River Yenisei. The values of the accumulation coefficients obtained for 242Pu, 13100±2100 L·kg-1, were close to the concentration factor for241Am – 17100±4300 L·kg-1, obtained for the Elodea shoots. The distribution of radionuclides between the structural components of aquatic plants depended mainly on the physicochemical properties of radionuclides and the composition of the aquatic environment. We studied the micro distribution of the artificial radionuclide 241Am in the components of Elodea canadensis - a submerged macrophyte of the Yenisei River. The alpha-track analysis showed that the micro distribution of 241Am within different components of the submerged plant E. canadensis was not uniform. 241Am distribution was found to be affected by the age of the leaf blades, state of the cells, and morphological features of the plant stem. The radionuclide 241Am penetrated into the plant cells through the cell wall of E. canadensis, but it was accumulated in the vacuoles rather than in the cell wall or cytoplasm. In this case, the integrity of the cell membranes was not damaged. Studies on the potential adaptation of one of the common aquatic macrophytes Elodea canadensis when immersed in a medium containing transuranium radio nuclides. It was found that almost all the studied 241Am and242Pu do not show a clear external effect on the solid fragments of the plant (cell membranes). Thus, it was shown that Elodea canadensis is tolerant of anthropogenic radionuclides that differ in nature, physico-chemical properties, etc.

Keywords

River Yenisei, Elodea canadensis, amerisium-241, plutonium-242, adaptation

Biography

Lydia Bondareva, PhD of Analytical Chemistry, Full Professor of Ecology. Leader research in Analytical laboratory. Education: Lomonosov's Moscow State University, Analytical chemistry. And Field: analytical chemistry, radioecology, chemistry of pesticides, aquatic plants I have more than 200 scientific articles in top-rated scientific journals and am the author and co-author of monographs.

Mikhail Vikhrov
MSU Russia

Screening of the Microscopical Fungi for The Biodegradation of Agricultural Wastes

Abstract

In the last century, industrial waste has become a serious problem for the environment. The disposal of protein, lipid waste from various industries by incineration or landfilling releases large quantities of hazardous chemical compounds. But this can be avoided by using biodegradation as a way to dispose of waste. Biodegradation - destruction of complex substances, materials, products through the activities of living organisms.

This study investigates the biodegradation potential of two Penicillium species and three Aspergillus species, which were isolated from soil by serial dilution method. They were grown on agarized media containing three proteins (hemoglobin, gelatin, and casein), as well as on medium for the study of lipase and organic acid synthesis. Protease production was observed to appear as a light zone around the fungal colonies. Then the enzymatic index (EI) was calculated by dividing the diameter of the hydrolysis zone by the diameter of the fungus.

During the research, a new potential producer Aspergillus phoenicis was discovered that showed a high potential for biodegradation: because it had large indices on hemoglobin and gelatin media: 1.42 and 3.36, respectively. The greatest potential in acid production was shown by Penicillium canescens while A. terreus and A. phoenicis did not show any. Regarding lipase production, the best results were shown by A. phoenicis and A. ustus - they secreted lipases in large quantities, revealing transparent areas around the colony, not just under it.

The results show that many of the fungi tested have significant biodegradation potential, indicating that they can be used for animal husbandry waste disposal. Thus, it can help to avoid harmful emissions and even bring benefits by producing substances for further use in industry.

Mikheeva Elza

Lobachevsky State University of Nizhny Novgorod, Russia

Biohythane Production by Two Step Anaerobic Digestion with Different Immobilized Fixed Bed.

Anaerobic digestion (AD) of organic waste makes it possible to produce not only methane, but also hydrogen, which, when mixed, form a high-energy mixture - biohythane. The efficiency of biohythane production depends on many factors, including organic loading rate (OLR) and hydraulic retention time (HRT). These parameters affect the efficiency of organic waste fermentation with hydrolytic and methanogen and the stability of the biogas production process. An important task is to find ways to improve the process of AD, allowing to increase the production of both hydrogen and methane simultaneously with the production of biohythane. A number of studies have shown that adding the immobilized fixed bed to an anaerobic reactor increases biomethane production. The aim of this work was to study the effect of a number of immobilized fixed bed (polyurethane foam, carbon felt, ceramic Raschig rings) on the process of two-stage AD with the production of biohythane in fixed-bed reactors during 57 days. Dry cheese whey diluted 200 times with distilled water was used as a substrate: COD=5730 mg/L, lactic acid content was 448.7 mg/L, acetic acid 200 mg/L, isobutyric acid 110 mg/L, ethanol 80 mg/L. Propionic and butyric acids were absent. For the acidogenic reactor (RH), an inoculum (TS 0.94%, VS 74.35% TS, pH 7.38) was used from the reactor, in which the process of anaerobic fermentation of compound feed proceeded in a thermophilic mode (55 ± 1) ° C. Before loading into RH, acid inactivation of methanogens was carried out (1 day with 10% HCl to pH 3.0, then 20% NaOH to pH 7.07). After inactivation of the inoculum, a regular change in characteristics was observed: TS 0.99%, VS 60.99% TS. For methanogenic reactors R1-R3, we used the inoculum from the digester MWWTP (Nizhny Novgorod, Russia), TS 1.9%, VS 62.8%, pH 7.45, the working temperature in the digester was (55 ± 1)°C. The reactor volumes were: 1500 ml for the acidogenic reactor (RH) and 900 ml for the methanogenic reactors (R1-R3). Pieces of polyurethane foam (PU) measuring 0.9x0.9x0.9 cm were used as an immobilizing material for RH and R1. Carbon felt was used for R2, and Raschig rings made of technical porcelain were used for R3. The RH reactor was operated at HRT of 4-10 hours, and the R1-R3 at HRT 0.5-9 days. It was found that at HRT values of 4-10 h in the process of dark fermentation, the highest hydrogen content in biogas of 33-53% was observed at pH values in the system of 3.7-5.2. According to the results of the experiment, the greatest removal of organic matter (32.98%) occurred at HRT 10 h, however, the maximum yield of hydrogen HPR (1836.67 ml/(L day)) was observed at HRT 8 h. Studies have shown that methanogenesis better in a reactor with PU fixed bed and a carbon felt reactor than in a reactor loaded with ceramic Rashigrings.

