

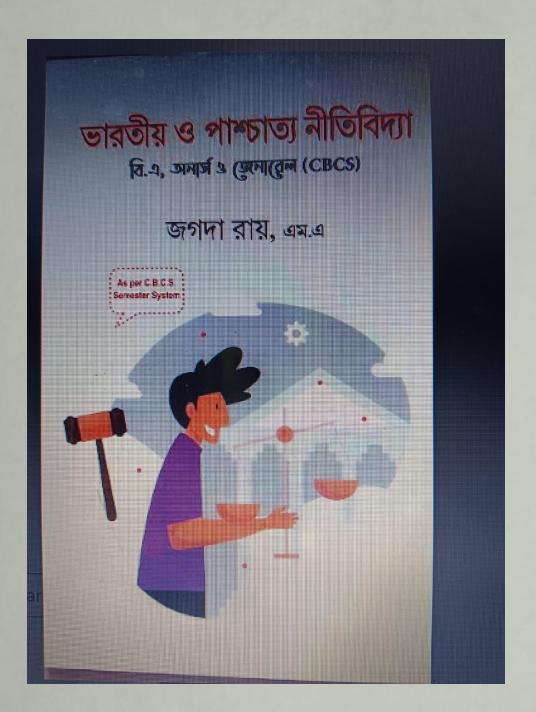
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Ref.

Name of the teacher: Mr. JAGODA ROY Title of book/chapter/paper: ভারতীয় ও পাশ্চাত্য নীতিবিদ্যা

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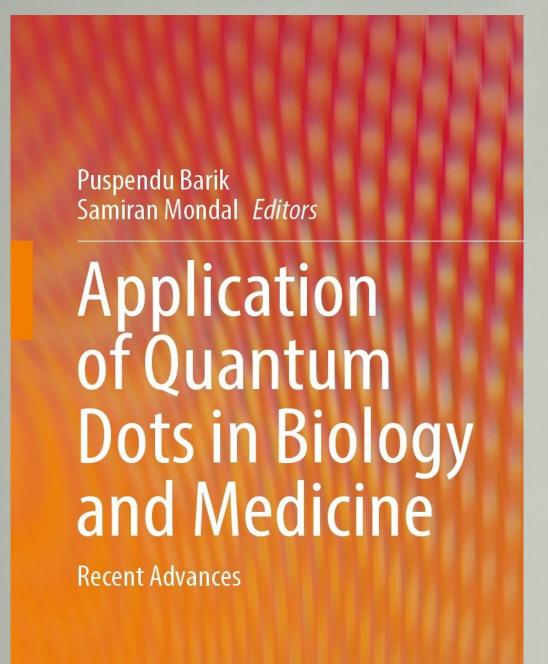
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Year: 2022

Date 20

Name of the teacher: DR. SAMIRAN MONDAL Title of book/chapter/paper: Application of Quantum Dots in Biology and Medicine: Recent Advances





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Ref.

Date 20

Name of the teacher: DR. SAMIRAN MONDAL Title of book/chapter/paper: Introduction to Quantum Dots

Year: 2022

Introduction to Quantum Dots



Samiran Mondal

Abstract Quantum dots (QDs) or luminescent semiconductor nanocrystals possess size-tunable elegant electro-optical properties, broad absorption spectra, and narrow emission ranging from UV to NIR region, high fluorescent quantum yields, fluorescence intermittency, resistance to photobleaching, and significant Stoke shift, which are the prerequisites for the application in vitro and in vivo bioimaging, biomarker, molecular pathology, drug delivery, and many more. The suitable applicability of QDs in the biomedical field needs to understand the science behind the QDs and their fundamental properties, which are most relevant to biology and medicine. In recent years, QDs have shown a wide variety of possibilities in the biomedical field due to their recent development of synthetic procedures and biocompatibility. The chapters will focus on the fundamentals of QDs. The chapter also includes a brief description of chapters in the book, which may help readers understand the topics' overview.

