



Ujjwal Bahu-Uddeshiya Sanstha, Nagpur

College code- 401

D.D. BHOYAR COLLEGE OF ARTS AND SCIENCE, MOUDA

Tah.: Mouda, Dist.: Nagpur, Pin - 441104

Affiliated to RTM Nagpur University, Nagpur, Approved by Government of Maharashtra

Email : dd.bhojar@rediffmail.com Website : ddbhojar.ac.in

Tel : 07115 - 281979 Mob. : 9158003321

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during academic session 2022-23.

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to website of the Journal	Link to article / paper / abstract of the article
Analyzing sports technologies and trends in modern era	Dr. Sanjay Khudale	Principal	International Journal of Sports, Health and Physical Education	2022	2664-7559	https://www.physicaleducationjournal.in/archives/2023.v5.3.v5.i2.A.79/analyzing-sports-technologies-and-trends-in-modern-era	https://www.physicaleducationjournal.in/archives/2023.v5.i2.A.79/analyzing-sports-technologies-and-trends-in-modern-era
A Study of Attitude and Professionalism of Post Graduate Physical Education Students of RTM Nagpur University, Nagpur	Dr. Sanjay Khudale	Principal	International Research Journal of Human Resource and Social Sciences	2022	2349-4085	https://ipindexing.com/journal-details/International-Research-Journal-Of-Human-Resources-And-Social-Sciences/243	https://acrob.at.adobe.com/id/urn:aai:d:sc:AP:c701e2a9-0176-47f1-80fb-7b9384eebef4

Aggression of State Level Men Kho-Kho and Kabaddi Players – A Comparative Study	Dr. Sanjay Khudale	Principal	International Journal of Research in Economics and Social Sciences(IJRESS)	2022	2249-7382	https://euroasiapub.org/	https://euroasiapub.org/wp-content/uploads/IJRESS-20-May2022Sanj.pdf
Temperature Dependence of Electrical Conductivity and XRD Studies of Hydroquinone Modified Amberlite XAD-4 Resin	Dr. Abhishekh Thakre	Chemistry	Russian Journal of Physical Chemistry A	2022	0036-0244	https://link.springer.com/journal/11504	https://link.springer.com/article/10.1134/S0036024422110310
DTP/SiO ₂ Assisted Synthesis of New Benzimidazole-Thiazole Conjugates Targeting Antitubercular and Antioxidant Activities	Dr. Shrikant V.Hese	Chemistry	Polycyclic Aromatic compounds	2022	1563-5333 (Online)	https://www.tandfonline.com/journals/gpol20	https://www.tandfonline.com/doi/full/10.1080/10406638.2022.2056210
Ultrasonic Study of Methyl Cobalamine Drug At 35 °C & 45 °C	Dr. Ritesh Naik	Chemistry	International Organization of Research & Development (IORD)	2022	2348-0831	https://iord.in/index.php/iord/issue/view/20	https://zenodo.org/records/7132561
Important Lead Optimization Tools & Techniques in Drug Discovery Process	Dr. Ritesh Naik	Chemistry	International Organization of Research & Development (IORD)	2022	2348-0831	https://iord.in/index.php/iord/issue/view/20	https://iord.in/index.php/iord/article/view/58
Investigations on Hematotoxic and Nephrotoxic Analysis in Aniline Induced Wistar Rats	Mrs. Shabnam Ramteke	Zoology	IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES	2022	2319-1775	https://www.ijfans.org/	https://ijfans.org/uploads/paper/cff28f2ad4153785dc78a1c22ad94cc2.pdf

Xylaria chilai sp. nov. from Chilai lake at Shibla Forest District Yavatmal, MS, India.	Mr. Swapnil Kamble	Botany	Int. J. of Life Sciences	2022	2320-7817(p)	https://ijlsci.in/ls/index.php/home/index	https://ijlsci.in/ls/index.php/home/article/view/615
INNOVATIVE PRACTISES IN LIBRARIES	Mrs. Minal S. Bhoyar	Library	Journal of Kavikulaguru Kalidas Sanskrit University, Ramtek	2022	2277-7067	https://kksushodhasamhita.org/index.php/sdsa	https://kksushodhasamhita.org/index.php/sdsa/article/view/992/46



D.D. BHOYAR COLLEGE OF ARTS AND SCIENCE, MOUDA

Tah.: Mouda, Dist.: Nagpur, Pin - 441104

Affiliated to RTM Nagpur University, Nagpur, Approved by Government of Maharashtra

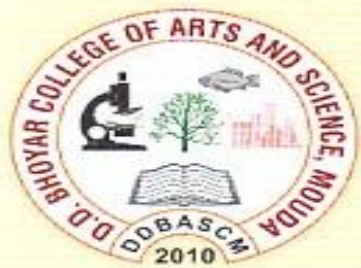
Email : dd.bhojar@rediffmail.com Website : ddbhojar.ac.in

Tel : 07115 - 281979 Mob. : 9158003321

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during academic session 2021-22.

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to website of the Journal	Link to article / paper / abstract of the article
Web-analogues Iron hydroxide@Cadmium hydroxide one dimensional nanostructure: Electrochemical supercapacitor	Dr. Shrikant S. Raut	Physics	Journal of Materials Science: Materials in Electronics	2021	0957-4522	https://link.springer.com/journal/10854	https://link.springer.com/article/10.1007/s10854-021-06733-5
Synthesis and evaluation of N-(4-(substituted)-3-(trifluoromethyl) phenyl) isobutyramides and their N-ethyl analogous as anticancer, anti-angiogenic & antioxidant agents: In vitro and in silico analysis.	Dr. Shrikant V.Hese	Chemistry	Computational Biology and Chemistry	2021	1476-928X	https://www.sciencedirect.com/journal/computational-biology-and-chemistry	https://www.sciencedirect.com/science/article/abs/pii/S1476927121000517
A Short Synthesis of Carbazole Alkaloids Murrayanine and Mukonine	Dr. Shrikant V.Hese	Chemistry	Chemical Methodologies	2021	2588-4344	https://www.chemmethhod.com/	https://doi.org/10.22034/chemm.2021.131552
DTP/SiO ₂ : An Efficient and Reusable Heterogeneous Catalyst for synthesis of Dihydropyrano[3,2-c]Chromene-3-Carbonitrile Derivatives.	Dr. Shrikant V.Hese	Chemistry	J. Appl. Organomet. Chem	2021	2783-1272 (online)	https://jaoc.samipublico.com/	https://doi.org/10.22034/jaoc.2021.276239.1004

Acoustical Studies of Molecular Interactions in the Solution of Streptomycin Drug at Different Temperatures and Concentrations	Dr. Ritesh Naik	Chemistry	Orbital-The Electronic journal of Chemistry	2021	1984-6428	www.orbital.ufms.br	https://periodicos.ufms.br/index.php/orbital/article/view/15555
ULTRASONIC STUDIES OF MOLECULAR INTERACTIONS IN THE SOLUTION OF LEAFEXTRACT OF OCIMUM TENUIFLORUM AT 2 MHZ	Dr. Ritesh Naik	Chemistry	Journal of Advanced Scientific Research	2021	0976-9595	https://www.sciensage.info/index.php/JASR	file:///C:/Users/H P/Downloads/1572-Article%20Text-1536-1-10-20220715.pdf
Ultrasonic Studies of Molecular interactions Binary Mixtures of Tamarind Leaves.	Dr. Ritesh R.Naik	Chemistry	International Journal of Interdisciplinary Innovative Research & Development (IJIIRD)	2021	2456-236X	IJIIRD International Journal for Engineering & Science	http://ijiird.com/wp-content/uploads/ASD005.pdf
Need for Holistic Planning by IQAC in The New Framework	Mrs. Minal S. Bhoyar	Library	THE RESEARCH JOURNAL (TRJ): A UNIT OF I2OR	2021	2454-4930	http://www.theresearchjournal.net/	http://nebula.wsi mg.com/1e8387e5546c150fe8dd9ff2cf03722a?AccessKeyId=809C1E9E538F4C38BEAB&disposition=0&alloworigin=1
TOXICITY OF ANILINE ON KIDNEY OF MALE ALBINO RAT.	Mrs. Shabnam Ramteke	Zoology	INDIAN JOURNAL OF APPLIED RESEARCH	2021	2249 - 555X	https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/	https://acrobat.adobe.com/id/urn:aaid:sc:AP:1b850814-4343-487e-9971-1163e5512bb1



Ujjwal Bahu-Uddeshiya Sanstha, Nagpur

College code- 401

D.D. BHOYAR COLLEGE OF ARTS AND SCIENCE, MOUDA

Tah.: Mouda, Dist.: Nagpur, Pin - 441104

Affiliated to RTM Nagpur University, Nagpur, Approved by Government of Maharashtra

Email : dd.bhojar@rediffmail.com Website : ddbhojar.ac.in

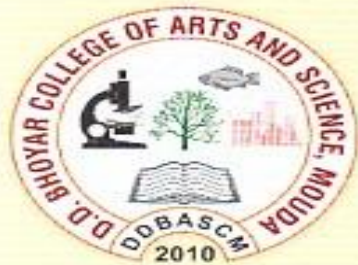
Tel : 07115 - 281979 Mob. : 9158003321

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during academic session 2020-21.

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to website of the Journal	Link to article / paper / abstract of the article
Child Labour in India: Violation of fundamental Human Rights	Dr. Sanjay Khudale	Principal	B.Aadhar's international Peer-Reviewed indexed Research journal	2020	2278-9308	https://cosmosimpactfactor.com/page/journals_details/5561.html	https://acrobat.adobe.com/id/urn:aaid:sc:AP:2d69528c-0faf-4f6f-abb7-8df8fc1bb62c
Analysis on mental health and self confidence among the kabaddi and kho-kho players	Dr. Sanjay Khudale	Principal	International Journal of Research in IT and Management (IJRIM)	2020	2331-4334	https://journals.indexcopernicus.com/search/details?id=33202	https://acrobat.adobe.com/id/urn:aaid:sc:AP:15240c3d-21f1-467a-ae1e-a41a888c1f33
Research on physical education Problems and management Reform of Indian colleges and universities	Dr. Sanjay Khudale	Principal	Sambodhi	2020	2249-6661	https://sambodhi.co.in/publications-resources/	https://acrobat.adobe.com/id/urn:aaid:sc:AP:0420440a-e918-45d7-9bd0-34e5ef20bedb
Prototype symmetric configured MWCNTs/Fe ₂ O ₃ based solid-state supercapacitor	Dr. Shrikant S. Raut	Physics	Synthetic Metals	2020	0379-6779	https://www.sciencedirect.com/journal/synthetic-metals	https://www.sciencedirect.com/science/article/abs/pii/S037967792030881X
Widening potential window of flexible solid-state supercapacitor through asymmetric configured iron oxide and poly(3,4-ethylene dioxythiophene) polystyrene	Dr. Shrikant S. Raut	Physics	Journal of Energy Storage	2020	2352-152X	https://www.sciencedirect.com/journal/journal-of-energy-storage	https://www.sciencedirect.com/science/article/abs/pii/S2352152X20314596

sulfonate coated multi-walled carbon nanotubes assembly							
Synthesis and evaluation of novel 4-chloro-5-(cyclic/acyclic amino)-2-p-tolyl-(2H)-pyridazin-3-one derivatives as anticancer, antiangiogenic, and antioxidant agents	Dr. Shrikant V.Hese	Chemistry	Chemistry & Biology Interface	2020	2249-4820	https://cbijournal.com/	http://cbijournal.com/paper-archive/september-october-2020-vol-5/Research-Paper-3-synthesis-and-evaluation-of-novel-4-chloro-5-cyclicacyclic-amino-2-p-tolyl-2h-pyridazin-3-one-derivatives.pdf
Study of Solution Behaviour of Chlorzoxazone in Ethanol–Water through Thermodynamic Properties	Dr. Abhishekh Thakre	Chemistry	Russian Journal of Physical Chemistry A	2020	0036-0244	https://link.springer.com/journal/11504	https://link.springer.com/article/10.1134/S0036024421150073
Study of Interactions in Water Solutions of Lemon Drops by Ultrasonic and viscometrical Measurements	Dr. Ritesh R. Naik	Chemistry	International Journal of Interdisciplinary Innovative Research &Development (IJIIRD)	2020	ISSN: 2456-236X	www.ijiird.com	https://www.researchgate.net/publication/373999455_GLUTATHIONE_S-TRANSFERASES_AS_A_PROGNOSTIC_BIOMARKER_FOR_LEUKEMIA
Generalized Offset Fourier-Mellin Transform & Its Analytical Structure	Dr. Paritosh Dolas	Mathematics	IJSET - International Journal of Innovative Science, Engineering & Technology	2020	2348 – 7968	https://www.ijiset.com/	https://ijiset.com/vol7/v7s10/IJSET_V7_I10_07.pdf

Generation of a fusion protein containing the two functional coiled-coil domain of t-SNARE, SNAP-23 and a transmembrane domain for mast cell	Prof. Durgesh Agase	Zoology	Journal of Applied and Natural Science	2020	0974-9411	https://journals.ansfoundation.org/index.php/jans	https://journals.ansfoundation.org/index.php/jans/article/view/2439
Studies on the morphology of leukaemic blast cells in relation to haematological parameters	Prof. Durgesh Agase	Zoology	Journal of Applied and Natural Science	2020	0974-9411	https://journals.ansfoundation.org/index.php/jans	file:///C:/Users/HP/Downloads/editors,+18-MS-2267_171+-+179.pdf



D.D. BHOYAR COLLEGE OF ARTS AND SCIENCE, MOUDA

Tah.: Mouda, Dist.: Nagpur, Pin - 441104

Affiliated to RTM Nagpur University, Nagpur, Approved by Government of Maharashtra

Email : dd.bhojar@rediffmail.com Website : ddbhojar.ac.in

Tel : 07115 - 281979 Mob. : 9158003321

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during academic session 2019-20.

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to website of the Journal	Link to article / paper / abstract of the article
Swimming as physical activity and recreation for women	Dr. Sanjay Khudale	Principal	Sambodhi	2019	2249-6661	https://sambodhi.co.in/publications-resources/	https://acrobata.dobe.com/id/urn:aaid:sc:AP:695826c9-6883-4656-981c-e49ed9f9c223
Cu(OH) ₂ @Cd(OH) ₂ core-shell nanostructure: Synthesis to supercapacitor application	Dr. Shrikant S. Raut	Physics	Thin Solid Films	2019	0040-6090	https://www.sciencedirect.com/journal/thin-solid-films	https://www.sciencedirect.com/science/article/abs/pii/S0040609019306121
Anchoring of gold nanoparticles into aligned TiO ₂ nanotube: Improved supercapacitive performance	Dr. Shrikant S. Raut	Physics	Nano-Structures & Nano-Objects	2019	2352-507X	https://www.sciencedirect.com/journal/nano-structures-and-nano-objects	https://www.sciencedirect.com/science/article/abs/pii/S2352507X19303038
Flexible iron-doped Sr (OH) ₂ fibre wrapped tuberoses for high-performance supercapacitor electrode	Dr. Shrikant S. Raut	Physics	Journal of Alloys and Compounds	2019	0925-8388	https://www.sciencedirect.com/journal/journal-of-alloys-and-compounds	https://www.sciencedirect.com/science/article/abs/pii/S0925838818345705

Anti-breast cancer and antiangiogenic potential of substituted thiazolo[2,3-b]quinazoline derivatives: synthesis, in vitro and in vivo analysis	Dr. Shrikant V.Hese	Chemistry	Chemistry & Biology Interface	2019	2249-4820	https://cbijournal.com/index.php	https://cbijournal.com/paper-archive/may-june-2019-vol-3/Research-Paper-1-anti-breast-cancer-and-antiangiogenic-potential-of-substituted-thiazolo23-b-quinazoline-derivatives-synthesis-in-vitro-and-in-vivo-analysis.pdf
---	---------------------	-----------	-------------------------------	------	-----------	---	---



D.D. BHOYAR COLLEGE OF ARTS AND SCIENCE, MOUDA

Tah.: Mouda, Dist.: Nagpur, Pin - 441104

Affiliated to RTM Nagpur University, Nagpur, Approved by Government of Maharashtra

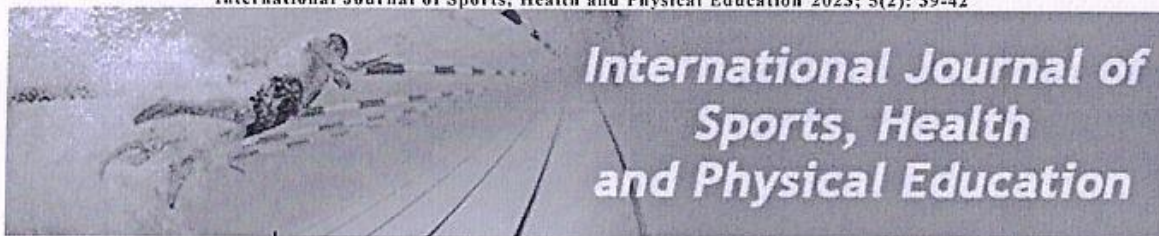
Email : dd.bhojar@rediffmail.com Website : ddbhojar.ac.in

Tel : 07115 - 281979 Mob. : 9158003321

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during academic session 2018-19.