Biography

Mikheeva Elza 2011 has completed her Ph.D at the age of 25 years from Lobachevsky State University of Nizhny Novgorod, Russia. She is the Scientific Researcher of resource saving biotechnology laboratory. She has published more than 50 paper in reputed journals and head of investigation which financing Russian Science Foundation. Research interests: biogas, methane-hydrogen gas, sewage sludge, anaerobic fermentation, biotechnology, methanogenic bacteria, food industry waste, vortex layer apparatus, bihythane, microbiology, biotechnology.

Alessandra Verardi

Alessandra Verardi, Paola Sangiorgio

ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Trisaia Research Centre, Rotondella (MT), Italy

Biotechnologies: An Advantageous Tool for Obtaining Chitin, Chitosan, and PHA from Low-Value Matrices

Abstract

Chitin, chitosan and polyhydroxyalkanoates (PHAs) are promising biopolymers of great commercial interest as they have unique properties and a wide range of applications. Chitin and chitosan exhibit high biocompatibility, biodegradability, low toxicity, and numerous significant biological activities, such as antioxidant, antimicrobial, and antitumoral. They also present chelating effects against metal ions, including iron, copper, and cadmium. PHAs are able to replace fossil-based plastics thanks to their versatility, high biocompatibility, biodegradability, and recyclability.

These biopolymers can be produced by or derived from living organisms. Chitin and chitosan sources are mainly the shells of aquatic crustaceans and, to a lesser extent, various fungal phyla. An attractive alternative source is represented by insects, with several advantages compared to crustaceans. Commercially, chitosan is obtained from the N-deacetylation of chitin. Chitin and chitosan are primarily recovered by chemical methods characterised by high environmental impacts. A valid alternative is a biological approach based on microorganisms, such as Lactobacillus sp., Bacillus sp., Pseudomonas sp., and Aspergillus sp., or enzymes produced by fungi or bacteria, such as protease and deacetylases. This approach represents an eco-friendly method also for mild reaction conditions. However, the high cost of enzymes and the long reaction time can limit the process scale-up.

A variety of microorganisms, among which Aeromonas, Azotobacter, Cupriavidus, Clostridium, and Pseudomonas, are employed to synthesise PHAs under nitrogen- or phosphorus-limited conditions. PHA accumulation in these prokaryotes acts like energy storage improving microorganisms' survival. PHA-producing microorganisms can convert many feedstock sources (e.g. used cooking oils and dairy processing by-products), producing different types of PHA.
Although PHA has high potential, it still does not compete with traditional synthetic plastics, mainly due to its high production cost. The need to lysate bacterial cells to recover PHA granules leads to the use of different methods that increase production costs. Among others, we can use enzymatic cell lysis, hypochlorite digestion or solvents such as chloroform or acetone, with related environmental and safety consequences. An alternative PHA recovery system uses mealworms which feed with dried PHA-containing bacterial cells and, by digestion, release PHA into their faeces. The process sustainability can be further increased by setting up a biorefinery strategy: PHA-producing microorganisms can grow on agro-industrial by-products to produce PHA and, once freeze-dried, can become food for mealworms that release PHA from the bacterial cells.

The considerable importance of these biopolymers is confirmed by their market trend which is expected to grow in the coming years, according to economic forecasts. Given the variety of applications of these biopolymers in numerous industrial sectors, the main challenge will be to produce them at a low cost and on an industrial scale. Biotechnology can offer a valuable tool to achieve these goals using modern scientific and engineering practices and exploiting low-value by-products as substrates, in the circular economy context.