Keywords Quantum dots (QDs) · Fundamentals and applications of QDs · Biomedical field

QDs are nanometer-scale (typically 2-10 nm in diameter) semiconductor nanocrys tals composed of Groups II (e.g., Zn, Cd),-VI (e.g., Se, S) or III (e.g., Ga, I),-V (e.g., N, P) or IV (e.g., Pb)-VI (e.g., Se, S) elements of Mendeleev periodic table that exhibit size-dependent optical properties, including absorbance and photoluminescence [1, 2]. Unique optoelectronic, catalytic, and semiconductor properties of QDs are arising due to their three-dimensional quantum confinement regime, i.e., the size of the QDs in the range of exciton Bohr radius [3, 4]. Valence and conduction bands are separated by a band gap in the semiconductor material. On photon absorption, electrons from the lower electronic energy state (valence band) are promoted to the higher electronic energy state (conduction band), producing a hole in the valence band. Bandgap energy becomes higher for the smaller QDs, and

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Ref.

Date 20

Name of the teacher: DR. SAMIRAN MONDAL Title of book/chapter/paper: The Underlying Mechanism of Quantum Dot-Induced Apoptosis: Potential Application in **Cancer Therapy**

Year: 2022

The Underlying Mechanism of Quantum **Dot-Induced Apoptosis: Potential Application in Cancer Therapy**

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Jishu Mandal, Mriganka Mandal, Tamanna Mallick, and Samiran Mondal

Abstract Quantum dots (QDs) are a popular agent to use in a wide range of scientific and industrial applications because the molecules consist of an excellent biophysical and optical property, later varies with the compositions from a wide range of visible to infrared wavelength. Being an established fluorescent probe QDs are useful in the long-term, multiplexed and quantitative imaging and detection is governed wonderfully by QDs. Here we represent the present trends of the multidimensional use or applications of QDs in the field of biological science to achieve disease diagnostics, control over it and in particular cancer treatments and cellular mechanisms induced by QDs. The QDs are small in size with a high surface ratio, capable of potentially changing the therapeutic and pharmacological efficacy towards a good dimension of disease management. These are unique anti-cancer activities like apoptotic cell death and autophagy cell death, different types of molecular path-ways and mechanism of apoptosis has been focused hereafter application of quantum dots in various cell lines of malignant cells of mice and humans

Keywords Quantum dots · Apoptosis · Cancer therapy

Jishu Mandal, Mriganka Mandal-Both the authors have equal contributions.

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125

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Date 20

Name of the teacher: DR. SAMIRAN MONDAL Title of book/chapter/paper: Present Status and Future Perspective

Year: 2022

Present Status and Future Perspective

Samiran Mondal

Abstract The present chapter illustrates an overview of the application of quantum dots (QDs) and enlightens the future perspective on their potentiality in biology and medicine. The chapter highlights the critical aspects of QDs and the present state-of-the-art applications, both in vitro and in vivo.

Keywords Ouantum dots (ODs) · Present status · Future perspective

The concept of artificial atoms or quantum dots (ODs) comes from the reduced dimensionality of semiconducting crystals, i.e., the size of semiconductor particles controls optical and electronic properties called the quantum size effect. QD synthesis, characterization, and applications are still highly active fields of interest to researchers despite being part of mature technologies. During the last three decades, researchers have synthesized QDs by improving monodispersity and size tunability to ameliorate the overall optical properties by exploring different reaction conditions such as solvents, salts, pH, and temperature. The size-dependent tunable emission is attractive for biomedical research since luminescence is commonly used in cell, tissue, and animal experiments, supporting biomedical researchers with many precursors for building tools to address important questions and diagnose and treat diseases. Many researchers convincingly described many optical advantages of QDs over organic fluorophores or dye molecules for biomedical research, owing to their high quantum yield, broad absorption spectra, large Stoke shift, and highly stable. The widely increased interest in QDs has been established as a technological revolution by the tremendous efforts of scientists in chemistry, physics, biology, medical engineering, and pharmaceutical sciences.