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Calendar Year of publication	ISSN number	Link to website of the Journal	Link to article / paper / abstract of the article
Studies on the toxicity of 2-Methyltetrahydrofuran on the histopathology of gills of African catfish <i>Clarias gariepinus</i> Studies on the toxicity of 2-Methyltetrahydrofuran on the histopathology of gills of African catfish <i>Clarias gariepinus</i>	Prof. D. Agase	Zoology	Journal of Applied and Natural Science	2018	0974-9411 (Print)	https://www.ansfoundation.org/	https://journals.ansfoundation.org/index.php/journals/article/view/1775
A study on the toxicity of 4-nonylphenol on the histopathology of testes of African catfish <i>Clarias gariepinus</i> (Burchell, 1822)	Prof. D. Agase	Zoology	Journal of Applied and Natural Science	2018	0974-9411 (Print)	https://www.ansfoundation.org/	https://journals.ansfoundation.org/index.php/journals/article/view/1765
Fossil fruit of the Bignoniaceae family belonging to "Kigella pinnata" DC from the late Cretaceous Deccan Cherts of India	Dr. V. Kapgate	Botany	International journal of Rerearches in Biosciences, Agriculture & Technology (IJRBAT)	2018	2347-517X	https://ijrbat.in/	https://ijrbat.in/upload/papers/131020181159399.V.D.%20Kapgate.pdf

2022-23



International Journal of Sports, Health and Physical Education

ISSN Print: 2664-7559
ISSN Online: 2664-7567
IJSHP 2023; 5(2): 39-42
www.ijshpejournal.in
Received: 07-06-2023
Accepted: 11-07-2023

Sanjay V Khudale
Principal, D. D. Bhojar
College of Arts & Science,
Mouda, Nagpur, Maharashtra,
India

Analyzing sports technologies and trends in modern era

Sanjay V Khudale

DOI: <https://doi.org/10.33545/26647559.2023.v5.i2a.79>

Abstract

Physical pastime is turning into a more and more crucial thing of our lives. It is a important and a required factor of a healthful existence and there may be no question that it contributes to our wellbeing. While such easy gadgets output specially the statistical values of measured portions or matter activities, needs in game are greater stringent. Quantities of hobby should be measured in wider variety, with extra precision, and with better sampling frequency. We present a brief creation to motor gaining knowledge of in game and its desires for era back-up. We gift homes and obstacles of diverse sensors used for game pastime sign acquisition, way of verbal exchange, and homes and obstacles of verbal exchange channels. We shed a few mild at the evaluation of diverse components of game pastime sign and facts processing. We present timing, spatial, and computational electricity constraints of processing. Attention is given additionally to the kingdom of the artwork facts processing strategies together with gadget gaining knowledge of and facts mining. In end we present a few technological tendencies and demanding situations in sports, together with Internet of Things, clever game system, and actual-time biofeedback structures and packages.

Keywords: Wearable gadgets, sports, physiological, sensors, technological tendencies

Introduction

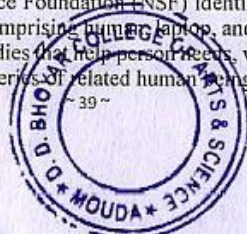
In a sense, we can classify leisure physical hobbies into casual games or recreational games, beginner games and expert games. Using period and help for this reason can be especially important for amateurs, because they almost never have private lessons. It is our imagination and foresight to design structures and packages for the game that can fulfill many viable to take advantage of the added engine information acquisition that could help the intelligent game system. For example, walking software can be applied to a mobile phone. It can provide the consumer with real-time notes on some key parameters like left and right leg duration stability etc. while walking. Users of this software can most likely improve their walking if they get some suggestions with the help of an expert teacher. Another viable example is a scoring machine that can provide real-time data on an athlete's overall performance down to the simplest. The coach can then decide whether or not immediate feedback is important to the athlete. Such a machine can be widely used for further evaluation and final comments for the athlete and/or teacher. In addition to pole vaulting, the application of generation has a great effect in cycling, 100-meter running and javelin throw^[1, 2], swimming^[3]. That's why the generation's innovation, placement and attention to aggressive rest is paramount for athletes who seek to optimize their exceptional feasible total performance within the destiny. But sometimes the creation of the latest generation can create debate or controversy.

Review of literature

Human-Centered Computing (HCC) places the customers on the middle of layout and improvement. HCC is an interdisciplinary subject that intersects laptop technological know-how, psychology, and cognitive technological know-how. HCC specializes in the layout and implementation of computing structures that help human beings sports and human improvement. It is the technological know-how of designing computations and computational artifacts in help of human endeavors^[4].

The National Science Foundation (NSF) identifies the developments of HCC studies as "a 3 dimensional area comprising human, laptop, and environment." The NSF describes the human measurement as studies that help person needs, via groups as goal-orientated groups, to society as an unstructured series of related human beings (NSF, 2016).

Corresponding Author:
Sanjay V Khudale
Principal, D. D. Bhojar
College of Arts & Science,
Mouda, Nagpur, Maharashtra,
India



PRINCIPAL
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA



A Study of Attitude and Professionalism of Post Graduate Physical Education Students of RTM Nagpur University, Nagpur

Dr. Sanjay V. Khudale

Principal

D. D. Bhoyar College of Arts and Science
Mouda, Dist. Nagpur

1.0 Introduction

It is very well established that the prime aim of education is the total and harmonious development of human beings. Moreover, promotion of health and fitness is also accepted as one of the main objectives of education in general and physical education in particular. Today, physical education is closely identified not only with the health and development of the students and sportspersons but also the professional help they are supposed to provide to the professional sportspersons. The concept of health in these curricula range from a fitness-centered concept, with a closer relationship between physical activity and health, to a broader and even critical view with an exacerbated value about what health actually is. To add to the above approach the professional growth of the sports field in India and abroad in terms of various sports leagues like Indian Premier League, Kabaddi Premier League, Premier Badminton League, etc. has generated a lot of demand for the sports and physical education professionals.

The professional growth in any field can be attributes to a person's knowledge and attitude along with the ability to practice whatever is known to him. Here the attitude plays a big role in determination of professional growth of the people. Attitude is a mental state of readiness, organised through experience, exerting a direct dynamic influence upon the individual's response to all object and situations with which it is related. Attitude means the way one presents and thinks about himself leading to the chosen path which directly impacts his behaviour in society and his personal day to day life. In view of the importance of the physical education field and the professional growth of the students who are pursuing this



[Signature]
PRINCIPAL



Aggression of State Level Men Kho-Kho and Kabaddi Players – A Comparative Study

Dr.Sanjay V. Khudale

D.D.Bhoyar Arts & Science college Mouda

1.0 Abstract

In different types of sports, aggression is a characteristic that can have numerous negative as well as positive effects on overall performance. Though most people view it (aggression) as a negative psychological characteristic, some sport psychologists agree that it can significantly improve the sports performance, which is called as an assertive behaviour. In view of this a systematic study has been carried out to compare the aggression levels displayed by the state level Kho-Kho and Kabaddi players. These games were selected as the competition is quite tough and players show strong psychological traits (with aggression being one of it) while playing both the sports. The aggression of players was determined using the Aggression Inventory developed by M.K. Sultania and the data was analysed using SPSS 18.0 software. The results showed that there is significant difference in the aggression level of Kho-Kho and Kabaddi players for factors like assault, indirect aggression, irritability and verbal aggression. However, no significant difference was evident with respect to factors like negativism, resentment, suspicion and guilt. The results show that there is a clear difference in the level of aggression displayed by the state level Kho-Kho and Kabaddi players.

Keywords: *Aggression, sports performance, Kho-Kho and handball players*

2.0 Introduction

The term aggression refers to a range of behaviors that can result in both physical and psychological harm to oneself, other or objects in the environment. Moreover, the expression of aggression can occur in various ways, including verbally, mentally and physically to name a few. Generally, human aggression is any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause some kind of harm (Bushman & Anderson 2001, Baron & Richardson 1994, Berkowitz 1993, Geen 2001). Many researchers have suggested that individual who engages in affective aggression, tend to have lower IQs than people who display predatory aggression. Now a day the term aggression is commonly associated with the sports. The aggressive players also appear to be more successful than their peers.



[Signature]
PRINCIPAL

COLLOID CHEMISTRY
AND ELECTROCHEMISTRY

Temperature Dependence of Electrical Conductivity and XRD Studies
of Hydroquinone Modified Amberlite XAD-4 Resin

A. M. Thakre^{a,*}, S. D. Deosarkar^b, V. V. Hiwase^c, and A. B. Kalambe^d

^a D.D. Bhoyar College of Arts and Science, Mouda, Nagpur (M.S.), India

^b School of Chemical Sciences, S.R.T.M. University, Nanded (M.S.), India

^c Arts, Commerce and Science College, Arvi, Wardha (M.S.), India

^d Government Institute of Science, Nagpur (M.S.), India

* e-mail: abhis_thakre@yahoo.co.in, abhis7985@gmail.com

Received October 16, 2021; revised May 10, 2022; accepted May 11, 2022

Abstract—Commercial amberlite XAD-4 resin was modified with hydroquinone moiety through the azo spacer (–N=N–) technique and abbreviated as AXAD–N=N–HQ. It was characterized by elemental analysis, FT-IR spectra and XRD. The number average molecular weight was determined by non-aqueous conductometric titration. Electrical conducting behavior of resin found to be in the range 0.01×10^{-6} to 0.03×10^{-6} mho cm^{-1} for temperature range 300–598 K. The activation energy (E_a) of conduction was evaluated by Wilson's law and found to be $1.774 \text{ kJ mol}^{-1}$. The resin was found to exhibit semiconducting behavior. Percentage of crystallinity and crystalline index was evaluated from XRD data.

Keywords: Amberlite XAD-4, resin, organic semiconductor, electrical conductivity, crystallinity

DOI: 10.1134/S0036024422110310

INTRODUCTION

Until about 30 yr ago, all carbon based polymers were rigidly regarded as an insulator and extensively have been used by the electronics industry because of their high resistivity, but now researchers are engaged in converting insulating polymers to conducting materials due to their strength, toughness, fractional resistance, plasticity, elasticity and corrosion resistance. In recent years semiconducting property of resins gained sufficient ground and this narrow perspective is rapidly changing as a new class of polymer known as intrinsically conductive polymer or electroactive polymer are being discovered. The conducting polymer research began nearly a quarter of a century ago, when films of polyacetylene were found to exhibit profound increases in electrical conductivity when exposed to halogen vapor [1–3].

Conducting polymers opened the way to progress in understanding the fundamental chemistry and physics of π -bonded macromolecules. Polymers with spatially extended π -bonding system are known as conjugated polymers. Synthesized conjugated conducting polymers can be classified into two major categories (1) chemically polymerized materials and (2) electrochemically polymerized via chemical polymerization [4, 5]. The first highly conducting organic polymer, chemically doped polyacetylene, was reported in 1977 [6]. Work on organic conducting

polymers has been carried out extensively due to wide applicability in area of electronics [7].

Undoped polymers are wide band gap semiconductors. Two approaches were mentioned in literature to minimize the band gap. The band gap can be reduced if the bond-length alternation is cancelled [8, 9]. Another strategy of decreasing the band gap consists in synthesizing conjugated polymers with alternating strong electron-donor and strong electron-acceptor fragments [10]. The value of band gap can be varied by appropriate functionalization of the conjugated backbone. In particular and appropriate combination of electron donating (reducing agents) and electron withdrawing (oxidizing agents) substituents may results in the preparation of semiconducting conjugated polymers in which bond alteration is lowered by consequence they exhibits a narrow band gap and make them good conductors [11].

In conjugated polymers, the chemical bonding leads to one unpaired electron from p orbital per carbon atom. Moreover, p bonding, in which the carbon orbitals are in the sp^2p_z configuration and in which the orbitals of successive carbon atoms along the backbone overlap, leads to electron delocalization along the backbone of the polymer. Hybridization of the high-lying HOMO level of the donor and the low-lying LUMO level of the acceptor in the donor-acceptor unit leads to a very small HOMO–LUMO gap [12].









2541



PRINCIPAL

G. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

DTP/SiO₂ Assisted Synthesis of New Benzimidazole-Thiazole Conjugates Targeting Antitubercular and Antioxidant Activities

Madhav J. Hebade^a , Sambhaji T. Dhumal^b , Sonali S. Kamble^c , Tejshri R. Deshmukh^d , Vijay M. Khedkar^e , Shrikant V. Hese^f , Rajesh N. Gacche^g , and Bhaskar S. Dawane^h 

^aDepartment of Chemistry, Badrinarayan Barwale Mahavidyalaya, Jalna, Maharashtra, India; ^bDepartment of Chemistry, Ramkrishna Paramhansa Mahavidyalaya, Osmanabad, Maharashtra, India; ^cDepartment of Biochemistry, Gramin Science (Vocational) College, Nanded, Maharashtra, India; ^dDepartment of Chemistry, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, India; ^eDepartment of Pharmaceutical Chemistry, School of Pharmacy, Vishwakarma University, Pune, Maharashtra, India; ^fDepartment of Chemistry, D. D. Bhoyar College of Arts and Science Mouda, Nagpur, India; ^gDepartment of Biotechnology, Savitribai Phule Pune University, Pune, Maharashtra, India; ^hSchool of Chemical Sciences, Swami Ramanand Teerth Marathwada University, Nanded, India

ABSTRACT



A series of new substituted benzimidazole-thiazoles (**9a–l**) have been designed and synthesized using 2-aminothiazole as a starting material by using molecular hybridization approach. The newly synthesized compounds were characterized by ¹H NMR, ¹³C NMR and HRMS analyses. The compounds (**9a–l**) were evaluated for their *in vitro* antitubercular activity against *Mtb* (MTCC 300) strain. Among the screened compounds **9a**, **9b**, **9c** and **9d** have displayed promising antitubercular activity with MIC 7.55, 4.60, 15.39 and 28.38 μ g/mL, respectively. All the compounds were further evaluated for their DPPH radical scavenging activity. The compounds **9a**, **9b** and **9d** were exhibited excellent radical scavenging activity. In addition to this, single crystal structure of compound **9a** was also studied. Furthermore, the high potency of these molecules was supported by ADME properties prediction as well as molecular docking study to gain an insight into the binding mode and affinity toward mycobacterial InhA.


ARTICLE HISTORY

Received 29 November 2021
Accepted 14 March 2022

KEYWORDS

Dodecaphosphotungstic acid; benzimidazole-thiazole conjugates; single crystal structure; antitubercular activity; antioxidant activity; molecular docking study

CONTACT Madhav J. Hebade  mjhebade@gmail.com  Department of Chemistry, Badrinarayan Barwale Mahavidyalaya, Jalna, MS 431213, India.

 Supplemental data for this article can be accessed online at <http://dx.doi.org/10.1080/10406638.2022.2056210>

© 2022 Taylor & Francis Group, LLC




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA



Ultrasonic Study of Methyl Cobalamine Drug At 35 °C & 45 °C

S. N. Khachane¹, Ritesh R. Naik²,

¹Department of Applied Science, Padm. Dr. V. B. Kolte College of Engineering, Malkapur, Dist: Buldana

²Department of Chemistry, D.D. Bhojar College of Arts & Science, Mouda, Dist: Nagpur-441104

DOI: 10.5281/zenodo.7132561

ABSTRACT

In the present study ultrasonic velocity (U), density (ρ) and viscosity (η) have been measured at frequency 1 MHz in the binary mixtures of methyl cobalamine with water in the concentration range (0.1 to 0.0125 %) at 35 °C & 45 °C using Multifrequency ultrasonic interferometer. The measured value of density, ultrasonic velocity, and viscosity have been used to estimate the acoustical parameters namely adiabatic compressibility (β_a), relaxation time (τ), acoustic impedance (z), free length (Lf), free volume (Vf) and internal pressure (n), Wada's constant to investigate the nature and strength of molecular interaction in the binary mixture of methyl cobalamine with water. The obtained result support the complex formation, molecular association by intermolecular hydrogen bonding in the binary liquid mixtures.

Keywords: free volume, acoustical parameters, ultrasonic velocity.