Biography

Alessandra Verardi holds a Master's Degree in Biology and a PhD in "Environment, Health and Eco-sustainable Processes" at the University of Calabria (Italy). She has completed her doctoral studies at the University of Lund (Sweden) and her post-doctoral studies at the Katholieke Universiteit Leuven (Belgium). She is currently a permanent researcher at ENEA- Italian National Agency for New Technologies, Energy and Sustainable Economic Development. Her studies aim to enhance and recover high-added-value bioproducts from agroindustrial byproducts from a circular bioeconomy perspective. Her scientific production includes articles in reputed journals, book chapters and proceedings of national and international conferences.

Prabha Muddobalaiah,

Prabha Muddobalaiah, Vasanthapuram Ravi and Narayana Swamy Ramachandra Swamy
M S Ramaiah Institute of Tehnology, India

Significant Lower Carboxylesterase Specific Activity in Meningiomas and Gliomas and Derived Primary Cell Culture Indicate Reduction in Anticancer Drug Metabolism and Higher in Lithium Treated LN229 and U251 Cell Lines

Abstract

Aims: Carboxylesterases (CE) convert carboxylic esters to alcohols and carboxylic acids. CE is a protective factor in the brain cells categorized as phase-I drug-metabolizing enzymes. Therefore we aim to find out the difference CE specific activity for Brain tumors as compared to the normal brain to understand the drug metabolism efficiency.

Study Design: Total Protein and Carboxylesterase assays were performed for Meningiomas and gliomas and derived primary cell culture and Lithium effect on CE in brain tumor cell lines.

Methodology: CE spectrophotometric assays were studied for 30 meningiomas and 52 gliomas in 82 males, while 45 meningiomas and 29 gliomas in 74 females respectively and derived cell culture. The brain tumor protein band pattern was studied by electrophoresis.

Results: The brain tissue extracts for SDS PAGE displayed a high intense single protein (not purified) band of 60 kDa in brain tumors as compared to normal brain.

The similar CE-specific activity between the meningiomas 20.96±5.071 (n=50) and gliomas 20.77±4.4644 nmol/min/mg (n=61) respectively, exhibited significantly lower CE activity as compared to normal Brain (n=106) 52.355 ± 11.15 nmol/min/mg of protein and p-value was less than 0.0001 extremely statistically significant. Hence CE activities are significantly lower in all grades of parent Brain tumors as compared to normal brain. Primary cell cultures with respective passages expressed lower CE activities than parent tumors respectively. Brain tumor cell lines expressed higher higher in Lithium treated LN229 and U251 cell lines

Conclusions: The current results indicate the reason for the failure of anticancer drug metabolism efficiency for both meningiomas and gliomas due to one of the reasons for exhibiting lower CE-specific activity. The chance of solving the drug metabolism provided by the current study helps advanced molecular biochemistry in designing drug conjugates for efficient metabolism by CE-specific activity and monitoring the chemotherapy for anticancer drug therapeutics in the future.

Keywords
Carboxylesterase; specific activity; meningiomas; gliomas; drug metabolism;LN 229;U251

C.Sermoneta

C.Sermoneta[1*], P.Di Dato[2], and B.M.Marzocchi[2]

[1]Istat, Via Cesare Balbo, 16Rome, Italy.
[2]Bioservice, Via dell'Epomeo 219 Naples, Italy.
Email id: sermonet@istat.it

Data Collection for Recreational Fishery in Italy: A Comparison Between Administrative Data and Surveys

Abstract

According to EU Reg. 199/08, "recreational fisheries' means non-commercial fishing activities exploiting living aquatic resources for recreation or sport". This definition will be taken into consideration for the aim of the present study.

A ministerial decree was enacted on 6 December 2010 in Italy, providing for the recognition of the consistency of the sport and recreational fishing in the sea, states that "all those wishing to go fishing in the sea will have to make a communication to provide some basic information such as names and addresses, the type of fishing practiced and the fishing areas". These communications are stored in a database managed by the Ministry of Agricultural, Food and Forestry Policies (Mipaaf) that will constitute the "universe" for the first assessment.

Although marine recreational fisheries are a very popular activity in Italy, it was not until 2018that the list of fishermen registered in the administrative databasehas been analyzedunder the Italian work plan for data collection in the fisheries and Aquaculture sectors 2017-2019 (EC Reg 1004/2017). After this first phase, according the official guidelines,a statistical surveyhas beencarried on with a CATI technique, to determine the number of recreational fishermen, to assess the share of catches from recreational fisheries compared to commercial catches, to collect basic information on recreational catchesin terms of gears and effort and macro-data on overall economic impact of the activity. All information was collected on a geographical basis (GSA- Geografical sub areas). The main aim of this study is to compare the strengths and weaknesses in the use of the administrative database vs the survey conducted by CATI from a sample of Italian population and later,from the respondents, on a panel of fishermen that havefilled in a logbookthroughout a year. The final outcomes show a set of figuresreviewed at marine region level (GFSM and ICES) and will propose a design to extend for future national surveys of recreational fisheries.