QDs present a versatile tool to obtain a series of remarkable results in the fields of cell labeling, cell migration tracking, multiplexed imaging, flow cytometry, fluorescence in situ hybridization, targeted tracing in living cells and animals, real-time in vivo and cellular process imaging, genomic and proteomic detection, pathogen

265

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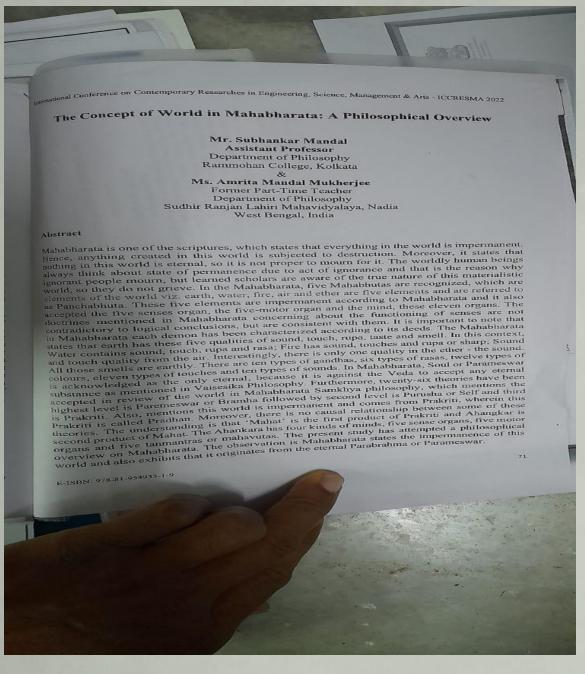
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Year: 2022

Name of the teacher: Dr.Subhankar Mandal

Title of book/chapter/paper: The Concept of World in Mahabharata: A Philosophical Overview (pp. 71 & January 2022)



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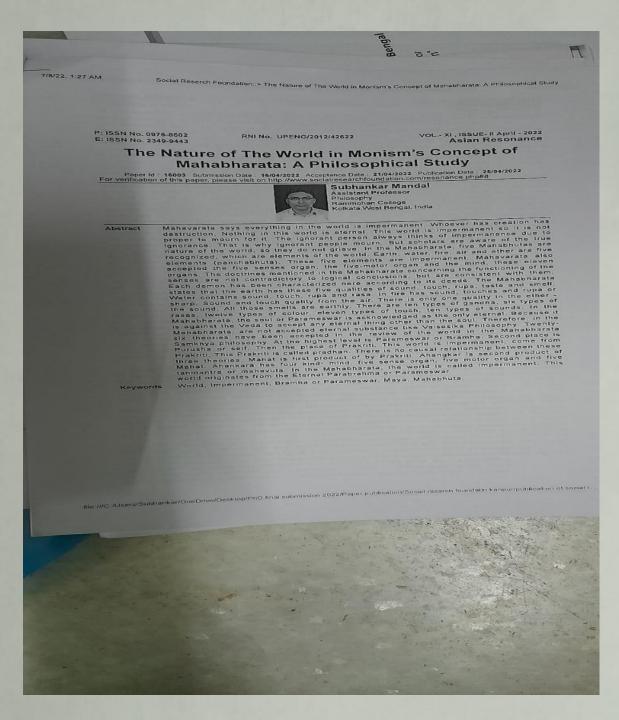
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Year: 2022

Name of the teacher: Dr.Subhankar Mandal Title of book/chapter/paper: The Nature of The World in Monism's concept of Mahabharata: A Philosophical Study (1-7)



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Date 20

Name of the teacher: Tanushree Murmu

Title of book/chapter/paper: A non-linear model of a fishery resource for analyzing the effects of toxic substances

Year: 2022

7:14 PM 🗇 🖪 146 att 1 23. A Non-linear Model of a F... ← ~ : link.springer.com Home > Nonlinear Dynamics ... > Conference paper A Non-linear Model of a Fishery Resource for Analyzing the Effects of Toxic Substances Sudipta Sarkar 🖂, Tanushree Murmu, ... Kripasindhu Chaudhuri + Show authors Conference paper | First Online: 06 October 2022 646 Accesses Part of the Springer Proceedings in Complexity book series (SPCOM) Abstract The goal of the proposed model is to investigate and analyze the qualitative behaviour of predator-prey fishery resource in an aquatic ecosystem by a non-linear mathematical model in which prey and predator species are - PI