1. INTRODUCTION

Ultrasonic waves are used in many applications including plastic welding, medicine, jewelry cleaning, pipe inspection and nondestructive test. Within nondestructive test, ultrasonic waves give us the ability to "see through" solid / opaque material and detect surface or internal flaws without affecting the material in an adverse manner. It had been identified about 200 years ago that dogs could hear ultrasonic sound.¹ This canine ability is often used in police departmental work and by dog trainers. These sound waves are used by bats as a kind of navigational radar for night flying.² Even blind people unconsciously develop a similar method by which obstacles are sensed by the reflected echoes of their footsteps or the tapping of a cane. In the field of technology, the waves are being used to measure depth of sea, directional signaling in submarine and mechanical cleaning of surface soldering³ and to detect shoals of fish. Acoustic sonograms have become an important medicinal diagnostic tool which is widely used nowadays.⁴⁻⁵ Ultrasonic waves are used for both diagnosis and therapy. It includes the detection of wide variety of anomalies, such as tumor, bloodless surgery, proper extraction of broken teeth, cardiology, gynaecology and kidney stone fragmentation⁶. Ultrasound is more sensitive than X-rays in distinguishing various kinds of tissues. It is believed to be less hazardous than X-rays, although possible hazards of ultrasound have not yet been thoroughly explored.⁷ The unique feature of sound wave property is that it gives direct and precise information of the adiabatic properties of solution. The data of velocity of sound in very few liquids were available up to 1930. The discovery of interferometry and optical diffraction method improved the investigation, both qualitatively and quantitatively. Most of the information extracted from ultrasonic study of fluids is confined to the determination of hydration number and compressibility.⁸⁻⁹ The successful application of acoustic methods to physicochemical investigations of solution become possible after the development of adequate theoretical approaches and methods for precise ultrasound velocity measurements in small volumes of liquids.¹¹⁻¹² Thus in the present paper, acoustical studies of have been studied in water at different temperatures over a wide range of methyl cobalamine concentrations. From these experimental values a number of thermodynamic parameters



PRINCIPAL



Important Lead Optimization Tools & Techniques in Drug Discovery Process

DOI: 10.5281/zenodo.7132545

Ritesh R. Naik¹, S. N. Khachane²

¹Department of Chemistry, D.D. Bhojar College of Arts & Science, Mouda, Dist: Nagpur-441104

²Department of Applied Science, Padm. Dr. V. B. Kolte College of Engineering, Malkapur, Dist: Buldana

ABSTRACT

Lead optimization is one of the important phases of Drug Discovery Process in which researchers design, synthesize, and retest analogues of primary lead compounds. Identified lead molecules are used as the starting point for detailed chemical modifications in order to further improve their target specificity and selectivity and their pharmacokinetic and safety profiles, while maintaining the favorable properties of the lead compounds. Assessments of the pharmacological properties of Absorption, Distribution, Metabolism, and Excretion (ADME) of chemical leads are critical to their initial selection, and establishes benchmarks against which compounds synthesized during lead optimization. There are a tremendous number of tools available to discovery scientists to screen compounds for optimization of ADME properties and selection of better lead molecule. However, the use of these tools has generally been to characterize these compounds rather than to select among them. Many of the tools and technologies for lead discovery overlap with lead optimization as researchers attempt to incorporate the best drug characteristics early in the process. While the approaches taken may vary, the central theme is the same: make it better, faster, and more efficient. This review article summarized brief outline on lead optimization strategies and techniques used in drug discovery process.

Keywords- Lead optimization, tools and techniques, identification, new drug.

1. INTRODUCTION

Drug discovery is a very complex and multifaceted process¹⁻² which aims at identifying a compound therapeutically useful in curing and treating disease. This process involves the identification of candidates, synthesis, characterization, validation, optimization, screening and assays for therapeutic efficacy. Once a compound has shown its significance in these investigations, it will initiate the process of drug development earlier to clinical trials. New drug development process must continue through several stages in order to make a medicine that is safe, effective, and has approved all regulatory requirements. The drug discovery and development process generally follows the following path that includes a hit to lead stage as shown in Fig.1 Target validation (TV) → Assay development → High-throughput screening (HTS) → Hit to lead (H2L) → Lead optimization (LO) → Preclinical development → Clinical development this article mainly concentrates on the lead optimization phase in drug discovery process and the important strategies and techniques used to characterize the compound and establish the route.

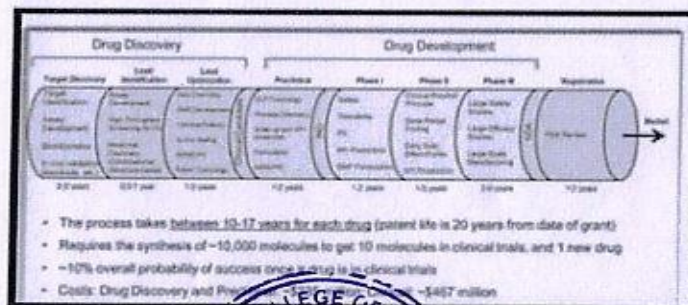
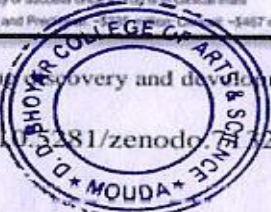


Fig. 1: The drug discovery and development process

100104

DOI: 10.5281/zenodo.7132545



PRINCIPAL
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

Investigations on Hematotoxic and Nephrotoxic Analysis in Aniline Induced Wistar Rats.

Shabnam Ramteke, Dr. VarshaDhurvey

P.G.T.D Department of zoology, D.D.Bhoyar College of art and Science, Mouda, Nagpur.

P.G.T.D Department of zoology, RTMNU, Nagpur (M. S.) India

Abstract-

The Nephrotoxic and Hematotoxic risks of aniline have been identified and evaluated in the current investigation using male Wistar rats. Aniline was administered orally to Group A rats for 30 days using gavage at a dose of 20 mg/kg body weight per day, while Group B rats received standard saline water as treatment. After the completion of treatment, the male Wistar rats were sacrificed for specialized tests. Serum biomarkers of kidney injury, creatinine and blood urea increased their concentration. Sodium and potassium concentrations decreased and histological changes such as random apical sloughing of the brush border of proximal tubular cells occurred. Proximal and distal tubular cells exhibited marked degenerative changes.

Key words: - Aniline; Nephrotoxicity; Rats; Biomarker; Histology.

INTRODUCTION

Today, one of the top priorities of environmental impact assessment studies is the requirement for safety evaluation of everyday chemicals and their widespread exposure at every level of organization in the ecosystem. Scientific, regulating authorities, and public sectors have become concerned about the health impacts of many of the chemicals used in personal care products and domestic utilities (Daughton & Terms, 1999). International efforts are being made to investigate these chemicals' environmental occurrences, fates, impacts, and ecological and human health hazards. The Scientific Committee on Cosmetic Products and Other Consumer Products (SCCNFP, 2002). The term toxicology describes how chemicals affect living things negatively. Animal studies that are extrapolated to human populations are typically used to determine a compound's toxicity (Cota et al., 2000). The method of exposure plays a role in a substance's toxicity. The main methods of exposure to toxic compounds include cutaneous, inhalation, and ingestion. Determining exposure and establishing the contribution of interacting elements that can change toxicity are crucial components of toxicological evaluation. For a full assessment of toxicology and its prognosis, quantitative expressions of toxicity and exposure are crucial. A large number of biochemical analyses of blood have been used in *in vivo* studies using laboratory animals to evaluate the toxic potential of chemical compounds. In recent decades, efforts have been made to validate clinical chemistry tests as organ-specific biomarkers (Travlos, 1996). The majority of industrialized countries manufacture aniline and its monochlorophenyl derivatives. Aniline was manufactured in excess of 400 million pounds in 1975 just in the US. The aromatic amine aniline is used as an intermediate product in the manufacture of herbicides, azo dyes, drugs, paint, and toothpaste. These substances are also used in the synthesis of several organic compounds, including those that are used in medicines, dyes, antioxidants, chemicals



Xylaria chilai sp. nov. from Chilai lake at Shibla Forest District Yavatmal, MS, India.

Swapnil K. Kamble^{1*}, M.A. Shaheezad², Ninad Dharkar³

¹Department of Botany, D.D. Bhojar College of Arts and Science, Mouda, Dist. Nagpur MH, India

²Principal, S.P.M. Science and Gilani Arts, Commerce College Ghatanji. Dist. Yavatmal MS, India

³Department of Botany, S.P.M. Science and Gilani Arts, Commerce College Ghatanji. Dist. Yavatmal MS, India

Email: 1skkamble56@gmail.com; | 2shaheezadakil@gmail.com; | 3ninads.dharkar@rediffmail.com

*Corresponding author

Manuscript details:

Received: 26.03.2022

Revised: 10.04.2022

Accepted: 18.06.2022

Published: 20.06.2022

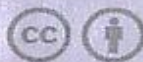
Cite this article as:

Kamble Swapnil K, MA Shaheezad, Ninad Dharkar (2022) *Xylaria chilai* sp. nov. from Chilai lake at Shibla Forest District Yavatmal, MS, India, *Int. J. of Life Sciences*, 10 (2):171-174.

Available online on <http://www.ijlsci.in>

ISSN: 2320-964X (Online)

ISSN: 2320-7817 (Print)



Open Access This article is licensed under a Creative Commons Attribution 4.0

International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other thirdparty material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>

ABSTRACT

The present paper deals with the new species of *Xylaria chilai* sp. nov. reported from Chilai lake at Shibla forest district Yavatmal (MS) India. During mycological survey authors have collected different varieties of fungal flora from various places of the Chilai lake area. Teak wood is dominant vegetation in this forest. Shibla forest is a deciduous forest exploring many diverse groups of saprobic fungi. In due course authors come across with the interesting member of ascomycetes fungi. Out of which *Xylaria chilai* sp. nov. is reported as new on the basis of taxonomic identification.

Keywords: Taxonomy, Stromata, Perithecia, Asci, Ascospore.

INTRODUCTION

Yavatmal district in Maharashtra is rich in mycoflora. The main aim of mycological collection was to explore the diversity of mycoflora in Shibla forest around the Chilai lake. Chilai lake is located in Zari Jamani Tehsil of Yavatmal district in Maharashtra. *Xylaria* is a genus of ascomycetous fungi commonly found growing on dead wood. Some species are endophytes in many tropical plants. Sacs like perithecia, cylindrical, paraphysate, octosporous asci, uniseriated brown elliptical ascospores are the characteristic features of *Xylaria*. On the basis of host specificity and detailed taxonomical and comparative study of already known species the species in this paper reported as new species. The detailed description is mentioned as follows.

MATERIALS AND METHOD

The collected specimens were wrapped in butter paper and brought to the laboratory. Five sections were made by using a sharp razor blade



PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

INNOVATIVE PRACTISES IN LIBRARIES

Mrs. Minal S. Bhoyar


ABSTRACT

In the technical era, has change all fields of human growth. Emerging of new technology in smart way are adoptions of all. Information explosions and revaluation are becomes a worldwide. Revaluation are in every field like economics, educational, social, political, commercials etc. Libraries are plays a important role to provide a recent information's to the users. Now a days the role and services of libraries are become a smart with adoptions of technology. Services of libraries are becomes a smart for accepting a novel technology. Librarians are now familiar with the new and universal trends to provide a prompt service. This paper are highlighting the ideal academic libraries and its services and innovative practices in library with adoptions of ICT.

Keywords: ICT, M-Opac, Academic Libraries, Innovative Practices.

Library is Heart of any academic institution. Also it is soul of any learning and research Institution as well as Information is the form of considered as the support for power and prosperity and it's very essential for economic and social development of the society. The revolution in Information and Communication Technology has bridged knowledge gap by providing free flow of data. With the help of technology obsessed revolution, the delivery of information was started in digital format .Of course, Innovation and transformation both are imperative concept of today's libraries especially in light of the libraries' ongoing transition from acquiring serials in print to




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

2021-22



Web-analogues one-dimensional iron hydroxide@cadmium hydroxide nanostructure: electrochemical supercapacitor

Savita Patil¹, Shrikant Raut², Bidhan Pandit³, S. N. Pandey⁴, Shilpa A. Pande⁵, and Babasaheb Sankapal^{3,*}

¹DDSP Arts Commerce and Science College, Erandol, Jalgaon, Maharashtra 425109, India

²D. D. Bhoyar College of Arts and Science, Mouda, Nagpur, Maharashtra 441104, India

³Department of Materials Science and Engineering and Chemical Engineering, Universidad Carlos III de Madrid, Avenida de La Universidad 30, 28911 Leganes, Madrid, Spain

⁴Department of Physics, Motilal Nehru National Institute of Technology Allahabad, Prayagraj 211 004, India

⁵Department of Applied Physics, Laxminarayan Institute of Technology, R T M Nagpur University, Nagpur, Maharashtra 440033, India

⁶Nano Materials and Device Laboratory, Department of Physics, Visvesvaraya National Institute of Technology, South Ambazari Road, Nagpur, Maharashtra 440010, India

Received: 27 November 2020

Accepted: 30 July 2021

Published online:

9 August 2021

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2021

ABSTRACT

One-dimensional iron hydroxide@cadmium hydroxide nanostructures have been prepared by sequentially converting cadmium hydroxide into iron hydroxide via simple and cost-effective cation exchange reaction based on solubility product to design electrochemical supercapacitive electrode. Surface architecture of iron hydroxide@cadmium hydroxide nanostructures in the form of core-shell enables easy and effective electrochemical reactions which have been studied via electrochemical cyclic voltammetry and charge-discharge studies. Interestingly, iron hydroxide@cadmium hydroxide electrode exhibits specific capacitance of 368 F g^{-1} at current density of 0.5 A g^{-1} along with electrochemical impedance analysis. Capacitance retention performed at the scan rate of 50 mV s^{-1} for 5000 cycles results in 52% capacity of its initial.

1 Introduction

Supercapacitor possesses the distinctive capability of higher power densities and longer cycle life than batteries for numerous applications such as power sources in mobile electronic devices as well as in

next-generation electric vehicles. Due to the growing demands for the advancement of supercapacitive energy storage devices with high power and energy densities, various electrode materials with high capacitance have been explored [1, 2]. It is extremely important to develop electrode material with

Address correspondence to E-mail: brsankapal@phy.vnit.ac.in; brsankapal@gmail.com

Springer



<https://doi.org/10.1007/s10854-021-06733-5>

PRINCIPAL

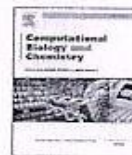
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA



Contents lists available at ScienceDirect

Computational Biology and Chemistry

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



Synthesis and evaluation of N-(4-(substituted)-3-(trifluoromethyl) phenyl) isobutyramides and their N-ethyl analogous as anticancer, anti-angiogenic & antioxidant agents: *In vitro* and *in silico* analysis

Ajay S. Sawant^a, Sonali S. Kamble^{b,1}, Parshuram M. Pisal^b, Sanjay S. Sawant^b, Shrikant V. Hese^c, Kamini T Bagul^d, Rahul V. Pinjari^b, Vinod T. Kamble^{c,*}, Rohan J. Meshram^d, Rajesh N. Gacche^{e,*}

^a School of Chemical Sciences, Swami Ramanand Teerth Marathwada University, Nanded-431 606, MS, India
^b Gramin Science (Vocational) College, Vishnupuri, Nanded-431 606, MS, India
^c DD Bhojar College of Arts and Science Mouda, Nagpur, 441104, MS, India
^d Bioinformatics Centre, Savitribai Phule Pune University, Pune, 411007, India
^e Organic Chemistry Research Laboratory, Department of Chemistry, Institute of Science, Nagpur, MS, India
^{*} Department of Biotechnology, Savitribai Phule Pune University, Pune, 411007, MS, India



ARTICLE INFO

Keywords:
 Antiangiogenic
 Anticancer
 Antioxidant activity
 Flutamide
 Autodock

ABSTRACT

N-(4-(substituted)-3-(trifluoromethyl) phenyl) isobutyramides and their N-ethyl analogues (flutamides) are versatile scaffolds with a wide spectrum of biological activities. A series of new N-(4-(substituted)-3-(trifluoromethyl) phenyl) isobutyramides (8a-t) and their N-ethyl analogous (9a-t) were synthesized and characterized. The inhibitory potential of the synthesized compounds on the viability of three human cancer cell lines HEP3BPN 11 (liver), MDA-MB 453 (breast), and HL 60 (leukemia) were assessed. Among all the compounds 8 l, 8q, 9n and 9p showed higher inhibitory activity on the viability of HL 60 than the standard methotrexate. These lead molecules were then tested for their potential to inhibit the activity of proangiogenic cytokines. The compound 9n showed significantly better inhibition against two cytokines viz. TNF α and Leptin as compared to the standard suramin, while 9p has activity comparable to suramin against IGF1, VEGF, FGFb, and Leptin. The 8q is found to be strong antiangiogenic agent against IGF1, VEGF and TGF β ; while 8 l has showed activity against TNF α , VEGF, and Leptin inhibition. Furthermore antioxidant potential of 8a-t and 9a-t compounds was screened using DPPH, OH and SOR radical scavenging activities. The OH radical scavenging activity of 8c and DPPH activities of 9n as well as 9o are significant as compared to respective standards ascorbic acid and α -tocopherol. The 8c, 9p and 9 h have also exhibited potential antioxidant activity. Additionally, we present *in silico* molecular docking data to provide the structural rationale of observed TNF α inhibition against newly synthesized compounds. Overall, the synthesized flutamide derivatives have not only anticancer activity, but also possess dual inhibitory effect (anti-angiogenesis and antioxidant) and hence can act as a promising avenue to develop further anticancer agents.