Keywords

Recreational fisheries, data collection, administrative data, survey

References

[1] HYDER K., FERTER K., WELTERSBACH M.S., TOWNHILL B., Recreational sea fishing in Europe in a global context—p 225-243Participation rates, fishing effort, expenditure, and implications for monitoring and assessment. Fish and Fisheries (2018).

[2] F. GRATI Handbook for data collection on recreational fisheries in the Mediterranean and the Black SeaFAO fisheries and aquaculture technical paper 669 (2021)
[3] L. FABBRIS, L'indagine campionaria – Metodi, disegni e tecniche di campionamento, NIS: La Nuova Italia Scientifica, Roma (1989).

[4] M. BALLIN ET AL.: The use of information from experts for agricultural official statistics - Proceedings of Q2008 European Conference on Quality in Official Statistics (2008).
[5] J. HERFAUT, H. LEVREL, O.THÉBAUD, G. VÉRON - The nationwide assessment of marine recreational fishing: A French example (2013)

Biography

Project Manager-Researcher on Animal Production, Food Security and precision farming Directorate for environmental and territorial statistics, Division for statistics and surveys on agriculture at ISTAT (National Institute of Statistics). Expert in the fishery sector, eggs, milk and dairy products. Long experience in designing and analysing agriculture data; in harmonizing methodologies and data in European and official statistics; in analysing administrative data from Ministry and IACS; national expert in Eurostat Working Group on Animal production and Fishery and in international cooperation in the straightened of official statistics. National expert in RDC MED/GFCM.

Perozeni Federico

University of Verona, Italy
Email id: federico.perozeni@univr.it

Microalgae for the Future: High Value Products for a Growing Population

Abstract

One of the biggest difficulties of our century is providing enough food, energy, and raw materials for a population that is growing. As an alternative to plants, algae play a significant role. Sadly, domesticating algae is important to increase biomass yield and reduce cultivation cost. Using algae as green factories to produce high-value goods is one of the most promising opportunities. Here, we describe how Chlamydomonas reinhardtii's metabolism was modified to produce three distinct products, each with unique properties and uses.

Fist is astaxanthin, red ketocarotenoid, mainly used as fish or poultry feed but with several application in human disease treatment for its antioxidant capacity. The second one is geraniol, a monoterpene utilized in food industry that has the ability to alter the taste of algae so that customers will find it more appealing but is also used for its antimicrobial and repellent capacity. Last,Zeolin, a recombinant protein created by combining phaseolin (P. vulgaris) and -zein (Z. mays) to create a protein with a balanced amino acid composition which can be used for human consumption enhancing the quality of proteins assumed.

UVM4 strain of Chlamydomonas reinhardtii was engineered via nuclear transformation utilizing genes designed in silico to enhance protein expression. Best expressing lines, lines were screened for fluorophores' fluorescence, which was followed by the measurement of metabolic products or protein accumulation.
Data show that microalgae can be used, thought genetical engineering, as a sustainable platform for the production of a variety of high value products giving encouraging perspective for the future.

Biography

Federico Perozeni holds a PhD in Biotechnology obtained at the University of Verona in 2020. He is now Junior assistant professor at the SOLE-LAB group coordinated by Prof. Matteo Ballottari at the University of Verona. Federico Perozeni is involved in several national and international research projects focused on the genetic engineering of microalgae to produce high value products. He published since 2017 15 papers in peer-reviewed international journal.

Abdul-Rhman H. Muhammad[1,4*,]

Abdul-Rhman H. Muhammad[1,4*],GadallahAbu-Elreesh[1], M.Z. Sedik[2], Hassan Moawad[3], Ali. T. Sabbor[5],Desouky Abd-El-Haleem[1]

[1]Environmental Biotechnology Department, Genetic Engineering and Biotechnology Research Institute (GEBRI), Scientific Research and Technological Applications City (SRTA-City), Burg-El-Arab City, Alexandria, Egypt
[2]Microbiology Department, Faculty of Agriculture, Cairo University
[3]Agricultural Microbiology Department, Biology Division, National Research Center, Dokki, Cairo, Egypt
[4]Academy of Scientific Research and Technology, Cairo, Egypt
[5]Botany Department, Faculty of Agriculture, Cairo University, Cairo, Egypt*Corresponding author: abdelrhman.eltahtawy93@gmail.com

Studying the Behavior of the Light-off Bio-reporter DF4/PUTK2 as a Light-on Assay againstLead

Abstract

Recombinant bioluminescent bacteria are frequently directed towards use as environmental biosensors because it has high sensitivity, selectivity, costless, easy to useand function as rapid measurement to detect heavy metals. The bioluminescence of DF4/PUTK2 assay is based on using the bio-reporter Acinetobacter DF4/PUTK2 carring luciferase genes luxCDABEwhich emit light constitutively. This can be measured in time intervals by luminometerto determine the behavior of bio-reporter against lead. The light emitted in the lead treated samples was equal or increased than the control. Therefore, the bio-reporter DF4/PUTK2 was subjected to intensive studies to elucidate its behavior with lead and if it was possible to be employed as a lead light-on assay in water in reverse order. Time exposure (5 to 990 min), lead concentration (0 to 30000 ppm), and lead salts (acetate-chloride and nitrate) were included in this study. The bio-reporter DF4/PUTK2 was more sensitive to lead concentrations range (19.25 to 15000 ppm). However, at high concentrations of lead, the light was being decreased due to cell death and/or metabolic burden simultaneously. It was possible to detect the presence of lead in water samples through light-induction in specific concentrations which add another advantage to the bio-reporter DF4/PUTK2.