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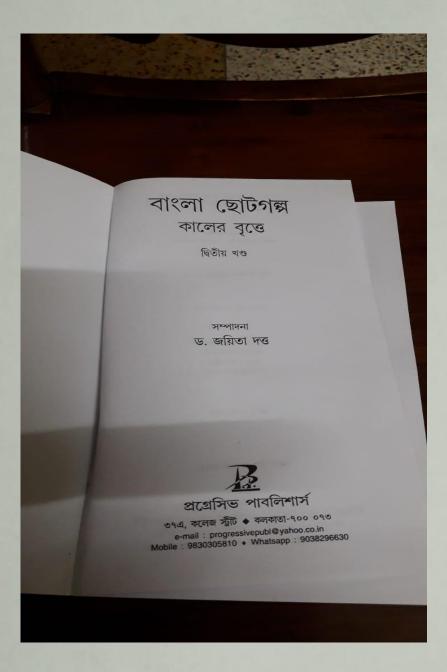
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Year: 2022

Date 20

Name of the teacher: Dr. Sumita Das Majumdar Title of book/chapter/paper: বাংলা ছোটগল্প কালের বৃত্তে : দ্বিতীয় খন্ড(পয়লানম্বর)



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Year: 2022

Date 20

Name of the teacher: Dr. Samarendra Nath Banerjee Title of book/chapter/paper: Text Book on Biology (Editions: 2018-22)



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Name of the teacher:Dr. Mahfuz Alam Title of book/chapter/paper: Education & Work Prticipation of Muslim Women in Murshidabad District: An Empirical Study

Year: 2022

ILLUSTRATING THE MUSLIMS OF MODERN BENGAL

A Cluster of Interpretations

Edited by Firoj High Sarwar

> Foreword Sohel Firdos

Education and Work Participation of Muslim Women in Murshidabad District : An Empirical Study

Rakibul Islam & Mahfuz Alam

Murshidabad has been always very important name in the history of India. The end of medieval age and the beginning of modern age in India was started from the soil of Murshidabad. The present territorial shape of Murshidabad has been sketched out in 1879, on the basis of administrative ground. Geographically, Murshidabad is situated in between the north and south Bengal in the latitude of 23°43"- 24°52", and in the longitude of 87°49". 88°44". According to 2011 census, the total area of Murshidabad is about 5324 sq.km, total population is 7103407 and literacy rate is 66.69 percent.¹ On the basis of socio-economic development, Ministry of Panchayeti Raj has marked Murshidabad as a backward area in 2006. Issues like unemployment, illiteracy has a high impact on the Muslim community in the Murshidabad district. Due to poverty, the students are compelled to leave their study. The customs of child marriage and the illiteracy of girl child are very much common in these areas. The age long negligence of the government, and the subsequent people's apathy towards education made this district backward. Even, after almost seventy years of Independence, people of Murshidabad are still thriving for a fully functional university in their homeland. Though, the Central and State Government have taken many steps to develop the position of this backward community, but there are still many issues which needed to be taken care of. In Murshidabad, Mulsims, in general, are more backward than the other communities of the district. Among the Muslims, the women are the most neglected portions of the community. They are lagging behind their men on every aspect like education, health and employment -which is obviously not encouraging factor for total progress of the country.

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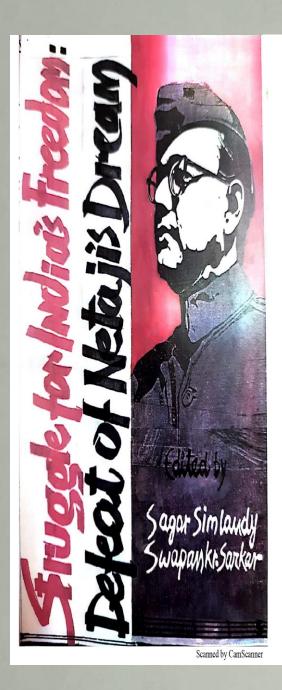
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Year: 2022

Date 20

Name of the teacher: Dr. Mahfuz Alam Title of book/chapter/paper: Subhas Chandra Bose-the undoubted warrior



12 Subhas Chandra Bose-the undoubted warrior Rakibul Islam Mahfuz Alam, Assistant Professor of Education, Rammohon College, Kolkata, W.B.