1. Introduction


Cancer is the major cause of mortality and death around the world (Jemal et al., 2011). Most of the chemotherapeutics available against cancer have disadvantage of being unspecific and are often associated with several off-target toxicities. The reactive oxygen species (ROS) or free radicals are highly reactive species and usually generated through

the normal cellular metabolism. The entire ROS have the capability to interact with cellular components including DNA (Singh et al., 1998). The damaging effects of ROS/free radicals such as singlet oxygen (¹O₂), superoxide anions (O₂⁻), and hydroxyl radicals are balanced by the enzymatic antioxidants particularly the radical scavenging enzymes such as superoxide dismutase, catalase and the non-enzymatic antioxidants. When level of free radicals or ROS exceeds the radical scavenging

* Corresponding authors.
 E-mail addresses: vtkd@rediffmail.com (V.T. Kamble), rnacacche@unipune.ac.in (R.N. Gacche).
¹ These authors equally contributed as first author.

<https://doi.org/10.1016/j.compbiochem.2021.107484>
 Received 15 October 2020; Received in revised form 1 April 2021; Accepted 4 April 2021
 Available online 8 April 2021
 1476-9271/© 2021 Elsevier Ltd. All rights reserved.




 PRINCIPAL
 D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
 MOUDA



Short communication

A Short Synthesis of Carbazole Alkaloids Murreyanine and Mukonine

Milind V. Gaikwad^{1*}, Rahul D. Kamble^{2*}, Shrikant V. Hese³, Shuddhodan N. Kadam⁴, Ajay N. Ambhore⁵, Sunil V. Gaikwad^{6*}, Ashok P. Acharya⁷, Bhaskar S. Dawane⁸

¹Department of Chemistry, D.Y. Patil ACS College Pimpri, affiliated; Savitribai Phule Pune University, Pune (MS) India-411018

²Department of Chemistry, Amruteshwar ACS, College, Vinzar, Pune (MS) India-412213

³D.D. Bhojar College of Arts and Science Mouda, Nagpur, 441104, MS, India

⁴Department of Chemistry, VidnyanMahavidhyalaya, Sangola, Solapur (MS) India -413307

⁵Department of Chemistry, PDVP College, Tasgaon, Sangli (MS) India -416312

⁶Department of Chemistry, Savitribai Phule Pune University, Pune (MS) India-411007

⁷Department of chemistry Mudhoji College, Phaltan- Satara (MS) India-415523

⁸School of Chemical Sciences, SRTM University, Nanded (MS) India -431606

ARTICLE INFO

Article history

Submitted: 2021-05-12

Revised: 2021-05-14

Accepted: 2021-06-07

Manuscript ID: CHEMM-2105-1334

Checked for Plagiarism: Yes

Language Editor:

Dr. Behrouz Jamalvandi

Editor who approved publication:

Dr. Valid Khakyzadeh

DOI: 10.22034/chemm.2021.131552

KEYWORDS

Carbazole alkaloids

Mukonine

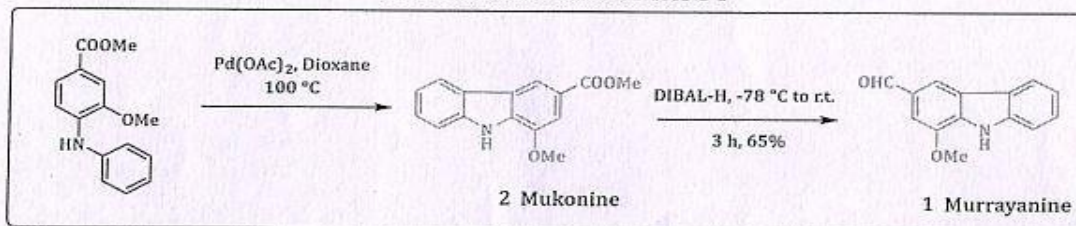
Murreyanine

Buchard coupling

ABSTRACT

The short, easy and total synthesis of Murreyanine (1), Mukonine (2), carbazole alkaloids were elaborated, based on a regioselective buchwald coupling of methyl 4-bromo-3-methoxybenzoate with aniline and successive transformation into the corresponding carbazole alkaloids by oxidative coupling followed by cyclization of the phenyl and aryl rings.

GRAPHICAL ABSTRACT



* Corresponding author: Milind V. Gaikwad & Rahul D. Kamble

E-mail: mvgaikwad76@gmail.com; rdkamble43@gmail.com

© 2021 by SPC (Sami Publishing Company)



PRINCIPAL
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

Original Article: DTP/SiO₂: An Efficient and Reusable Heterogeneous Catalyst for synthesis of Dihydropyrano[3,2-c]Chromene-3-Carbonitrile Derivatives



Rahul D. Kamble^a | Milind V. Gaikwad^{b*} | Manojkumar R. Tapare^a | Shrikant V. Hese^c |
Shuddhodan N. Kadam^d | Ajay N. Ambhore^e | Bhaskar S. Dawane^f

^aDepartment of Chemistry, Amruteshwar ACS, College, Vinzar, Pune (MS) India-412213

^bDepartment of Chemistry, D.Y. Patil ACS, College, affiliated; Savitribai Phule Pune University, Pimpri, Pune (MS) India-411018

^cDepartment of Chemistry, DD Bhojar College, Mouda, Nagpur (MS) India-441104

^dDepartment of Chemistry, VidyanMahavidhyalaya, Sangola, Solapur (MS) India 413307

^eDepartment of Chemistry, PDVP College, Tasgaon, Sangali (MS) India 416312

^fSchool of Chemical Sciences, SRTM University, Nanded (MS) India 431606



Abstract R.D. Kamble, M.V. Gaikwad*, M.R. Tapare, S.V. Hese, S.N. Kadam, A.N. Ambhore, B.S. Dawane. DTP/SiO₂: An Efficient and Reusable Heterogeneous Catalyst for synthesis of Dihydropyrano[3,2-c]Chromene-3-Carbonitrile Derivatives. *J. Appl. Organomet. Chem.*, 2021, 1(1), 22-28.

<https://doi.org/10.22934/jaoc.2021.276239.1004>



Article info:

Received: March 04, 2021

Accepted: March 26, 2021

Available Online: April 6, 2021

ID: JAOC-2103-1007

Checked for Plagiarism: Yes

Peer Reviewers Approved by:

Dr. SUNIL V. GAIKWAD

Editor who Approved Publication:

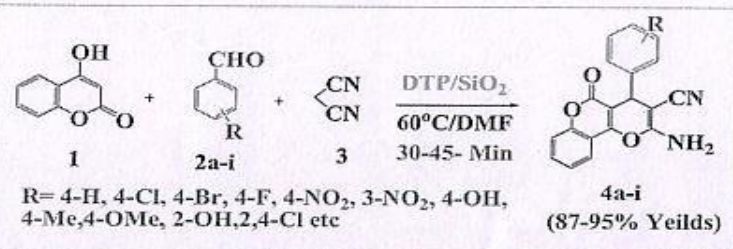
Professor Dr. Abdelkader Zarrouk

Keywords:

DTP/SiO₂, green synthesis, dihydropyrano[3,2-c]chromene-3-carbonitrile.

ABSTRACT

An efficient and convenient method has been developed for the synthesis of 2-amino-5-oxo-4-phenyl-4, 5-dihydropyrano[3,2-c]chromene-3-carbonitrile derivatives from a one-pot multi-component reaction between 4-hydroxy-2H-chromen-2-one. Aromatic aldehydes and malononitrile were catalyzed by DTP/SiO₂ as an efficient and reusable heterogeneous catalyst. The current method provides advantages over reported method viz simple operational procedure, easy isolation and recyclability of the catalyst, environmental benign, reduced reaction time and superior yield.




*Corresponding Author: Milind V. Gaikwad (mvg1976@rediffmail.com)



PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

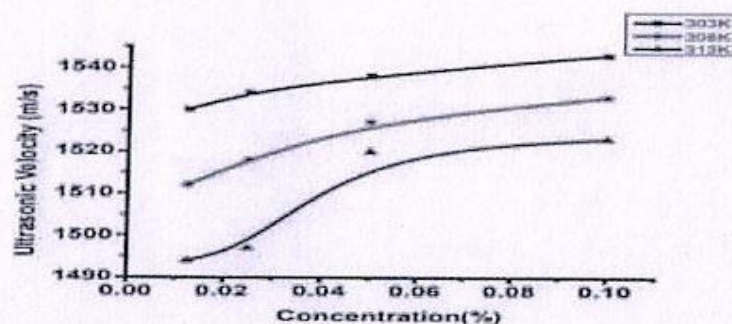
Full Paper | <http://dx.doi.org/10.17807/orbital.v13i4.1465>

Acoustical Studies of Molecular Interactions in the Solution of Streptomycin Drug at Different Temperatures and Concentrations

Ritesh Ramdasji Naik 

Streptomycin is an antibiotic medication used to treat a number of bacterial infections. In the present study ultrasonic velocity (U), density (ρ) and viscosity (η) have been measured at frequency 1 MHz in the binary mixtures. The binary mixtures of streptomycin with water in the concentration range (0.1 to 0.0125%) at 303 K, 308 K, and 313 K using a multifrequency ultrasonic interferometer. The measured value of ultrasonic velocity, density and viscosity have been used to estimate the acoustical parameters namely adiabatic compressibility (β_a), relaxation time (τ), acoustic impedance (z), free length (L_f), free volume (V_f) and internal pressure (P_i), Wada's constant (W), Rao's constant (R) to investigate the nature and strength of molecular interaction in the binary mixture with water. The obtained results support the occurrence of complex formation, molecular association through intermolecular hydrogen bonding in the binary liquid mixtures.

Graphical abstract



Keywords

Streptomycin
Free volume
Acoustical parameters
Ultrasonic velocity
Adiabatic compressibility
Acoustic impedance

Article history

Received 26 December 2019
Revised 03 August 2021
Accepted 26 August 2021
Available online 25 September 2021

Handling Editor: Grégoire J. F. Demets

1. Introduction

In present day applications of ultrasonic are emerging in the field of forensic sciences, space research and also in wars. Ultrasonic waves are used in studying the properties of matter on the basis of interaction between the waves and constituents of the medium through which they pass. Determination of ultrasonic velocity and absorption coefficient has furnished methods for studying molecular and

structural properties of liquids. Ultrasonic waves are used in many applications including plastic welding, medicine, jewelry cleaning, pipe inspection, and nondestructive test. Within nondestructive test, ultrasonic waves give us the ability to 'see through' solid/opaque material and detect surface or internal flaws without affecting the material in an adverse manner. It had been identified, about 200 years ago, that dogs could hear

Department of Chemistry, D.D. Bhojar College of Arts and Science, Mouda, Nashik-421104, MS, India.  author. E-mail: ritunaik912@rediffmail.com

Published by Federal University of Mato Grosso do Sul, www.orbital.chemistryjournal.com   **PRINCIPAL**
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA



ULTRASONIC STUDIES OF MOLECULAR INTERACTIONS IN THE SOLUTION OF LEAF EXTRACT OF *OCIMUM TENUIFLORUM* AT 2 MHZ

Ritesh R. Naik

Department of Chemistry, D.D. Bhojar College of Arts & Science, Mouda, Nagpur, Maharashtra, India

*Corresponding author: ritunaik912@rediffmail.com

ABSTRACT

Ultrasonic velocity (U), have measured at experimentally frequency 2 MHz in the binary mixtures leaf extract of *Ocimum Tenuiflorum* in distilled water with (0.1% to 0.0125 %) concentrations range at Temperature 30°C, 35°C & 40°C. Density ultrasonic velocity and viscosity used to estimate the acoustical parameters namely adiabatic compressibility (β_a), relaxation time (τ), acoustic impedance (z), free length (Lf), free volume (Vf) and internal pressure (Pi), Wada's constant would prove to be more useful to predict and confirm the molecular interactions. A variation in these parameters will provide strong information regarding the molecular interactions taking place in the solution.

Keywords: Intermolecular free length, Acoustical parameters, Ultrasonic velocity.

1. INTRODUCTION

Our country is very well known for Ayurveda, in the Ayurveda medicines are largely made up from plants, herbs. One of such herbs is Tulsi which is also known as Holy Basil. Tulsi is known for its antifungal nature. In recent years ultrasonic technique has become a powerful tool in providing information regarding the molecular behavior of the liquids, polymer solutions and mixtures etc. [1-5]. Ultrasonic waves are used for both diagnosis and therapy. It includes the detection of wide variety of anomalies, such as tumor, bloodless surgery, proper extraction of broken teeth, cardiology, gynecology and kidney stone fragmentation [6-10]. The successful application of acoustic methods to physicochemical investigations of solution becomes possible after the development of adequate theoretical approaches and methods for precise ultrasound velocity measurements in small volumes of liquids [11, 12].

2. MATERIAL AND METHODS

The Tulsi leaf extract used in this study was of analytical range. Thermostatic water bath to maintain constant temperature. Mittal company Interferometer with an accuracy of 0.1%. at 2 MHz. The viscosity (η) measured by using Ostwald's viscometer with an accuracy of ± 0.001 PaSec. The density (ρ) of this binary solution was measured accurately. Using 25 mL specific gravity bottle in an electronic balance precisely and

accurately. The basic parameter U, η , ρ were measured at solutions of leaf extracts of *ocimum tenuiflorum* at temperature 30°C, 35°C & 40°C.

By using ultrasonic velocity following ultrasonic parameters are calculated [13-20].

1. Ultrasonic velocity (v): $v = f \times \lambda \text{ ms}^{-1}$
2. Adiabatic compressibility (κ): $\kappa = (1/v^2 \rho) \text{ kg}^{-1} \text{ ms}^2$
3. Free volume (V_f): $V_f = (M v / k \eta)^{3/2} \text{ m}^3$
4. Acoustic impedance (Z): $Z = v \times \rho \text{ kg m}^{-2} \text{ s}^{-1}$
5. Free length (Lf):
 $L_f = (K \sqrt{\kappa})$
 $\kappa =$ Adiabatic compressibility, $K =$ Temperature dependent constant $(93.875 + 0.345T) \times 10^{-8}$
6. Ultrasonic Attenuation (α/ρ^3): $\alpha/\rho^3 = 8\pi^2 \eta / 3\rho^3$
7. Relaxation time (τ): $\tau = 4\eta / 3\rho v^2$
8. Wada constant (W): $W = M \cdot \kappa^{-1/7} / \rho$
9. Internal pressure (Π_i):

$$\Pi_i = b RT \left[\frac{\kappa \eta}{v} \right]^{1/2} \frac{\rho_3^2}{M_6^7}$$

10. Cohesive energy (CE): $CE = \Pi_i V_m$

3. RESULT AND DISCUSSION

The measured values of ultrasonic velocity, density and related Thermo Acoustical parameters of Tulsi Leaf extract solution at temperatures 30°C, 35°C and 40°C.



Ultrasonic Studies of Molecular interactions Binary Mixtures of Tamarind Leaves.

Dr. Ritesh R. Naik¹, Sandeep Khachane²

¹ Assistant Professor, Department of Chemistry, D.D. Bhojar College of Arts & Science Mouda, Nagpur, Maharashtra, India

² Assistant Professor, Department of Applied Science, Padm. Dr. V. B. Kolte College of Engineering, Malkapur, Maharashtra, India

ABSTRACT

In the present study, ultrasonic velocity (U), density (ρ), and viscosity (η) have been measured at frequency 1 MHz in the binary mixtures of Tamarind with water in the concentration range (0.1 to 0.0125%) at 303 K, 308 K, and 313 K using a multifrequency ultrasonic interferometer. The measured value of density, ultrasonic velocity, and viscosity have been used to estimate the acoustical parameters, namely adiabatic compressibility (β_a), relaxation time (τ), acoustic impedance (z), free length (L_f), free volume (V_f), and internal pressure (III), Wada's constant (W). The obtained results support the complex formation, molecular association by intermolecular hydrogen bonding in the binary liquid mixtures

Keywords: Tamarind, free volume, acoustical parameters, ultrasonic velocity, adiabatic compressibility, acoustic impedance.