Keywords

Biosensors, Bioluminescence, Acinetobacter, Lead.

References

[1] D.Abd-El-Haleem,S. Ripp, C. Scott, G. Sayler, A luxCDABE-based bioluminescent bioreporter for the detection of phenol. J. Ind. Microbiol. Biotechnol. 29, 233–237, (2002).
[2] D.Abd-El-Haleem, Z.Sahar, A. Ashraf, E. Hassan, A. Gadallah2006. Acinetobacterbioreporter

assessing heavy metals toxicity. J. Basic Microbiol.,46, 339–347, (2006).
[3] E. Brodl, C. Alexandra, H. J. Christina, H. W.Niederhausera, M. Peter. The impact of LuxF on light intensity in bacterial bioluminescence.J PhotochemPhotobiol B.207, 111881, (2020).
[4] G. Din, F. Hasan, M. Conway, B. Denney, S. Ripp, A. A. Shah, 2019. Engineering a bioluminescent bioreporter from an environmentally sourced mercury-resistant Enterobactercloacae strain for the detection of bioavailable mercury. J ApplMicrobiol. 127, 1125-1134, (2019).
[5] C.T.X. Dan, S. Abby, R. Alexandra, C. Robert, P. Sarah, R. Steven, S. Gary,The Evolution of the Bacterial Luciferase Gene Cassette (lux) as a Real-Time Bioreporter. Sensors (Basel). 12, 732-752, (2012).

Biography

[6] Abdul-Rhman has completed his master degree from cairo University and work as a speacialist at agricultural microbiology department at national research center and research assistant ship at at Environmental Biotechnology Department, Genetic Engineering and Biotechnology Research Institute (GEBRI), Scientific Research and Technological Applications City (SRTA-City).He has published paper in biocatalysis and agricultural biotechnology journal (Q1) jundertitile Studying the behavior of the light-off bioreporter DF4/PUTK2 as a light-on assay against lead, He received the Next Generation Scholars Scholarship, which is granted to outstanding students and top university graduates to study for a master's degree, lecturer at summer school of biotechnology, city for scientific research and technology applications from march 2018 to march 2019, Scientific manager spirulinaproject at Nobaria (2015-2018), Speaker at the 23rd Global Biotechnology Congress London, UK., Speaker at 10th international conference on food science and food safety & 24th Global Biotechnology Congress, Middlesex University, UK.

A.Karlović[1]

A.Karlović[1*], I.Šimić[1], and A.Lalić[1]

[1]Faculty of Agriculture and Food Technology, University of Mostar, Biskupa Čuleb.b., 80 000 Mostar, Bosnia and Herzegovina
Email id: andrea.karlovic@aptf.sum.ba

Use of Brewer's Spent Grain in the Poduction of Ćupter, Traditional Herzegovinian Product

Abstract

Ćupter is Herzegovinian candy made of must and flour/semolina. The idea is to offer brewer's spent grain (BSG) new value because BSG is manly burned or sold as asnimal feed in Bosnia and Herzegovina [1].Given the good nutritional composition and low purchase price, it can beused in the food industry. However, Sahin et al. [2] demonstrated that BSG might be a good substitute for flour and semolina in pasta due to its high fiber and protein source, which inspired the idea to use it in the traditional Herzegovinian product ćupter in place of flour and semolina.The purpose ofthis study was to partially replace semolina and flour with BSG originating from industrial and craft breweries and study nutritive, chemical, and preference properties of the product. In this research, with grape juice was used as an ingredient in all samples.Combinations of industrial and craft spent grain with semolina or flour were used in the research:Sample 1 (semolina+ industrial spent grain), Sample 2 (semolina+ craft spent grain), Sample 3(flour+ craft spent grain), Sample 4 (flour + industrial spent grain). The pH, water activity, moisture,ash content, protein content, sugars and energetic value were observed.

Keywords

brewers' spent grain; ćupter; traditional product; grape must

References

[1] S. I. Mussato, G. Dragone, I. C. Roberto,J.Cereal Sci., 43, 1–14, (2006).

[2] A. W. Sahin, K. Hardiman, J. J. Atzler, M. Vogelsang-O'Dwyer, D. Valdeperez, S. Münch, G. Cattaneo, P. O'Riordan, Innov. Food Sci. Emerg. Technol., 68, 102633, (2021).