Sagar Simlandy & Swapan Kumar Sarkar

Introduction

In India, Subhas Chandra Bose is considered as one of the greatest leaders of Freedom Movement against the British Colonial rule. His charismatic leadership and immense influence on the common people has made him a legend among the national figures. The name, Subhas Chandra Bose has become an inspirational myth for the Indians in our long struggle for freedom against the British Empire. Among all the other freedom fighters in India, Subhas Chandra Bose actually stands in a different league. He has organized a massive military movement against the almighty British Empire which is still regarded as one of the most iconic events in the history of struggle for freedom in the South Asian context against the colonial rulers. Subhas Chandra Bose, popularly is known as 'Netaji' because of his natural leadership quality and patriotism. Moreover, he was an excellent administrator, statesman and visionary. In the popular perception, Bose is worshipped as a warrior hero who has sacrificed his life for the cause of Indian the cause of Indian Independence. And in this pattern, we normally overlook the basic political, socio-economical ideas of Bose which is always an integration of the socio-economical ideas of Bose which is always an integral part of every step he made in the journey lo become 'Netaji' for all.

In order to understand the legacy of Subhas Chandra Bose, we need to study his idea of nation, nationalism and socio-cultural

118

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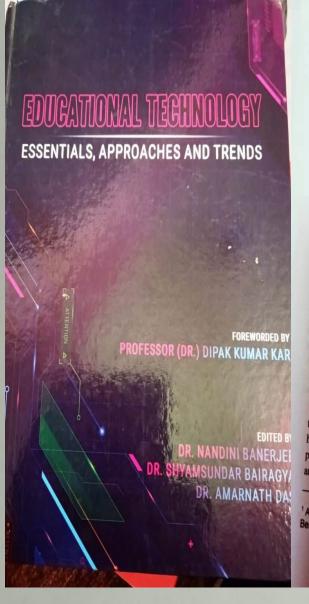
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Year: 2022

Date 20

Name of the teacher: Dr. Mahfuz Alam Title of book/chapter/paper: Mass Media & Education



condition. Second, it should contribute to the continuous 'expansion of knowledge'. Third and finally, the education system must meet the updated market demands for requisite skills. The word 'Media' connects its route with Latin 'medium' which means 'in the middle'. It can be broadly defined as certain mode of communication which happens through some medium. It possesses technical & institutional methods of production and distribution. Media has several types, based on accessibility, reach and audience. It plays an important role in the democratic system. Media helps for

CHAPTER 27 MASS MEDIA & EDUCATION

Dr. Mahfuz Alam 1

ducation is always regarded as the ultimate tool for learning and

ducation is always regarded and ducation is not restricted only in text development. The process of education is not restricted only in text

development. The process of connected with every step our daily in ten The very existence of human life entirely depends on the holistic approach of The very existence of human fire charge gan be the instrument of change to education. A properly educated human being can be the instrument of change to education. A property cutcated number future generation. All the forms of education make the world a better place for our future generation. All the horizont of education make the world a better place for our are evolved on the basis of social demand formal, informal and not formal to maintain the social fabric intact. In the Education plays an important loss of system is also evolving itself to keep up the track. With the changing time, education system has developed several applications and new dimensions. Education technology has emerged as one of the prime developments of modern education system which has been instrumental in creating many necessary reforms according to the demands of the present society. In current world, the education system has three basic priorities. First, the education should be accessible to all irrespective any division like class, caste or any kind of financial

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Name of the teacher: Dr. Mahfuz Alam Title of book/chapter/paper:Self-instructional Strategies