1. INTRODUCTION

Ultrasonic waves are used in many applications including plastic welding, medicine, Ultrasonic waves give us the ability to 'see through' solid / opaque material and detect surface or internal flaws without affecting the material in an adverse manner. It had been identified, about 200 years ago, that dogs could hear [1]. This canine ability is often used in police departmental work and by dog trainers. These sound waves are used by bats as a kind of navigational radar for night flying [2]. In the field of technology, the waves are being used to measure depth of sea, directional signaling in submarine, and mechanical cleaning of surface soldering [3], and to detect shoals of fish. Acoustic sonograms have become an important medicinal diagnostic tool which is widely used nowadays [4-5]. Ultrasonic waves are used for both diagnosis and therapy. It includes the detection of wide variety of anomalies, such as tumor, bloodless surgery, proper extraction of broken teeth, cardiology, and stone fragmentation [6]. Ultrasound is more sensitive than X-rays in distinguishing various kinds of tissues. It is believed to be less hazardous than X-rays, although possible hazards of ultrasound have not yet been thoroughly explored [7]. Most of the information extracted from ultrasonic study of fluids is confined to the determination of hydration number and compressibility [8-9]. The successful application of acoustic methods to physicochemical investigations of solution becomes possible after the development of adequate theoretical approaches and methods for precise ultrasound velocity measurements in small volumes of liquids [10-12]. In the present paper, acoustical studies have been studied in water at different temperatures over a wide range of Tamarind concentrations. From the experimental values a number of thermodynamic parameters namely ultrasonic velocity, adiabatic compressibility, acoustic impedance,

Need for Holistic Planning by IQAC in The New Framework

Mrs. Minal S. Bhojar
LIBRARIAN

D.D.Bhojar Collage of Arts and Science Mouda, Nagpur-441104

Abstract:-

During the past years the quality of education becomes a important needs in educational fields. The implementations of knowledge, construction and smart work is impact of institutional standards. IQAC in any institution is a important administrative body that is responsible for all quality matters. It's a prime responsibility of IQAC to initiate, plan and supervise various activities that are necessary to increase the quality of the education imparted in an institution or college. The role of IQAC is maintaining quality standards in teaching, learning and evaluation becomes crucial, and therefore undertaken on a smaller scale to work out the exact status and functioning of IQAC and its outcome. This paper presents importance of IQAC planning in new framework including the compositions, importance, and role, functions, OF IQAC and its teamwork. The dimensions and indicators of the study focus on the IQAC teamwork, its constructive work to developed a Quality Culture.

Keywords:-

IQAC, NAAC, HELs, AQAR, Quality culture.

I. INTRODUCTION

Quality Education has become a very important need also a matter within the the last one decade. Now a days the number of institutions are busy to providing higher education in India. The educational institutional vision is to provide a Quality and Excellence .Presently the bigger challenge of educational institute to give Acquisition and enhancement of quality education. IQAC Plays the main role of all these system .The Prime task of IQAC is develop a system for conscious, consistent and catalytic improvement in the overall performance of institution. . The quality of higher education is the main concern in policy framing and for that it has been made compulsory to obtain accreditation of higher education institutions (HEIs) by National Assessment and Accreditation Council (NAAC) enhance the quality of education. That occasion during the post-accreditation period, institutions got to channelize its efforts and measures towards promoting the holistic academic excellence including the peer committee recommendations.

1. Composition of the IQAC

IQAC is established in every institution under the Chairmanship of the Head of the institution. Heads of important academic and administrative units and a few distinguished educationists and representatives of local management and stakeholders. The composition of the IQAC as follows:

1. Chairperson: Head of the Institution
2. One member from the Management
3. Few Senior administrative officers
4. One nominees each from local society, Students and Alumni
5. One nominees each from Employers /Industrialists/Stakeholders
6. One among the senior teachers as the coordinator/Director of the IQAC

The composition of the IQAC will depends upon the size and complexity of the institution, accordingly the representation of teachers may vary. It helps the institutions in planning and monitoring. IQAC gives stakeholders or beneficiaries a cross-sectional participation in the institution's quality enhancement activities. IQAC members have a responsibilities to promoting awareness within the institutions. The members should have aware the realities of the institutions.

2. IQAC – Vision

To ensure quality culture because the prime concern for the Higher Education Institutions through institutionalizing and internalizing all the initiatives crazy with internal and external support.

3. IMPORTANCE OF IQAC



[Signature]
PRINCIPAL
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA



TOXICITY OF ANILINE ON KIDNEY OF MALE ALBINO RAT.

Mrs. Shabnam K. Ramteke

Assistant Professor, D.D. Bhojar College Of Art And Science Mouda, Dist-Nagpur.

ABSTRACT Aniline is a widely used chemical in a variety of industrial products and in almost all hair dye formulation. It is documented as a cause of clinical nephrotoxicity. The purpose of following study to investigate the histological alterations in kidney by aniline. For this study 24 male albino rats (*Rattus norvegicus*) weighing between 200-300gm were used. They were randomly divided into three groups. Group I as a control provided normal saline water and the group II, group III were exposed to aniline at 20mg/kg bw/day orally for 15 and 30 days duration respectively. The result revealed that the kidney structure showed fragmentation of brush border in the epithelial lining of proximal convoluted tubule, tubular dilation and hemorrhage in glomerular cells. As well as in 30 days duration the more effect also showed nuclear pyknosis, fragmentation of glomerular tuft and thickening of glomerular basement membrane. Therefore, it is concluded that the aniline causes histological changes as increase the exposure of duration may resulting in improper ultrafiltration of blood by kidney.

KEYWORDS : Aniline, albino rat, kidney histology.

INTRODUCTION

Aniline is a clear to slightly yellow liquid with a pungent odor. It does not readily disappear at room temperature. Aniline is a little soluble in water and mixes readily with most organic solvents. Aniline is used to create a number of yields such as agricultural chemicals, synthetic dyes, antioxidants, polyurethane foam stabilizers for the rubber industry, herbicides, varnishes and explosive etc. (ATSDR, 2002). The general population may be displaying to aniline by eating food or drinking water containing aniline, but these amounts are usually very small. If you work in a place that makes products like dyes, varnishes, herbicides, and explosives, you may be exposed to aniline at high amount (Anuradha *et al* 2004). Aniline detected also in tobacco smoke, so people who smoke or breath in second-hand smoke may also be exposed to aniline. Aniline produced commercially by catalytic vapor phase hydrogenation of nitrobenzene (Hummaddi, 2012). Paraphenyl-diamine (PPD) is analog of aniline provokes one of the most prominent edema, and it appears to be grossly specific and selectively localized in the head and neck, which is responsible for intense focal irritation. The PPD toxicity altered vascular permeability and involvement of the parasympathetic nervous system (sentilkumaran *et al*, 2015).

The highest body loads were found for production of aniline and further processing in the large-scale chemical industry. High exposures were also determined for release of aniline as a decomposition product in iron, steel and aluminum foundries and use of liquid dyeing formulations with residual aniline (scientific community, 2003). Oral absorption of aniline amounts in rats is more than 80% and 90%. In the body, aniline is widely distributed, the highest concentrations being found in red blood cells, plasma, kidney, liver, bladder and the gastrointestinal tract in rat. Due to their basicity, aniline and N-acetylaniline undergo enterohepatic cycling (Kalpal *et al*, 2007). Aniline is able to cross the placenta. The concentration of aniline was slightly higher in fetal than in maternal blood of rats, while the half-life was 1.5 h in both fetal and maternal blood plasma (Benya and Cornish, 1994). The textile printing and dyeing industry use aniline is a water-intensive industry requiring a large volume of freshwater at various steps of printing and therefore, the volume of wastewater produced is equally large (chung *et al*, 1982). N-methylaniline reacts aggressively with strong acids and oxidants. N-methylaniline is injurious if swallowed or inhaled or absorbed through the skin can cause methaemoglobinemia, central nervous system effects, eye and skin irritation, liver and kidney damage, gastrointestinal irritation with nausea, vomiting and diarrhea (Abebe *et al*, 2013).

Para-phenylene Diamine (PPD) is a common element in most of the hair dye preparations used for accelerates the process of dyeing and can caused local toxic effects or systemic when applied topically or ingested. PPD is derivative of aniline, aniline is aromatic amine, a colorless solid when pure. It is used mainly as a fur and hair dye and as a chemical intermediate in the production of numerous substances, including dyes and polymers (HSDB, 2009). The PPD frequently used by women for beauty in Africa and the Middle East and Indian sub-

continent (Hashimet *et al*. 1992). PPD is mixed with henna leaves of *Lawsonia alba*, as color enhancement to decorate the hands and feet in special Sudanese social events, such as wedding ceremonies. Whereas, a serious PPD intoxication problems were recorded in Morocco and India due to the most popular hair dyes contain PPD, among other ingredients (Singhet *et al*, 2008). Severe exposure to high level of PPD may cause severe dermatitis, eye irritation and tearing, Asthma, renal failure, vertigo tremors, convulsions and coma, while ingestion of PPD produces rapid developments of edema of face, neck, pharynx (tongue and larynx with respiratory distress which often needs tracheostomy (Kumar 1988).

There is very diminutive information is available on the toxicity of aniline on kidney of rat particularly on histopathology. Thus the present study was performed to determine the effect of aniline on kidney of rat.

MATERIAL AND METHOD

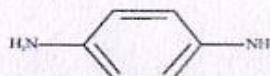
Animal model

The present study was conducted on healthy male albino rat (*Rattus norvegicus*). Weighing between 150-250g. All animal procedures were reviewed and approved by the Animal Ethics Committee. Rats were maintained in clean polypropylene cages with saw dust bed this cage covered by stainless still wire lid. The animal kept in highly hygienic, ventilated room under constant conditions of temperature, relative humidity (50-60%), and lighting 12 h light and 12h dark cycles. Animals were provided with a standard profitable rat diet and distilled water.

CHEMICAL

Aniline is an oily liquid, which is colorless when freshly distilled, but darkens in exposure to air and light it becomes brown, oily liquid. The Molecular formula of Aniline is C₆H₇N. The Molecular Weight is 93.127. Aniline has pungent odor. It has 8.1ph and 184.1 Boiling Point. The Solubility of aniline is partial in normal water and highly in boil water. Synonyms of aniline is amino benzene; benzenamine, phenylamine.

Structural formula



Experimental design

In our study the total 24 male albino (*Rattus norvegicus*) rat were used in the experimental protocol. The animal divided in three groups. The group I served as a control received normal saline water. Group II and III were experimental received aniline 20mg/kg/day for fifteen and thirty days respectively. The experimental animals were preserved in the animal house on daily observations.

Body and Kidney weight

Weight of each animal was recorded before and after treatment. After



PRINCIPAL
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

Positive Impact of Covid-19 Pandemics on Environmental Sustainable Development.

Mrs. S. K. Ramteke

Assistant Professor, D. D. Bhojar College of Art and Science, Mouda.
Email: shabnamramteke@gmail.com

Abstract-

The model of sustainable growth from 1980 to the present has changed into definitions of the three supports of sustainability (social, economic and environmental). Environmental sustainability is properly defined by focusing on its bio geophysical aspects. This means maintaining or improving the integrity of the Earth's life supportive systems. The global burst of coronavirus disease 2019 (COVID-19). Instead the consequence of the mitigation measures adopted to checkmate the spread of the virus or closing of the economic sectors through the lockdown (stay at home, stay safe) order has affected the environment directly. The immediate outcome of COVID-19 on the environment can be noticed mostly in the quality of air and change in climate, Aquatic systems and water resources, and the soil and land environment.

Keyword- Covid19, lockdown, environmental impact, sustainability, Climate change.

Introduction

The period "sustainable growth" was generated by the IUCN's 1980 World Conservation Policy (IUCN, UNEP and WWF, 1980). It is definite that "for development to be sustainable it necessarily take account of social and ecological factors, as well as economic ones". Our Common Future (Brundtland Report) (WCED, 1987) then provided further direction to complete global solutions. It defined maintainable growth as development which "encounters the requirements of the current generation without cooperating the ability of future generations to chance their own needs". The World Conference on Sustainable Development in 2002 (UN, 2002) with the idea of the three pillars - social, environmental, economic.. community sustainability as "the total to which public beliefs, social independences, social relationships and social institutions can continue into the future" (Bedrih, Moldan, et al). Conservational sustainability "pursues to recover human well-being by defensive the sources of fresh resources used for human needs and certifying that the human wilds are not topped, in direction to stop damage to people" (Goodland, 1995).

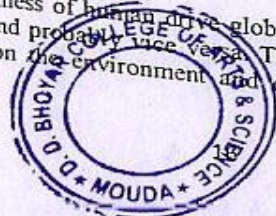
The burst of coronavirus disease-2019 (COVID-19) first appeared at the end of December 2019, from the Hunan seafood market in Wuhan City of China, and open as an international public fitness extra in a combine of weeks by the World Health Organization (WHO, 2020a). It is an infectious illness caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The concept of environmental sustainability remained settled (Goodland, 1995). According to Goodland, Goodland's conceptualization of ecological sustainability turns addicted to the resource-limited ecological economic framework of "limits to growth". The use of renewable and nonrenewable incomes on the source side, and contamination and excess adjustment on the sink side. (Holdren et al. 1995). The term environmental sustainability has gradually become normally recognized. As an for sample, the Commissioner for Environmental Sustainability of the Australian State of Victoria, P. Sutton, clear environmental sustainability as "the capability to preserve the abilities that are appreciated in the physical environment" (Sutton, 2004).

Methodology

This study was did by studying the available published literatures, news available on net, case studies, and different government and non-government establishments information from intelligences and official websites. Scientific literatures were composed through electronic means from the database of Science Traditional, Springer, PubMed, Tailor and Francis, ISI Web of Knowledge, Research Gate, and Google Scholar but not in a systematic manner. After a large amount of studies, this reading collects and presents the data and information which are important to the environmental effects of COVID-19 and light the study goals.

Covid-19 And The Environment

The amount and fastness of human drive globally, give position to the enormous impact of human activity on wildlife and probably on the environment and climate. Due to movement restriction and a has carried several effects on the environment and climate. Due to movement restriction and a



PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

TOXICITY OF ANILINE AND ITS DERIVATIVES ON RATS ORGAN:- A SYSTEMATIC REVIEW.

Mrs. SHABNAM K. RAMTEKE
Mrs. V. T. DHURVEY

Abstract:-

Aniline (A) and its derivatives are widely-used chemical intermediates. Its derivatives are used industrial compounds and are produced by most industrialized nations. These compounds are important chemical intermediates in the synthesis of many organic chemicals used as antioxidants, dyestuffs, pharmaceuticals, agricultural chemicals, and in numerous other industrial capacities. Human exposure to aniline and its derivatives generally occurs in the industrial setting, and much of our knowledge concerning the toxicity of aniline compounds in man has come from industrial exposure. The aim of this present study is combination the effect of aniline and its derivative from different sources. The vivo and in vitro nephrotoxic potentiality of these compounds was assessed in rats. Here the combine explanation of effect of aniline on kidney and bladder from different paper. The different aniline derivative studied such as 3,4,5-trichloroaniline (TCA) on male Fischer 344 rats, Radiolabel [¹⁴C]aniline on male Fischer 344 rats, Monochloroaniline derivatives(2-CA, 3-CA and 4-CA) on male Fischer 344 rat, Aniline (amino benzene) on male wistar rat (*Rattus norvegicus albinus*) and Paraphenylene Diamine on male Sprague-Dawley rats. This different derivatives of aniline show the different effect studied on the kidney of rat and bladder of rat such as renal cell cytotoxicity, aniline bind to DNA, RNA and change the arrangement of DNA and RNA. Aniline causes blood urea nitrogen increase, Aniline also proteinuria, hematuria, Methaemoglobin. All this result it's concluded that aniline has variety of toxicity on excretory organ of kidney of rat. Nephrotoxic potentiality of aniline is increases by increase the concentration of aniline.

Keyword :- Aniline, Kidney, Liver, Spleen Bladder, Nephrotoxicity, Rat.