Biography

Andrea Karlovic graduated in 2014 from the Faculty of Agriculture and Food Technology at the University of Mostar, majoring in Food Technology. After finishing her studies, she works as an external assistant at the mentioned faculty in the department of Wine Technology and Strong Alcohol Production. In 2019, she enrolled in the postgraduate study in Food Technology at the University of J.J. Strossmayer in Osijek.

Ekane Peter Etape

Ekane Peter Etape#, Petronilla Ashihyo Akumbom, Beckley Victorine Namondo, Ebong Njume D. Ngole, Josepha Foba-Tendo

Department of Chemistry, Faculty of Science, University of Buea, Cameroon
[1]Ekane Peter Etape, ekane20022001@yahoo.fr
[2]Beckley Victorine Namondo, namondo31@gmail.com
Senior lecturers in Inorganic and Solid state Chemistry, and Material science

A Tamarind Local Variety from Garoua, Cameroon (Physicochemical Characterization, Fruit Pulp Fermentation and Extraction of Tartaric Acid from the Fruit Pulp Winery Waste).

Abstract

Introduction: Tamarind is known for the tart taste which is characteristic of tartaric acid. The fruit pulp is in high demand in both domestic and industrial settings due to the high food value. It contains fatty acids, vitamins, roughage, phytosterols and many other phytochemicals necessary for good health. To the best of our knowledge very little has been reported on processing of this nutritional fruit and the results reported so far show variability as a function of the botanical origin of the plant. No literature exists for the Tamarind variety from Cameroon and no study combining wine production and extraction of Tartaric acid from the waste residue has so far been reported. We are taking this advantage to explore wine fermentation from tamarind fruit pulp by focusing on the effect of different parameters such as time of treatment for juice extraction, yeast inoculate for wine fermentation and secondary fermentation to wine quality, and extract Tartaric acid from the winery solid waste residue. The main fermentation was done at 25^{oC} in 13days and 1 week secondary fermentation. The wine was characterized for alcoholic content, pH, titratable acidity, soluble dry matter (Brix) and consumer acceptability while the winery solid waste residue (potassium bitartrate precipitate) was used to extract crystalline L- tartaric acid which was characterized by FTIR, Melting point and crystallinity by PXRD. Tamarind pulp wine produced was of acceptable quality (clear, sweet, sparkling, smooth and flavored) following the olfactory test. The drink had a pH of 3.04 and 16%, alcohol content while the Tartaric acid was crystalline (PXRD), reflected all characteristic functional groups (FTIR) of tartaric acid and melting point of 189.8-196.4oC (laboratory grade). These results leave us with the impression that, it is very practicable to couple Tamarind fruit pulp wine production with chemical synthesis of pure crystalline Tartaric acid using solid winery waste from tamarind fruit pulp. The method used in this study is simple, straight forward, ecofriendly and cost effective.

Keywords

Tamarind pulp, wine, fermentation, waste residue, Tartaric acid

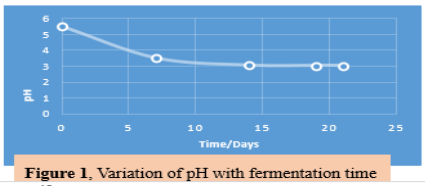


Figure 1, Variation of pH with fermentation time

Table 1a: Physical Characteristics of Tamarind fruit and seed

Parameters		Sample A	Sample B	Sample C	Mean
Fruit	Length/cm	4.2	7.4	5.8	5.8 ± 1.3
	Width/mm	1.4	1.6	1.2	1.4 ± 0.2
	Weight/g	2.5901	4.3902	3.4801	3.4923 ± 1.2729
Weight of pulp /g of fruit		0.5324	0.5412	0.5432	0.5389 ± .0006
Number of seed per pod		3	5	4	4 ± 1
Seed	Weight/g	0.3732	0.4171	0.3950	0.3950 ± .0310
	Density/g/mL	3.4	3.8	3.6	3.6 ± 0.2