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Semester 4

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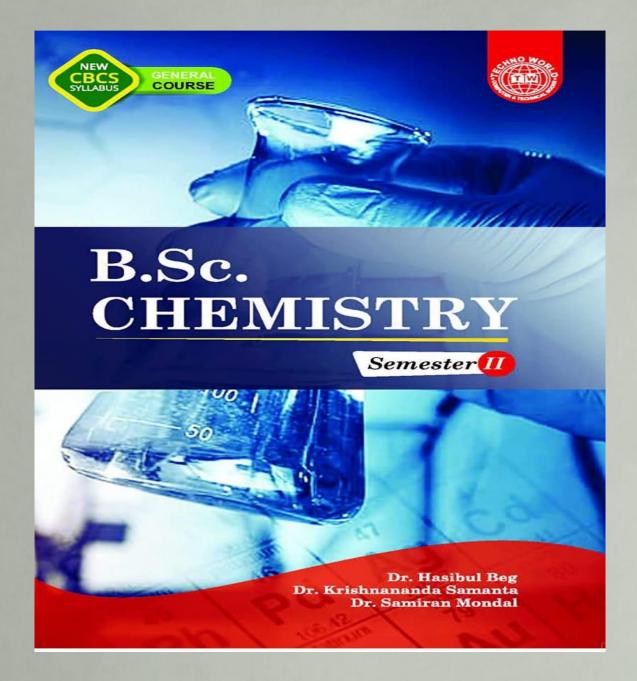
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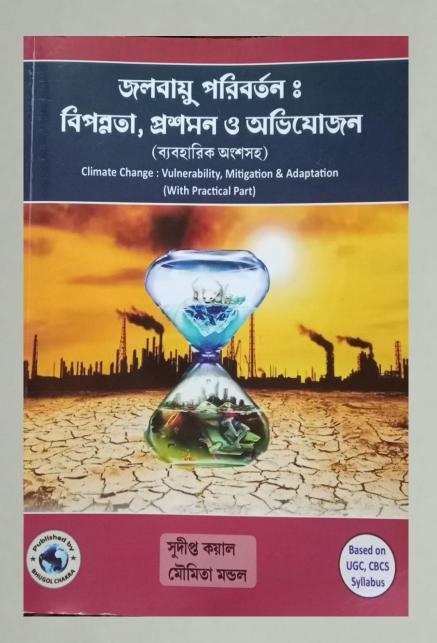
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Year: 2023

Date 20

Name of the teacher: Moumita Mondal

Title of book/chapter/paper: Jalavayu Poriborton: Biponnota, Proshomon o Abhijojon (Climate Change: Vulnerability, Mitigation and Adaptation)



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Year: 2023

Date 20

Name of the teacher: Dr. Gouriprosad Datta Title of book/chapter/paper: Amorphophallus campanulatus: An Untold Story of a Potent Nutraceutical- Part I

> Chapter 14 Print ISBN: 978-81-961090-5-9, eBook ISBN: 978-81-961090-3-5

Amorphophallus campanulatus: An Untold Story of a Potent Nutraceutical- Part I

Subhashree Basu ^a, Moumita Das ^b and Gouriprosad Datta ^{c*}

DOI: 10.9734/bpi/cops/v2/3878B

ABSTRACT

The study aims to analyze the proximate composition, mineral and vitamin content as well as active components present in the popularly consumed tuber of West Bengal, *Amorphophallus campanulatus*. Medicinal plants are potential sources of biomolecules and their analogues have great relevance in the preparation of modern medicines. They are also good source of essential nutrients and minerals that contribute to the wellbeing of an individual. On proper supplementation through diet, they can acquire, convert, allocate, distribute and pave way for proper utilization of all the essential components in the biological system So this popular tuberous crop of south-east Asia that has its mention in the Indian ancient medicinal system, Ayurveda, is taken into consideration to analyze its nutritional components. The plant species were collected from farmers of Santragachhi, Howrah district and authenticated by Botanical Survey of India, Howrah district, West Bengal, India. Fresh tubers were analyzed for their content of crude proteins, total carbohydrate, soluble carbohydrate, fat, fibre, ash, moisture, carotenoids and vitamins. With the aid of an inductively coupled plasma atomic spectrometer, the ash's mineral content was analyzed. Phytochemical constituents were separated using gas chromatography and components detected by mass spectrometry. According to the study, *Amorphophallus campanulatus* tubers have high levels of crude protein, moisture, fibre, ash, and vitamins E and C. In addition, the tuber contains practically all of the necessary macro- and micronutrients. It's fascinating that the tuber is devoid of heavy metals including arsenic, lead, cadmium and mercury. None the less the tuber also contains several nutraceutical components that have several health benefits. Thus, the study's findings make a significant contribution to our understanding of the full nutritional profile of this tuber, which may encourage increased use for the maintenance of a healthy lifestyle and future attention to its therapeutic pot