INTRODUCTION:-

Aniline inducing DNA damage in the kidney of rats and in inducing sister chromatid exchanges in vivo in mice (20). N-methylaniline is an aniline derivative. Aniline, at a high concentration, induces minimal increases in sister chromatid. Although it is known that metabolites of mono- and dichloroanilines are toxic to the kidney in vivo and in vitro. The development of synthetic dyes for hair in the laboratory is traced to 1856, and permanent hair colorants have been in commercial use for over 100 years.[4] The toxicity of paraphenyldiamine (PPD) was first described in a hair-dresser in 1924 following exposure due to occupational handling. PPD is the chemical intermediate by aniline Serum biomarker creatinine and blood urea of kidney injury pointed a significant ($p < 0.01$) increased and decreased Na^+ and Cl^- levels as well as body weights and the mean relative kidney weights were affected by the treatment regard to both the exposure time and the concentration of PPD. Histopathological findings include microscopical damage caused by PPD treatment. Such as glomerular hypertrophy, hyperemia swelling glomerular lining epithelium and mesangial matrix expansion in group III as well as lobulation of glomerular tufts, glomerular cells vacuolation, diffused hyaline and thickening of glomerular basement membrane. Chloroanilines are commonly used as chemical intermediates to manufacture dyes, agricultural chemicals,

D. D. BHOYAR COLLEGE OF ART AND SCIENCE MOUDA AND PROFESSOR, PGTD Department of Zoology Nagpur university.



PRINCIPAL

D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

Research Article

Differential gene expression and co-regulated expression of genes in leukemia: an *in-silico* approach to identify potent biomarker

D. M. Agase*

Department of Zoology, Govt. J.S.T.P.G. College, Balaghat (M.P.), India

K. K. Gupta

Centre for Bioinformatics, Pondicherry University, Puducherry, India

A. Wasnik

Department of Botany, Govt. J.S.T.P.G. College, Balaghat (M.P.), India

M. S. Markam

Department of Zoology, Govt. J.S.T.P.G. College, Balaghat (M.P.), India

S. B. Zade

Department of Zoology, R.T.M. Nagpur University, Nagpur (M.S.), India

P. M. Mohurle

Department of Zoology, R.T.M. Nagpur University, Nagpur (M.S.), India

T. S. Kothe

Department of Zoology, Govt. K.N.G. College, Balaghat (M.P.), India

*Corresponding author. Email: sbt.durgesh@gmail.com

Article Info

[https://doi.org/10.31018/](https://doi.org/10.31018/jans.v13i2.2650)

[jans.v13i2.2650](https://doi.org/10.31018/jans.v13i2.2650)

Received: March 28, 2021

Revised: May 22, 2021

Accepted: May 26, 2021

How to Cite

Agase, D.M. *et al.* (2021). Differential gene expression and co-regulated expression of genes in leukemia: an *in-silico* approach to identify potent biomarker. *Journal of Applied and Natural Science*, 13(2), 585 - 592. <https://doi.org/10.31018/jans.v13i2.2650>

Abstract

A biomarker can be measured, used to diagnose or classify disease, and measure progress as well as the therapeutic response of the disease. Early diagnosis and selection of appropriate treatment can be critical for the successful treatment of diseases. Identification and characterization of potent diagnostic biomarkers, and therapeutic targets rely heavily on traditional *in vitro* screens which require extensive resources and time. Integration of *in silico* screens prior to experimental validation can improve the efficiency and potency of biomarkers as well as reduce the cost and time of biomarker discovery. Considering the need, present work was undertaken to identify biomarkers for different classes of leukemia. Differential Gene Expression (DGE) analysis and co-regulated expression analysis were used for *in silico* identification and characterise a potent biomarker for leukemia. On the basis of *in silico* screening, the present study proposed seven protein-coding (CD38, TSC22D3, TNFRSF25, AGL, LARGE1, ARHGAP32, and PARM1) genes for the diagnosis of leukemia. The study also proposed a novel three-step lineage-specific model for the diagnosis of leukemia. In the three-step diagnosis model, the first group of biomarkers with an association of clinical and hematological parameters diagnose leukemia. The second group of biomarkers diagnoses acute and chronic form of leukemia. The third group of biomarkers identifies whether it belongs to myeloid lineage or lymphoid lineage.

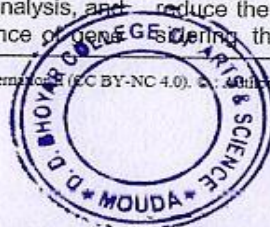
Keywords: Biomarkers, Co-regulated Expression, Differential Gene Expression, Leukemia

INTRODUCTION

Leukaemia is a malignant neoplasm of hematopoietic cells. Aberrant gene expression related to cellular differentiation, and proliferation of hematopoietic cell contributes to malignant transformation of cells. A better understanding of differential gene expression (DGE) in leukemia should provide diagnostic biomarkers, and therapeutic targets for therapy of this disease. Differential gene expression analysis refers to the analysis, and interpretation of differences in the abundance of gene

transcripts within a transcriptome (Conesa *et al.*, 2016). DGE is important to understand the biological differences between healthy and diseased states (Rodriguez *et al.*, 2017). Identification and characterization of potent diagnostic biomarkers, and therapeutic targets rely heavily on traditional *in vitro* screens which require extensive resources and time. Integration of *in silico* screens prior to experimental validation can improve the efficiency and potency of biomarkers as well as reduce the cost and time of biomarker discovery. Considering the need, present work was undertaken to

This work is licensed under Attribution-Non Commercial 4.0 International License (CC BY-NC 4.0). © All rights reserved. Publishing rights @ ANSF.



PRINCIPAL
D. D. BHOYAP COLLEGE OF ARTS & SCIENCE
MOUDA



E-ISSN: 2320-7078
P-ISSN: 2349-6800
www.entomoljournal.com
JEZS 2021; 9(5): 205-213
© 2021 JEZS
Received: 04-07-2021
Accepted: 06-08-2021

DM Agase
Department of Zoology,
Govt. J.S.T.P.G. College,
Balaghat, Madhya Pradesh,
India

MK Bisen
Department of Botany,
Govt. College, Lamta,
Madhya Pradesh, India

MS Markam
Department of Zoology,
Govt. J.S.T.P.G. College,
Balaghat, Madhya Pradesh,
India

TS Kothe
Department of Zoology,
Govt. K.N.G. College, Balaghat,
Madhya Pradesh, India

AS Soni
Department of Zoology,
Govt. J.S.T.P.G. College,
Balaghat, Madhya Pradesh,
India

Corresponding Author:
DM Agase
Department of Zoology,
Govt. J.S.T.P.G. College,
Balaghat, Madhya Pradesh,
India

Study on avifaunal diversity of Wainganga river basin at Balaghat district of Madhya Pradesh

DM Agase, MK Bisen, MS Markam, TS Kothe and AS Soni

Abstract

The avian diversity plays an important role in the ecological balance of an ecosystem and acts as an excellent indicator of environmental changes. The present study was carried out in the Wainganga River basin at Balaghat district to document the diversity, habitat strata, migration, and conservation status of avifauna. A total of 117 species of birds belonging to 18 orders and 53 families have been recorded in this study from December 2020 to July 2021. Out of the 117 species of birds, 110 species were Resident (R), 5 were winter migrant (WM) and 2 were summer migrant (SM). According to IUCN Red List version 3.1.7, 113 species were Least Concern (LC), 3 species were near threatened (NT), 1 species was vulnerable (VU). The presence of Near Threatened (NT) and Vulnerable (VU) species indicates the importance of present study sites.

Keywords: avifauna, conservation, IUCN, migration

1. Introduction

Birds are a critical component of biodiversity. They provide a direct and indirect contribution to the ecosystem and act as an excellent indicator of environmental health. They occupy a wide range of ecological positions (Hoyo *et al*, 2006) [8], depending on the taxonomic viewpoint. Central India has diverse avifauna including residential, and migratory birds. In central India, the Balaghat district of Madhya Pradesh is recognized for its maximum forest density, biological diversity, and ecological values. About 80% of the district's area is covered with forest. District Balaghat, itself looks like a flying bird, and lies in a plateau region at the southern base of the Satpura range, just east of the Wainganga River.

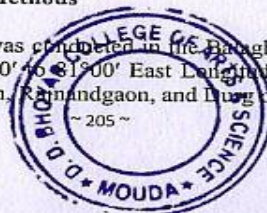
The Wainganga rises in the Seoni District of Madhya Pradesh. The Wainganga basin comprises the catchment area of the river up to the confluence of Godavari (Fig.1). The total length of this river is 754 km up to the confluence with the Godavari. In the beginning, it flows eastward for a distance of about 175 km and then Southward for a length of about 100 km in Seoni, and the Balaghat District. The town of Balaghat is situated on the Bank of River Wainganga (Chisholm, 1911) [2]. The Wainganga River basin has rich forest biodiversity dominated by typical dry deciduous forest including different species of Aina, Sal, Sagwan, Kino, Mahua, Tendu, etc., and also several tracts of good quality bamboo. Three types of soils broadly cover this area, Black cotton soils, Sandy loam & lateritic soil (Dwivedi *et al*, 2021) [6]. The faunal diversity of this forest includes many species of mammals, reptiles, amphibia, birds, insects, butterflies, dragonflies as well as spiders.

The study was conducted at different locations at Balaghat where this river flows which included Bajrang Ghat, Sankar Ghat, Aama Ghata, Jagpur Ghat, Bhamodi Ghat, and Gongali Ghat. This natural forest and water stream area have constituted a good habitat for many residential as well as migratory birds. The present study was an attempt to understand the avian diversity distribution in the forest, and near water stream habitat of the Wainganga River. The foremost objective of the present study is to collect baseline data of avian diversity at regular intervals. Therefore, an attempt has been made for the assessment of changes in avian diversity.

2. Materials and Methods

2.1 Study Area

The avian survey was conducted in the Balaghat District of Madhya Pradesh (Latitude 21°30' to 22°30' and 80°00' to 81°00' East Longitude). Balaghat District is bounded by the district Mandla in the North, Ramandgaon, and Durg districts in the east and south, and the Seoni



PRINCIPAL
D. G. BHOYAP COLLEGE OF ARTS & SCIENCE
MOUDA

2020-21



Child Labour In India: Violation Of Fundamental Human Rights

Dr. Sanjay V. Kudale
D.D.Bhojar College Of Arts &Sci.
Mouda Dist. Nagpur

Dr. Sanjay R. Choudhari
Shri Binzani City College .
Nagpur

Abstract

Child labour is an infringement of principal basic liberties and has been appeared to thwart kids' turn of events, conceivably prompting deep rooted physical or mental harm. Proof focuses to a solid connection between family destitution and youngster work, and kid work sustains neediness across ages by keeping the offspring of the poor out of school and restricting their possibilities for upward social portability. This bringing down of human resources has been connected to slow financial development and social turn of events. Ongoing ILO considers have indicated that the end of kid work experiencing significant change and creating economies could produce financial advantages a lot more noteworthy than the costs, which are generally connected with interest in better tutoring and social administrations. The major ILO principles on kid work are the two legitimate mainstays of worldwide activity to battle kid work.

Introduction

More than 70 million kids the world over work in unsafe conditions in farming, mining, homegrown work, and different areas. On tobacco ranches, kids work extended periods in extraordinary warmth, presented to nicotine and harmful pesticides that can make them debilitated. In Africa, Asia, and Latin America, youngster workers in distinctive and little scope gold mines work underground in pits that effectively breakdown and utilize poisonous mercury to handle the gold, gambling mind harm and different genuine medical issue.

Financial difficulty demands a cost for a large number of families around the world – and in certain spots, it comes at the cost of a youngster's actual wellbeing. Almost 1 out of 10 kids over the globe (around 152 million) are exposed to kid work, practically 50% of whom are in perilous types of work Children might be crashed into work for different reasons. Regularly, kid work happens when families face monetary difficulties or vulnerability – regardless of whether because of destitution, abrupt ailment of a guardian, or employment loss of an essential worker. The outcomes are faltering. Youngster work can bring about extraordinary substantial and mental mischief, and even demise. It can prompt subjection and sexual or financial abuse. Also, in practically every case, it cuts kids off from tutoring and medical care, confining their principal rights and undermining their fates.

Traveler and displaced person kids – huge numbers of whom have been removed by struggle, calamity or neediness – likewise hazard being constrained into work and even dealt, particularly on the off chance that they are moving alone or taking sporadic courses with their families.



PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA



ANALYSIS ON MENTAL HEALTH AND SELF CONFIDENCE AMONG THE
KABADDI AND KHO-KHO PLAYERS

Dr. Sanjay V. Khudale

Principal

D. D. Bhojar College of Arts & Science Mouda, Dist. Nagpur (M.S.)

Abstract

Sports psychology is the study of ways psychology impacts sports activities, athletic overall performance, exercising and bodily interest. Improve the overall performance and boom motivation. It facilitates athletes use mental standards to attain ultimate intellectual fitness and to enhance overall performance (overall performance enhancement) and sports activities psychology broaden the ultimate athletic overall performance, care and health of athletes, coaches, and game organizations, and the relationship among bodily and mental functioning. The cause of the examine became to evaluate the chosen mental profile on self-self belief of Kuvempu University and Davanagere University. Kabaddi and Kho-Kho guys gamers with the aid of using the use of standardizing questionnaires designed with the aid of using Vealey, Hayashi, Garner-Holeman, and Giacobbithe topics had been starting from 18 to twenty-eight years, the statistics accumulated became dealt with with the statistical technique "t" check and large on account that it's miles greater than the desk value. The examine confirmed that there has been a substantial among Kabaddi and Kho-Kho guys gamers. Kabaddi gamers higher then Kho-Kho gamers in self-self assurance. The motive why Kabaddi gamers advanced in self-self assurance because of degree of aggression is high. It is suggested that comparable examiae can be performed to one of a kind age groups. Same examine can be performed on large sample. Similar examine can be performed for one of a kind levels.

Keywords: Sport, psychology, kabaddi, kho-kho, self belief



PRINCIPAL

**D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA**

**Research on Physical Education Problems and Management Reform of Indian
Colleges and Universities**

Dr. Sanjay V. Khudale
Principal

D.D. Bhojar Arts and Science College, Mouda
sanjaykhudale@gmail.com

Abstract

Research purpose: Indian college students' physique condition not improved for many years, profoundly affected the national talent training quality and effect, the colleges and universities sports work caused many concerns and questions, by analyzing the problems existing in the college sports, puts forward some countermeasures for India's colleges and universities sports management reform. Research methods: the research methods of the paper are literature and questionnaire survey, which have surveyed 406 PE teachers from 10 universities in India. The research process: the paper analyses to retrieve relevant literature, this study was carried out on the questionnaire survey information statistics, combined with the Indian government policy document interpretation of the college sports, analyzes the realistic problems in the college sports, finally puts forward some countermeasures for the reform of sports management in colleges and universities. Results: School leaders should pay more attention to school sports; Universities should implement relevant policies of the state; Develop student development as the goal of sports work; 4. Establish a management system of multi-subject co-participation.

Keywords: India's colleges and universities, university physical education, real problems, management reform

Introduction:

Why do college students have years of physical health without reverse? Why does the country introduce regulations and regulations to strengthen college sports work, the effect is not satisfactory? Why is the "sports element" in the evaluation system of college talent? Why is there no obvious reform in college sports management system? According to the above problem, only seek answers from the national policy laws and regulations safeguard level, is clearly not enough, also should be the internal operation status of sports management system and mechanism in colleges and universities and the dilemma for answers. Constructing a set of practical and effective college sports management measures is the necessary condition for the development and management of college sports. The research methods of the paper are literature and questionnaire survey, which have surveyed 406 PE teachers from 10 universities in India. Research process: the author has been working in college sports for many years and has been thinking seriously about this issue. So the author in the thesis analyses to retrieve relevant literature, the questionnaire on the basis of the statistical information, combined with the Indian government policy document reading of college sports, analysed the practical problems of college sports, finally puts forward some countermeasures for the reform of sports management in colleges and universities. The results of the paper are: School leaders should pay more attention to school sports; Universities should implement relevant policies of the state; Develop student development as the goal of sports work; Establish a management system of multi-subject co-participation.



[Signature]

PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE

MOUDA

ARTICLE IN PRESS

Synthetic Metals xxx (xxxx) xxx



Contents lists available at ScienceDirect

Synthetic Metals

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

Research Paper

Prototype symmetric configured MWCNTs/Fe₂O₃ based solid-state supercapacitorShrikant S. Raut^a, Lakshmana Kumar Bommineedi^b, Shilpa Pande^c, Babasaheb R. Sankapal^{b,*}^a D.D. Bhojar College of Arts & Science Mouda, Nagpur 441104, Maharashtra, India^b Nano Materials and Device Laboratory, Department of Physics, Vivesvaraya National Institute of Technology, South Ambazari Road, Nagpur 440010, Maharashtra, India^c Department of Applied Physics, Laxminarayan Institute of Technology, RTM Nagpur University, Nagpur 440033, Maharashtra, India

ARTICLE INFO

ABSTRACT

Keywords:
MWCNT/Fe₂O₃
JCI gel electrolyte
state symmetric supercapacitor

Prototype solid-state symmetric supercapacitor (SSS) device has been designed by using two MWCNT/Fe₂O₃ electrodes assembled through polyvinyl alcohol-lithium chloride gel electrolyte as mediator onto flexible stainless steel substrate. Through electrochemical investigation as-fabricated device demonstrated 70.16 F g⁻¹ of specific capacitance with remarkable 9.74 W h kg⁻¹ specific energy and 487 W kg⁻¹ specific power at current density of 0.57 A g⁻¹. Assembled device delivers an outstanding volumetric energy of 24.36 mW h cm⁻³ compensating volumetric power of 1218 mW cm⁻³ at a current density of 1.42 mA cm⁻². The cycle repeatability test of MWCNTs/Fe₂O₃ SSS device exhibited capacitance retention of 75% for 1500 cycles.