Figure I: Tamarind fruit, pulp, seed and leaves

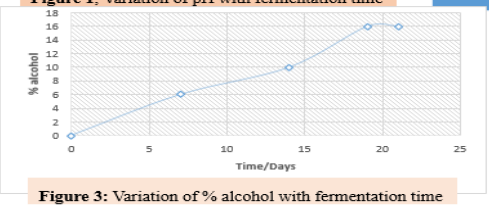


Figure 3: Variation of % alcohol with fermentation time

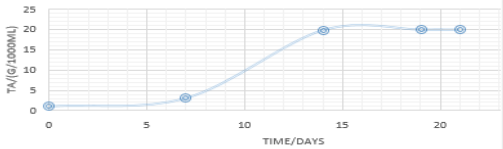


Figure 2. Variation of Titrable acidity with fermentation time

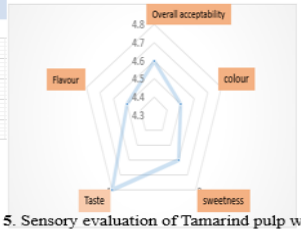
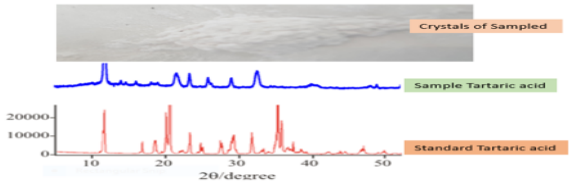
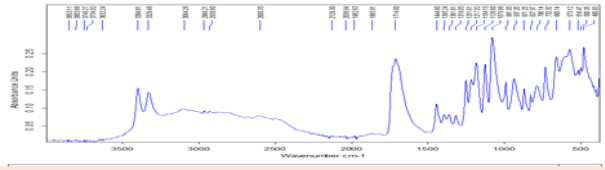


Figure 5. Sensory evaluation of Tamarind pulp wines



X-Ray diffractogram for the sample compared with the standard tartaric acid



FT-IR Bands for the Synthesized Sample Tartaric Acid

Bruno de A. Penna

L. Guimarães[1], I. Thomaz[1], M. Antunes[1], C. Pesset[1], C. Fonseca[1], A. Santos[1], I. Mello[1], A.M.N.Botelho[1], M.F. Côrtes1, M.S. Ramundo1, B. Penna[1] *

[1]Universidade Federal Fluminense, Instituto Biomédico, Niterói, RJ Rua Professor Hernani Melo n. 101, sala 302 (Laboratório de Cocos Gram Positivos), São Domingos, Niterói, Cep: 24210-130, Brazil

*Corresponding author: bpenna@id.uff.br

Epidemiologic Case Investigation on the Zoonotic Transmission of Methicillin-Resistant Staphylococcusspp from Infected Dogs to their Owners

Abstract

Dogs frequently harbor methicillin resistant Staphylococci asymptomatically. Moreover, these bacteria, mainly Methicillin-resistant Staphylococcus pseudintermedius, are frequently associated with canine pyoderma and otitis. Companion pets, such as dogs, are frequently implicated as potential reservoirs of staphylococci species carrying resistant genes. And due to the close social interaction between companion animals and humans, it can favor the exchange of resistant strains among themselves. Therefore, the aim of this is study was to sue whole genome sequencing technique to investigate the possible transmission of Staphylococcus pseudintermedius(methicillin-resistant and methicillin susceptible) isolated from canine clinical samples and their respectively owners. One hundred dogs and theirrespective owner were evaluated. Clinical samples of dog were obtained from pyoderma and otitis externa cases. All dog owners were screened at the same time of the dogs. All staphylococci strains obtained were identified by matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) and confirmed by PCR of the nucgene. All samples were also screened for methicillin-resistance by mecAPCR detection. A total of 64 dogs presented Staphylococcus pseudintermedius and nine of those were Methicillin-resistant Staphylococcus pseudintermedius (MRSP). In six cases dogs and their owners presented the same staphylococci species, and all those samples were whole genome sequenced and screened for antimicrobial resistance genes, SCCmec identification and MLST characterization. Phylogenetic analyzes revealed that in three cases dogs and owners had extremely similar samples, being two with MRSP samples and one that latter were confirmed as MSSP. Also, in all three cases the same SCCmec and sequence type were identified. This finding suggests that a possible transmission occurred. And since Staphylococcus pseudintermediusare mainly isolated from canine samples, dogs may have served as the potential source. On the other three cases, although both samples identified the same species, the samples were phylogenetically different. Whole genome sequencing was decisive to confirm that those three samples were transmitted among the dog and their tutor.

Biography

Professor of bacteriology at the Department of Microbiology and Parasitology at Universidade Federal Fluminense. He holds a degree in Veterinary Medicine from the Fluminense Federal University (2005), a master's degree in Veterinary Clinic and Reproduction from the Fluminense Federal University

(2009), a PhD in Veterinary Medicine (Animal Clinic and Reproduction) from the Fluminense Federal University (2013) and Post Doctorate (2014) by the same program. Has experience in Veterinary Medicine and Microbiology, with emphasis on Veterinary Microbiology, working mainly on the following subjects: hay and genotypic characterization of Gram-positive bacteria agents prevalent in cases of topical infections of small animals and phenotypic and genotypic detection of resistance and virulence in Staphylococcus isolated from infectious processes in companion animals

Richard Spontak
Richard Spontak*,[1] Reza Ghiladi,[1] Frank Scholle[1]

[1]North Carolina State University, Raleigh, North Carolina, USA.
Email id: spontak@ncsu.edu

Broad-Spectrum Self-Disinfecting Polymer Surfaces: Preparing for Future Health Crises