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Year: 2023

Name of the teacher: Dr. Shrabani Sen Title of book/chapter/paper: Oscillator systems, Approach from Nonlinear Dynamics

Ravinder Nath Anisetty Amiya Bhaumik rg/10.31674/ Oscillatory Systems: Approach from Nonlinear Dynamics **Shrabani Sen** Department of Chemistry, Rammohan College, Kolkata, West Bengal, India Corresponding Author's Email: sen.shrabani@gmail.com ABSTRACT ABSTRACT The aim of this chapter is to present a brief outline of the background theories essential for understanding numerous non-equilibrium phenomena, such as chemical and biological oscillations, spirals and so on. Oscillations are one of the most common phenomena in chemical and biological systems. Oscillations of chemical origin have been present since life originated. Every living system contains thousands of chemical and biological oscillators. The systematic study of oscillating chemical reactions and subsequently the broader field of Nonlinear Dynamics is of considerably fundamental domain of research in recent decades. The chapter starts with a brief outline of some background history of chemical oscillations followed by the basic thermodynamic explanations and stability analysis. A short glimpse of Phase plane analysis and Limit cycles are given. One dimensional stability analysis is followed by two dimensional one. Relaxation oscillation is explained both theoretically and graphically. Kerverder: Steady, State: Equilibrium: Phase, Plane: Non-Equilibrium Process: Oscillators Keywords: Steady State; Equilibrium; Phase Plane; Non-Equilibrium Process; Oscillatory Systems Introduction Introduction Dynamics is an interesting topic which explains how a physical variable of interest progresses with time. Harmonic oscillator is an example of linear motion which is well known from Newtonian Mechanics. In this motion the frequency of the oscillator is not dependent onamplitude. Whenever the system is not linear its motion changes the behavior. It is not so simple because of the dependency of its frequency over its amplitude. The result is the motion may vary from purely rhythmic to chaotic region. Nonlinear dynamics has its origin in Physics to Newtonian mechanics developed earlier in mid-1600s, it is now treated as an interdisciplinary subject today (Epstein 1998, Strogatz 1995, Murray 1993, Gillespie 1977, Goldbeter 2006) which has its application in almost all branches of Physics, Chemistry and Biology (Grossman 1990, Hillborn 1994, Jalan 2005, Julvez 2015). Although it developed early but the subject could not found its applicability because the classical three-body system was not under the ability of the Newtonian method. The Poincare developed a new geometric technique in studying such systems (Strogatz). From this a new area of Nonlinear Dynamics has been developed which has enlarged application in different area of science specially in chemistry and biology. In order to go into the depth of aforementioned people have to get idea about the differences between temporal and spatio temporal oscillations. Oscillations are of two types. One is temporal that means it oscillates in time (Sen *et al.*, 2008, Sen *et al.*, 2009, Dhatt, Sen & nds in Chemical and B Chaudhury 2020, Murray 1993, Scot 1994) and the other is spatio temporal that means it can oscillate both in space and time. Temporal oscillation implies it is homogeneous in space (Bray 1921) where as the spatio-temporal oscillation has its coupling of the space part with the temporal part with diffusion (Epstein 1998, Ghosh *et al.*, 2009, Sen *et al.*, 2010). A chemical or biological oscillation is a periodic far-from-equilibrium phenomena which is part of non equilibrium thermodynamics. After looking back at the history of the subject it shows that long time has been taken to establish the fact that the oscillatory phenomena has no contradiction with the classical second law of thermodynamics. Belousov (1893-1970) submitted the manuscript of continuous conversion of yellow Ce⁺⁴ to colorless Ce⁺³ in 1951 but it was rejected. The editor outwardly stated that his work was simply impossible. The paper could be published on submission of some additional evidence which can contain some snapshots of different phases of oscillation. Tragic fact s that after laboring for six more years the work was again rejected. At 1961 Zhabottinsky a graduate student of Biophysics began looking at the same 5 Sanyal



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Year: 2023

Date 20

Name of the teacher: Dr. Samarendra Nath Banerjee Title of book/chapter/paper: Cyclophosphamide – its medical and mechanism with side effects.