1. Introduction

Supercapacitor's research and development has boosted rapidly in diverse fields including portable electronics, transportation, military and aerospace by providing substantially advanced energy density compared to conventional capacitors [1]. Small, thin, lightweight and flexible solid-state devices maintain a high-quality performance with an inimitable set of features inclusive of higher power density, extravagant charge-discharge rate capability and remarkable cycle permanency under continuous mechanical deformation such as folding, bending and stretching [2]. Traditional liquid electrolyte based supercapacitor exhibit key shortcomings in practical application as encapsulation is the prime requirement against the embedded toxic electrolyte for technological application to prevent its leak [3]. In addition, inappropriate shape of traditional supercapacitors reveals several significant disadvantages for their employment in feasible applications. In particular, same electrode materials exhibiting the same specific capacitance in same electrolyte is used to fabricate symmetric supercapacitor which could simplify cell packing process. To design high-performance supercapacitors, porous carbon material with a variety of faradaic-active species, specific morphologies, compositions and structures have aroused scientific and technological interest [4–7].

Wide spread materials have been explored as electrode towards

solid-state symmetric supercapacitor devices, among which the hybrid electrode material consist of carbon nanotube coated metal oxide permit to perform the faradic and non-faradic mechanisms for charge storage [8,9]. Inclusion of higher valence states available with iron (0, 2+ and 3+), enriched redox chemical kinetics (Fe⁰/Fe²⁺, Fe⁰/Fe³⁺, Fe⁰/Fe³⁺, etc.), widen working potential in negative region, less poisonous and more eco-friendly nature as compared to other transition metal oxides, iron oxide and iron based oxides/hydroxides have been emerging as a promising material for supercapacitor applications [10].

Our earlier report emphasis the liquid-state configured supercapacitive electrode based on Fe₂O₃ material anchored onto high surface area MWCNTs thin film [11] and its electrochemical comparative investigation with individual MWCNTs and Fe₂O₃ electrodes. Liquid-state electrochemical supercapacitor suffers through evaporation of solvent, leakage problem due to imperfect sealing and reaction between used electrolytes with the substrate and hence, affects the long life period. Hence, state of art has been explored to design prototype complete solid-state supercapacitor in symmetric configured mode by using two MWCNTs/Fe₂O₃ electrodes sandwiching with the aid of polymer-conducting gel electrolyte as mediator where polymer can act as a dielectric and conducting electrolyte can act as a conducting matrix embedded between non-conducting dielectric matrix. Hence, supercapacitive performance has been explored for designed prototype

* Corresponding author.

E-mail addresses: bsankapal@gmail.com, bsankapal@phy.vnit.ac.in (B.R. Sankapal).<https://doi.org/10.1016/j.synthmet.2020.116629>

Received 7 August 2020; Received in revised form 18 October 2020; Accepted 6 November 2020

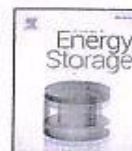
0379-6779/© 2020 Elsevier B.V. All rights reserved.

Please cite this article as: Shrikant S. Raut, *Synthetic Metals*, <https://doi.org/10.1016/j.synthmet.2020.116629>

PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

5/22/2024, 12:43 PM



Widening potential window of flexible solid-state supercapacitor through asymmetric configured iron oxide and poly(3,4-ethylenedioxythiophene) polystyrene sulfonate coated multi-walled carbon nanotubes assembly

Swapnil S. Karade^a, Shrikant S. Raut^b, Hemant B. Gajare^c, Pratibha R. Nikam^c, Rajendrakumar Sharma^d, Babasaheb R. Sankapal^{a,*}

^a Nano Materials and Device Laboratory, Department of Physics, Vivesvaraya National Institute of Technology, South Ambazari Road, Nagpur-440 010 (M.S.), India

^b D. D. Bhoyar College of Arts and Science, Mouda, Nagpur-441104 (M.S.), India

^c School of Physical Sciences, Moolji Jalitha College, Jalgaon-425001, Maharashtra, India

^d SPEL Technologies Private Limited, Pune-411 013 (M.S.), India

ARTICLE INFO



MWCNTs/PEDOT:PSS
Asymmetric supercapacitor
Widen potential

ABSTRACT

Current smart energy storage technology needs flexible, compact and even wearable devices with a wide potential window. As a requisite, a novel flexible all-solid-state asymmetric capacitor (ASC) based on worm-like nanostructured iron oxide ($\gamma\text{-Fe}_2\text{O}_3$) as negative electrode have been selected properly in combination with poly(3,4-ethylenedioxythiophene): polystyrene sulfonate (MWCNTs/PEDOT:PSS) coated multi-walled carbon nanotubes as a positive electrode to achieve wide potential window of 1.8 V and the use of facile, low cost and binder free approach for the synthesis are the novelties of the present report. These two electrodes have been sandwiched by CMC- Na_2SO_4 gel electrolyte. Chemical bath deposition method has been used to deposit $\gamma\text{-Fe}_2\text{O}_3$ thin film while 'dip and dry' coating technique to deposit MWCNTs/PEDOT:PSS composite thin film. Strikingly, the resulting $\gamma\text{-Fe}_2\text{O}_3$ /MWCNTs/PEDOT:PSS asymmetric cell yields a wide voltage window of 1.8 V with a high specific capacitance of 65 F g^{-1} at 2.4 A g^{-1} current density with good specific energy and specific power. Furthermore, ASC device was capable of 80% retention at 5000 cycles through charge-discharge studies at current density of 2.5 A g^{-1} along with the flexibility test by bending the device to 170° delivering only 15% capacity loss as per initial one.

1. Introduction

Ever-increasing demand of energy storage devices for electronic devices such as mobile phones, laptops, electronic paper and in the automobile industry, the major research focus has been made towards the development of flexible, light-weight and low cost energy storage applications. Hence, high performance energy and power densities are indispensable which can be acquired through electrochemical storage devices along with safe operation, small environmental impact and economic viability [1]. Currently, supercapacitors have attracted enormous research interest due to their high specific power, reasonable energy density, fast charge-discharge time and long cycle life [2,3]. However, the energy density E is usually limited by the operating voltage (V) according to the equation $E = 1/2CV^2$, where C is the device capacitance.

Conventional supercapacitor devices with liquid electrolyte suffers

major drawbacks as solvent evaporation, improper sealing against liquid electrolyte leakage and fabrication for small-scale flexible devices. Use of solid-state supercapacitors can overcome these problems and holds many advantages such as small size, light weight, easy handling, excellent reliability and wider range of operating temperature [4,5]. Furthermore, an effective approach towards widening operating voltage window can be made with the aid of asymmetric capacitor (ASC) design which may deliver effective power to enhance the electrochemical performance towards smart storage technologies [6]. Reports have highlighted the improvement of the supercapacitive performance by using nanostructured materials such as nanowires, nanotubes and nanorods [7–9] with large surface area, short diffusion path for fast electron/ion transfer, and better stress strain accommodation [10]. There are various metal oxides supported by carbon framework have been successfully utilized for 3D-printed micro-supercapacitors [11,12]. Fe_2O_3 has been studied as an electrode material for

* Corresponding author.

E-mail address: brsankapal@phy.vnit.ac.in (B.R. Sankapal).

<https://doi.org/10.1016/j.est.2020.101622>

Received 29 February 2020; Received in revised form 13 June 2020; Accepted 16 June 2020
2352-152X/ © 2020 Elsevier Ltd. All rights reserved.




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA



CHEMISTRY & BIOLOGY INTERFACE

An official Journal of ISCB, Journal homepage; www.cbijournal.com

Synthesis and evaluation of novel 4-chloro-5-(cyclic/acyclic amino)-2-*p*-tolyl-(2*H*)-pyridazin-3-one derivatives as anticancer, antiangiogenic, and antioxidant agents

A. S. Sawant¹, S. S. Kamble^{2*}, S. V. Hese¹, P. M. Pisal¹, S. S. Sawant¹, V. A. Kamble⁴, V. T. Kamble^{3*}, R. N. Gacche^{5*}

¹School of Chemical Sciences, Swami Ramanand Teerth Marathwada University, Nanded-431 606 (MS), India.

²Gramin Science (Vocational) College, Vishnupuri, Nanded-431 606 (MS), India.

³Organic Chemistry Research Laboratory, Department of Chemistry, Institute of Science, Nagpur (MS), India.

⁴Department of Microbiology, Adarsha Mahavidyalaya, Amaravati, (MS), India.

⁵Department of Biotechnology, Savitribai Phule Pune University, Pune-411007 (MS), India

#Equally contributed as first author

*Corresponding Author E. Mail: rngacche@rediffmail.com, Phone: +91-9423656179 Fax: 91-2462-259461

Received 23 July 2020, Accepted 30 September 2020

Abstract: Pyridazinone is a unique template that is associated with several pharmacological activities. A new class of pyridazinone derivatives containing cyclic/acyclic amine moiety was synthesized and evaluated for their *in vitro* cytotoxic activity against HEP3BPN 11 (liver), MDA 453 (breast) and HL60 (leukemia) cancer cells. Three derivatives **4a** (76.78±0.7 against HEP3BPN 11), **4b** (71.55±0.88 against HL60), and **4e** (79.04±0.2 against HEP3BPN 11 & 73.09±0.1 against MDA 453) showed promising anticancer activity were further tested for their potential to inhibit the proangiogenic cytokines involved in tumor progression. Free radical scavenging activities of these compounds were demonstrated using 2,2-diphenyl-1-picryl hydrazine (DPPH), OH and superoxide anion radicals.

Keywords: Synthesis, Pyridazinones, Anticancer, Antiangiogenic, Antioxidant agents.

Introduction

Besides the invention of plethora of cancer chemotherapeutic agents, drugs having more therapeutic index and safe on health grounds are appreciated in the 'target rich lead poor' scenario of anticancer research [1]. The currently used chemotherapeutic agents do not distinctively

target tumor cells, but rather obstruct with cell division or hamper enzymes involved in DNA replication or metabolism. These drugs hence moreover damage the normal dividing cells of rapidly regenerating tissues, like those of the bone marrow, gut mucosa and hair follicles. Cancer chemotherapy is restricted by a lack of specificity, results into the damage to cancer



[Signature]
PRINCIPAL

D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

PHYSICAL CHEMISTRY
OF SOLUTIONS

Study of Solution Behaviour of Chlorzoxazone in Ethanol–Water through Thermodynamic Properties

S. D. Deosarkar^{a,*}, T. M. Kalyankar^b, and A. M. Thakre^c

^a School of Chemical Sciences, Swami Raman and Teerth Marathwada University, Nanded, MS, 431606 India

^b School of Pharmacy, Swami Ramanand Teerth Marathwada University, Nanded, MS, 431606 India

^c Bhojar College of Arts and Science, Mouda, Nagpur, M.S., India

* e-mail: sandeo24@yahoo.co.in

Received October 9, 2020; revised October 23, 2020; accepted October 26, 2020

Abstract—The article reports experimental density (ρ), speed of sound (u), and refractive index (n) of solutions of centrally acting muscle relaxant chlorzoxazone over the wide concentration range (0.01–0.10) mol kg⁻¹ in 70 vol % ethanol–water at 303.15, 308.15, and 313.15 K. Experimental results have been used to calculate various properties such as isentropic compressibility (κ_s), specific acoustic impedance (Z), intermolecular free length (L_f), relative association (R_A). Results have been discussed in terms of molecular interactions and structural fittings in studied solutions.

Keywords: drug, density, speed of sound, isentropic compressibility, acoustic impedance

DOI: 10.1134/S0036024421150073

1. INTRODUCTION

Chlorzoxazone (5-chloro-3-H-benzoxazol-2-one) is a centrally acting muscle relaxant used to treat muscle spasm and resulting pain. It is well absorbed with protein binding of 13–18%. It contains hydrogen bond donor (one) and hydrogen bond acceptor (two) sites which show different interactions with solvent. Solution behavior of Chlorzoxazone in terms of thermophysical properties is of theoretical and practical interest. Large numbers of medications have a potential to interact with alcohol which can alter metabolism. The alcohol–medication interaction includes pharmacokinetics and pharmacodynamics [1].

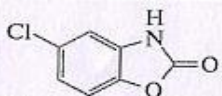
The density, speed of sound and refractive index of drug solution are used to compute different volumetric, acoustic and optical properties. These properties are helpful for interpretation of molecular interactions in drug solution. The drug interaction is a subject of intensive study in bio-physical chemistry [2]. Refractive index is highly sensitive to the variations in the molecular organization and therefore provides important structural information in solution [3]. The

drug action is understood through physiochemical properties at molecular level [4] as it is resulted from different kinds of interactions such as ionic or covalent, hydrogen bonding, charge transfer, dipole–dipole, hydrophobic interactions etc. [5]. Speed of sound along with density is useful to calculate some important acoustic and thermodynamic properties which give qualitative information about intermolecular forces in solutions [6–9]. Thermodynamic properties of drug solutions provide deeper insight into the interactions in cellular fluids. Studies on speeds of sound and densities of solutions containing pharmaceutically important drugs are of interest [10–15]. In present work, systematic study of temperature dependence of various thermodynamic properties of Chlorzoxazone in 70 vol % ethanol–water mixtures have been carried out.

2. EXPERIMENTAL

Chlorzoxazone (minimum assay $\geq 98\%$, specifications are given in Table 1) was supplied as a gift sample by Cipla Pvt. Ltd. India. Deionized distilled water

Table 1. Specifications of chemicals

Name of the chemical	Source	Chemical structure	Molecular weight, kg/mol	Linear formula
Chlorzoxazone	Cipla Pvt. Ltd.		169.565	C ₇ H ₄ ClNO ₂




PRINCIPAL
D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

Study of Interactions in Water Solutions of Lemon Drops by Ultrasonic and viscometrical Measurements

Dr. Ritesh R. Naik¹, Sandeep Khachane²

¹ Assistant Professor, Department of Chemistry, D.D. Bhoyar College of Arts & Science Mouda, Nagpur, Maharashtra, India

² Assistant Professor, Department of Applied Science, Padm. Dr. V. B. Kolte College of Engineering, Malkapur, Buldada, Maharashtra, India

ABSTRACT

In the present study ultrasonic velocity (U), density (ρ) and viscosity (η) have been measured at frequency 1 MHz. The measured value of ultrasonic velocity, density and viscosity have been used to estimate the acoustical parameters namely adiabatic compressibility (β_a), relaxation time (τ), acoustic impedance (z), free length (Lf), free volume (Vf) and internal pressure (Pi), Wada's constant to investigate the nature and strength of molecular interaction in solution with water. The obtained result supports the occurrence of complex formation, molecular association through intermolecular hydrogen bonding in the mixture.

Key Words: ultrasonic velocity, density, viscosity, molecular interaction, intermolecular hydrogen bonding.

INTRODUCTION

Ultrasonic non-destructive testing is resourceful technique that can be appropriate to study molecular interactions in liquids, liquid mixtures and solutions. Ultrasonic propagation parameters yield valuable information regarding the behavior of solutions, because intermolecular association, complex formation, dipole interaction and related structural changes affect the compressibility of the system which produces corresponding variations in the ultrasonic velocity. Ultrasonic technique has been adequately employed to investigate the properties of any substance to understand the nature of molecular interactions in pure liquid, [1] liquid mixtures [2-3] and solutions [4]. Drug action, although complex result from various kinds of physico-chemical interactions, e.g. Ion dipole, ionic or covalent, hydrogen bonding, charge transfer interactions, hydrophilic interactions etc.[5-6] All the form kinetic processes involve transport of drug across biological membranes, which can be understood by transport property measurements such as ultrasonic velocity, viscosity, thermal conductivity and diffusion. A number of researchers [7-12] have investigated the molecular interaction in aqueous solution of different antibiotics in the recent years. Acoustic and thermodynamic parameters have been used to understand different kinds of association, the molecular packing, molecular motion and various types of intermolecular interactions and their strengths influenced by the size in pure components and in the mixtures [13-17]. Excess parameters play a vital role in assessing the compactness due to molecular arrangement and the extent of molecular interactions in the liquid mixtures through charge transfer, dipole-dipole and dipole induced dipole interactions [18]. The sign and the extent of deviation of these functions from ideality depend on the strength of interactions between unlike molecules [19]. In the present studies, the ultrasonic velocity of lemon juice in water have been measured and various acoustical parameters have been calculated. The results are interpreted in terms of molecular interaction occurring in the solution. Ultrasonic waves are used in many applications including plastic welding, medicine, jewelry cleaning, pipe inspection, and nondestructive test. Within nondestructive test, ultrasonic waves give us the ability to 'see through' solid / opaque material and detect surface or internal flaws without affecting the material in an adverse manner. It had been identified, about 200 years ago, that dogs could hear [20]. This canine ability is often used in police departmental work and by dog trainers. These sound waves are used by bats as a kind of navigational radar for night flying [21]. Even blind people unconsciously develop a similar method by which obstacles are sensed by the reflected echoes of their footsteps or the tapping of a cane. In the field of technology, the waves are being used to measure depth of sea, directional signaling in submarine, and mechanical cleaning of surface soldering [22], and to detect shoals of fish. Acoustic sonograms have become an important medicinal diagnostic tool which is widely used nowadays [23]. Ultrasonic waves are used for both diagnostic and therapy. It includes the detection of wide variety of

Generalized Offset Fourier-Mellin Transform & Its Analytical Structure

Paritosh Dolas¹, Vidya Sharma²

¹ Head, Department of Mathematics, D. D. Bhojar College of Arts & Science, Mouda, Nagpur, Maharashtra, India, 441104

² Head, Department of Mathematics, Arts, Commerce and Science College Kiran Nagar, Amravati, Maharashtra, India, 444606

Abstract

The offset Fourier transform is the space-shifted and frequency-modulated versions of the original Transform. It is more general and flexible than the original one. Since offset Fourier Transform has close relations with the optical system consisting of lenses, free spaces, prisms and shifted lenses. Also, we have acknowledged that Fourier-Mellin transform is most useful integral transform due its shift-scale invariance property which is applicable in various fields of Mathematical Physics, Applied Mathematics and Engineering etc. In the current paper we have thrash out the generalization of Offset Fourier-Mellin Transform in the distributional sense and provide its Analyticity structure.