Abstract
Some of the microbial challenges currently facing the global community are becoming broadly and increasingly life-threatening, as illustrated by the worldwide COVID-19 pandemic. In more chronic fashion, microbes such as antibiotic-resistant MRSA and spore-forming C. difficileconstitute major healthcare concerns. In response, various materials-related methods involving nanoparticles or surface functionalization have been proposed to combat this menace, but many are either limited to specific microbes or promote environmental contamination. In this work, we introduce two antimicrobial strategies in which several polymer films and coatings are utilized to demonstrate their potential. The first focuses on embedding photosensitive dye molecules capable of generating reactive oxygen species (singlet oxygen) into polymers such as a nonpolar thermoplastic elastomer (TPE) [1], as well as coatings on polymer fibers. In the presence of molecular oxygen and incoherent visible light, this system inactivates at least 99.9999% of two Gram-positive bacterial strains, as well as at least 99.9% of three Gram-negative bacterial strains and three virus strains, in ca. 1 h under the conditions employed. Alternatively, a vastly different method employs an anionic (i.e., sulfonated) TPE that is inherently capable of promoting a dramatic surface pH jump due to proton transport, resulting in a highly acidic and microbiocidal environment that rapidly causes inactivation and kills at least 99.99% of the pathogens tested (including 3 drug-resistant bacteria such as MRSA, as well as SARS-CoV-2[2]) in less than 5 min. These methods afford effective pathways to broad-spectrum anti-infective materials.

Keywords
Antimicrobial polymer, photodynamic inactivation, block polymer, stimuli-responsive

References
[1] B. S. T. Peddinti, F. Scholle, R. A. Ghiladi, R. J. Spontak, ACS Appl. Mater. Interfaces, 10, 25955 (2018).
[2] B. S. T. Peddinti, S. N. Downs, J. Yan, S. D. Smith, R. A. Ghiladi, V. Mhetar, R. Tocchetto, A. Griffiths, F. Scholle, R. J. Spontak, Adv. Sci.,8, 2003503 (2021).

Biography
Richard Spontak received his B.S. and Ph.D. degrees in Chemical Engineering from Penn State and UC Berkeley, respectively. He has >300 peer-reviewed journal publications and his research has been featured on >30 journal covers and cited over 14,000 times. He has received numerous honors including the ACS Chemistry of Thermoplastic Elastomers and Roy W. Tess Awards, the IOM3 Colwyn Medal, the SPSJ International Award, and the SPE International Award. A fellow of the

American Physical Society and the Royal Society of Chemistry, he is a member of the Norwegian Academy of Technological Sciences and a Distinguished Professor at NC State.

Maria Alejandra Bravo de la Parra

Institute of Biotechnology (UNAM), USA

Mode of Action Models to Explain the Mechanism of Action of Insecticidal Cry Proteins Produced by Bacillus Thuringiensis

Abstract

Bacillus thuringiensis Cry toxins are a family of proteins whose members have shown toxicity against different insect orders or nematodes. Although the amino acid sequence identity could be low, all members share a similar protein fold composed of three distinct domains suggesting that the mode of action is conserved. These proteins have been widely used in biological control of insect pests worldwide.

Two different models for the mechanism of action of Cry toxins have been proposed, the signal transduction model (STM) or the sequential step model (SSM). In the case of STM, binding of Cry toxins to a membrane bound receptor, cadherin, triggers a G-protein dependent cascade that causes programed cell death. The SSM proposes that cell death is triggered by pore formation activity of the protein which results from sequential steps of the toxin, all of them assisted by receptor binding such as, concentration of toxin in the membrane, toxin oligomerization and oligomer insertion into the membrane. A fundamental difference between both models is that toxin oligomerization is a fundamental step for the SSM, while is not needed for the STM. However the oligomer formation is still a fundamental piece of information that is missing. Here we will summarize the experimental evidence that lead to both models and the experimental evidence that shows that toxin oligomerization is essential. Also, the different models that have been proposed to explain the possible conformational changes of Cry proteins during its oligomerization and pore formation.

Biography

Dr. Bravo made PhD studies in Basic Biomedical Research (1989) in the National University of Mexico (UNAM). Since then she works in the Institute of Biotechnology, UNAM. Her research is focused to the study Cry and Cyt insecticidal toxins produced by Bacillus thuringiensis bacteria.

In 1991 she made a Postdoc in Plant Genetic Systems, Belgium and in 1995 another Postdoc in Institute Pasteur, France. She has done several short stays in EMBRAPA Brazil, Pionner Hi-Bred USA and Institute of Plant Protection, China. Currently she has ongoing collaborations with all this institutions.

Dr. Bravo has published 202 scientific articles, 33 book chapters, edited 4 books and has 8 patents. She received the research award of the Mexican Academy of Sciences, National University Award for young researchers, AgroBio México Award and Women in Science L›Oreal UNESCO Award.

GSEBB2023

3rd Global Summit and Expo on Biotechnology and Bioscience

October 23-25, 2023 | Barcelona, Spain

https://www.thescientistt.com/2023/biotechnology-bioscience