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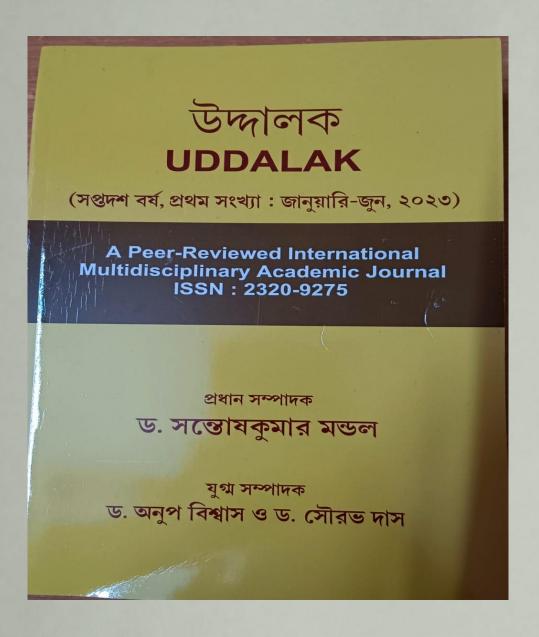
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Name of the teacher: Mrs. Anima Roy Title of book/chapter/paper: শিক্ষা সম্পর্কে স্বামী বিবেকানন্দের দৃষ্টিভঙ্গি এবং এর বর্তমান প্রাসঙ্গিকতা



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Date 20

Name of the teacher: Dr. Samik Acharjee Title of book/chapter/paper: In-silico Structural Prediction of Melanocyte- Stimulating Hormone (MSH) and Melanocortin 1 Receptor (MC1R) of African Clawed Frog (Xenopus laevis) by Homology Modeling (Recent Trends in Science, Platinum Jubilee Series)

Sensk Acharjes



Stimulating Hormone (MSH) and Melanocortin 1 Receptor (MC1R) of African Clawed Frog (Xenopus laevis) by Homology Modeling Samik Acharjee* Department of Zoology Rammolan Gillegr, 102/1 Raja Rammolan Sami, Kokata-70009

In-silico Structural Prediction of Melanocyte-

Email of Corresponding author: samikacha njeribia nanohancollege.ac.in Abstract:

Melanocyte stimulating hormone (MSH) binds to Melanocortin 1 receptor (MCTR) for controlling pigment dispersion in dermal melanophores during background adaptation of amphibians. MSH-MC1R binding is a kind of protein-protein interaction, which depends on the 3-dimensional (3D) structure of the receptors and its ligand molecule. But, species specific evaluation of MSH and MCIR structures are not available till date. Therefore, an attempt was taken to understand the 3D structure of MSH and MC1R of Xempus lacvis by accessing the sequence data from NCBI. The MSH and MC1R protein sequences were analyzed via Expasy's protparam server, SOPMA and SWISSMODEL/Workspace. The results suggested that MSH is an unstable, hydrophilic and basic nature of protein; whereas MCIR is an unstable, hydrophobic and slightly basic in nature. The secondary structure of MSH showed the presence of alpha helix 30.55%, extended strands 836% and 1.09% beta turns along with random coiling of 60.00%, whereas in MCIR alpha helixes are 54.26% followed by 16.72% of extended strands, beta turn with 284% along with random coiling with 26.18%. The predicted 3D structure by homology modeling was then validated by RAMPAGE server. Such predicted 3D structure can also be utilized for molecular docking and simulation studies in future.

Key words: Homology modeling; Insilico; MSH-MCIR; Xenopus laevis.

Fage | 64

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