Keywords: *Fourier Transform, Mellin Transform, Offset Fourier-Mellin Transform, Generalized function etc.*

1. Introduction

The function transformation method simply means mathematical operation through which a real or complex valued function is transformed into another setting of data in which the original problem can be solved more easily or in which the problems have clear physical meaning. These methods have been used successfully in solving many problems in engineering, mathematical physics and applied mathematics.

Generalized functions are especially useful in making discontinuous function more like smooth functions and describing discrete physical phenomena such as point charges. Gelfand, Shilov [3], Zemanian [1,2] extended number of integral transforms e.g. Laplace, Mellin, Fourier, Hankle, Stieltjes, Whittaker etc. to the spaces of generalized functions.

The Fourier transform (FT) and Mellin transform (MT) are well-known transforms. The Fourier transform is a fundamental mathematic tool widely used in signal analysis, radiology and integral to modern MR image formation [10]. Fourier and Mellin transforms are extensively used for spectrum analysis, signal processing, and optical system analysis. FMT is frequently used in content-based image retrieval and digital image watermarking [12]. The method of egomotion estimation makes use of the Fourier-Mellin Transform for registering radar images in a sequence [9].

The offset Fourier transform (offset FT) is the space-shifted and frequency-modulated versions of the original transforms. They are more general and flexible than the original ones [4]. Offset FTs are similar to the original FTs, except that the kernel $e^{-i\tau t}$ is replaced by $e^{-i(\tau-\eta)(t-\tau)}$. That is, the kernel is generalized by appending a space-shifted term and a frequency-modulated term; they are useful in optics and especially useful for analyzing optical systems with prisms or shifted lenses [4].

In the present paper we have generalized the Offset Fourier-Mellin Transform in the distributional sense.

Outline of this paper:

Section 1; define the Generalized Offset Fourier-Mellin Transform. Analyticity theorem of Generalized Offset Fourier-Mellin Transform is furnished in section 2. The notation and terminology given as per A. H. Zemanian [1, 2].




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

Research Article

Studies on the morphology of leukaemic blast cells in relation to haematological parameters

D.M.Agase*

Govt. J.S.T.P.G.College, Balaghat, India

S.B.Zade

P.G.T.D. of Zoology, RTM Nagpur University, Nagpur, India

M.S.Markam

Govt. J.S.T.P.G.College, Balaghat, India

P.M. Mohurle

P.G.T.D. of Zoology, RTM Nagpur University, Nagpur, India

P.R. Chaudhari

P.G.T.D. of Zoology, RTM Nagpur University, Nagpur, India

S.P. Padole

D.D. Bhoyar College of Arts and Science Mouda, Nagpur, India

P.R. Bandedbuche

D.D. Bhoyar College of Arts and Science Mouda, Nagpur, India

P.D. Bhoyar

D.D. Bhoyar College of Arts and Science Mouda, Nagpur, India

A.D.Pangal

D.D. Bhoyar College of Arts and Science Mouda, Nagpur, India

A.K. Ganju

Ganju Hematology Clinic and Hospital, Nagpur, India

*Corresponding author. E-mail: sbt.durgesh@gmail.com

Abstract

A combination of haematological parameters with morphological evaluation of peripheral blood and bone marrow blast cells is crucial for leukaemia diagnosis. FAB (French-American-British) classification is a simple and powerful diagnostic tool for leukaemia in developing countries like India. Differentiation block in the early stages of haematopoiesis and morphological characteristics of leukemic blast cells are directly related to haematological parameters. The present study is an approach to increase understanding of the simple morphological FAB classification of leukaemia in relation to haematological parameters. The present study revealed that Chronic Myeloid Leukaemia (CML) was the most common type of leukaemia, followed by Acute Myeloid Leukaemia, Acute Lymphoid Leukaemia (ALL), and Chronic Lymphoid Leukaemia (CLL) in Nagpur. Most of the cases of Acute Leukaemia had severe anaemia and thrombocytopenia. Highest variation was found in Total WBCs count of different types of leukaemia, particularly in different subtypes of AML. The present study also suggested that FAB classification is not outdated, but it does require continuous revalidation and other procedures for refinement.

Keywords: Blast cell, Bone marrow, FAB classification, Haematopoiesis, Leukaemia

INTRODUCTION

Leukaemia is a malignant neoplasm of haematopoietic cells. Specific genetic events related to cellular differentiation and proliferation of hematopoietic cell contributes to malignant transformation of cells and their progeny forming clones of leukaemia cells. In leukaemia, differentiation block occurs in the early stages of hematopoiesis, thus resulting in undifferentiated cells are named as blast cells. In a few cases, cells other than blast cells are counted that are known as blast equivalent (Singh, 2018). Leukemic blast cell and other

blast equivalent demonstrate extra-ordinary biological, morphological, and clinical heterogeneity (Baviskar, 2016). The perspective of the classification and characterization of leukemic blast cell is imperative for the treatment of different subtypes of leukaemia because in the leukemic form, by definition the bone marrow must contain at least 20% blast cell and study of blast cell morphology is the first step in the diagnostic pathway (Sabina *et al.*, 2014). The present study was carried out with the aim to know the morphological characteristics of blast cells of peripheral blood and bone marrow in relation to different haemato-

Article Info

[https://doi.org/10.31018/](https://doi.org/10.31018/jans.vi.2267)

jans.vi.2267

Received: April 29, 2020

Revised: May 18, 2020


Accepted: May 28, 2020

How to Cite

Agase, D.M. *et al.* (2020). Studies on the morphology of leukaemic blast cells in relation to haematological parameters. *Journal of Applied and Natural Science*, 12(2): 171 - 179. [https://doi.org/10.31018/](https://doi.org/10.31018/jans.vi.2267) jans.vi.2267

This work is licensed under Attribution-Non Commercial 4.0 International license. © 2018: Author (s). Publishing rights @ ANSF.




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA

GLUTATHIONE S-TRANSFERASES AS A PROGNOSTIC BIOMARKER FOR LEUKEMIA

¹D.M. Agase, ²S.B. Zade, ³M.S. Markam, ⁴T.S. Kothe, ⁵A.S. Soni, ⁶A.S. Kale, ⁷P.M. Mohurle

^{1,3-6}Assistant Professor, ² Professor, ⁷ Research Student

^{1,3,5} Department of Zoology, Govt. J.S.T.P.G. College, Balaghat, M.P., India.

^{2,7} P.G.T.D. Zoology, R.T.M. Nagpur University, Nagpur, M.S. India.

⁴ Department of Zoology, Govt. K.N.G. College, Balaghat, M.P., India.

⁶Department of Botany, Shri Shivaji Science and Arts College, Chikhli, Buldana M.S., India.

ABSTRACT

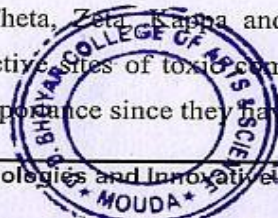
The present study has been undertaken to investigate the prognostic role of plasma Glutathione-s-transferases (GSTs) as a biomarker for leukemia. GSTs comprise a family of water-soluble enzymes involved in the detoxification of foreign compounds. The increase in GSTs is a major contributing factor to drug resistance. The present study revealed that the mean GST activity in the plasma of leukemia patients was significantly higher as compared to the control group. There was no significant difference ($p < 0.05$) between plasma GST activity of different classes of leukemia. There was a significant increase ($p < 0.01$) in plasma GST activity of leukemia patients in each class of leukemia after chemotherapy. The patients who achieved complete remission demonstrated significantly low plasma GST activity, but patients who achieved partial remission and the non-responsive patients demonstrated significantly high plasma GST activity.

Keywords: Biomarkers, chemotherapy, GSTs, Leukemia, Prognostic

INTRODUCTION

The term biomarker refers to a measurable variable that is associated with disease outcome (Ballman, 2015). A prognostic biomarker is one that indicates an increased (or decreased) likelihood of a future clinical event, disease recurrence or progression in patients. Prognostic biomarkers are useful in the selection of patients who required more intensive surveillance or adjuvant therapy. Prognostic markers are also important to place patients into different risk categories for guiding decisions on clinical management, to treat or not to treat (Lee et al. 2020). Keeping this in view the present study was undertaken to determine the activity of Glutathione s-transferases as prognostic biomarker in pre-and post-stage of chemotherapy for different sub-classes of leukemia. Glutathione-s-transferases (GSTs) is a family of enzymes involved in detoxification of foreign compounds. They participate in antioxidant defences through several mechanisms including reactive oxygen species (Ambad and Nagtilak. 2015).

GSTs play roles in both normal cellular metabolism as well as in the detoxification of a wide variety of xenobiotic compounds (Marrs et al. 1996). GSTs are referred to as phase II enzymes. They are actively involved in second phase of xenobiotic metabolism. The family of mammalian GSTs consists of eight classes of cytosolic isoenzymes namely, Alpha, Mu, Pi, Sigma, Theta, Zeta, Kappa and Omega. The mechanism of detoxification involves neutralization of the electrophilic, reactive sites of toxic compounds and attaching them to the tripeptide glutathione (GSH). GSTs studies are of great importance since they have been implicated in the development of drug



Research Article

Generation of a fusion protein containing the two functional coiled-coil domain of t- SNARE, SNAP-23 and a transmembrane domain for mast cell

D. M. Agase*

Department of Zoology, Govt. J.S.T.P.G. College, Balaghat (M.P.), India

S. B. Zade

Department of Zoology, R.T.M. Nagpur University, Nagpur (MS), India

T.S. Kothe

Department of Zoology, Govt. K.N.G. College, Balaghat (M.P.), India

*Corresponding author. Email: sbt.durgesh@gmail.com

Article Info

[https://doi.org/10.31018/](https://doi.org/10.31018/jans.v12i4.2439)

[jans.v12i4.2439](https://doi.org/10.31018/jans.v12i4.2439)

Received: November 3, 2020

Revised: December 10, 2020

Accepted: December 13, 2020

How to Cite

Agase D. M. et al. (2020). Generation of a fusion protein containing the two functional coiled-coil domain of t- SNARE, SNAP-23 and a transmembrane domain for mast cell. *Journal of Applied and Natural Science*, 12(4):670 - 674. <https://doi.org/10.31018/jans.v12i4.2439>

Abstract

SNAREs (Soluble N-Ethylmaleimide-Sensitive Fusion Protein Attachment Protein Receptor) are a class of membrane proteins that mediate membrane-membrane fusion in eukaryotic cells. SNAP-23 is a t-SNARE which is a component of cellular machinery is required for membrane fusion. SNAP-23 lacks transmembrane domain. Cysteines in the linker region of SNAP-23 are involved in targeting of SNAP-23 to the membrane. In the present work, a portion of MDR3 gene (MDR3₁₋₁₄₅) and CLP24 (CLP₁₃₄₋₁₉₅) was subcloned into a plasmid encoding EGFP-SNAP-23 Cys⁻ mutant for the generation of a fusion protein containing the two functional coiled-coil domain of t-SNARE, SNAP 23 and a transmembrane domain of MDR3 gene and CLP24 for mast cell. This fusion protein will be important to study the membrane targeting and raft association of the chimeric SNAP23 protein, which plays an important role in mast cell exocytosis in the mammalian system. A novel bioinformatics approach has been applied to identify the specific transmembrane domain. This novel approach can be used to construct other fusion proteins.

Keywords: EGFP, Exocytosis, Fusion Protein, Mast cell, MDR3, SNAREs, SNAP23

INTRODUCTION

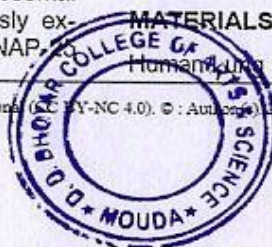
Biological membrane fusion is the central process in all living organisms. It contributes to a variety of biological processes including viral infection, cell fertilization, as well as intracellular transport, and neurotransmitter release. In particular, the various membrane-enclosed compartments in eukaryotic cells need to exchange their contents and communicate across membranes (Han *et al.*, 2017). Members of the SNARE (Soluble N-Ethylmaleimide-Sensitive Fusion Protein Attachment Protein Receptor) superfamily are required for intracellular membrane fusion events in eukaryotes (Chen *et al.*, 2001, Buxton *et al.*, 2003, Blumenthal *et al.*, 2003). SNARE proteins are classified into two classes based on their membrane localization. SNARE proteins associated with the vesicle's membrane are termed vesicle-SNAREs (v-SNAREs) and those on the target plasma membrane are called target-SNAREs (t-SNAREs) (Ramakrishnan *et al.*, 2012). SNAP-23 (Synaptosomal associated protein of 23 kDa) is a ubiquitously expressed t-SNARE protein that belongs to the SNAP

family (Jahn and Scheller, 2006). Like SNAP25, SNAP-23 is present in many types of cells at the plasma membrane domain, with a little intracellular localization, and mediates exocytosis of secretory vesicles (Sakurai *et al.*, 2012). Structurally, SNAP-23 lacks a transmembrane domain but contains two SNARE motifs (coiled-coiled domains) connected by a linker region containing five cysteines (Hepp *et al.*, 2005). This cysteine-rich linker region plays a crucial role in raft localization. But the molecular mechanism elucidating the role of these cysteines in targeting of SNAP-23 is not well known. The present work was carried out with the aim to construct a SNAP-23 fusion protein in which the cysteine-rich linker would be replaced by a transmembrane domain of some non-raft protein. This construct would help us in investigating the role of palmitoylation of the cysteines in membrane-membrane microdomain association of SNAP-23 and, further in membrane fusion events during exocytosis.

MATERIALS AND METHODS

Human Lung Carcinoma cell line A549 was a gift from

This work is licensed under Attribution-Non Commercial 4.0 International License (CC BY-NC 4.0). © : Author(s). Publishing rights @ ANSF.



PRINCIPAL

D. G. BHOYAP COLLEGE OF ARTS & SCIENCE
MOUDA

2019-20

Swimming as physical activity and recreation for women

Dr. Sanjay V. Khudale

Principal

D.D. Bhoyar Arts and Science College, Mouda

sanjaykhudale@gmail.com

Abstract

The present study reviews all data that establish swimming as an everyday lifestyle and recreational activity for women, since it promotes wellness, well-being and longevity. Swimming as a natural, physical activity is one of the most effective ways of exercise, since it affects and work outs the whole body. It is the most suitable sport for all age groups, because it combines beneficial results, for both body and soul and is also a low-risk-injury physical exercise. Aim of this study is to record the effect of recreational swimming in physical condition indexes and in quality of life in women. In particular to record the benefits, since studies have shown that swimming can help in prevention and treatment of chronic diseases and improves quality of life, of well-being and longevity. Results of all studies showed that swimming, as a great natural recreational activity has multiple beneficial-effects on the female body that are not limited to the physical characteristics but are extended to the mental ones. Challenges for the application and development fields of this particular method of exercise, are the quality of service provided and the staffing of departments and programs in multiple carriers, private or public. Researchers and writers agree that there are great prospects for growth for women through partnerships, with programs and systematic research in the field of recreational swimming.

Keywords: Swimming, Woman, Recreation, Benefits

Introduction:

The history of swimming is connected with the story of life itself, as the first living creatures of our planet appeared in the primeval oceans before they set foot on land. Moreover, it is well known that every human being spends its first few months of life in a personal and exclusive aquatic world. Therefore, human attraction to water is physical and normal for all humans. Data related to swimming date back to in ancient times through archaeological findings, proving that in ancient Greece swimming was a part of the basic education of children and part of their military education, as well. In ancient Rome there were heated pools. In 17th century Japan, swimming was a required course in school educational programs. People living in Pacific Islands learned to swim before they learned how to walk. Egyptians and Assyrians also indulged in swimming for recreation and fitness reasons.

Swimming was practiced in the Middle Ages as a useful skill for men. Gradually, this activity was thought to be a healthy exercise and, afterwards, a recreational one. In England, swimming, as a sport for all, began to spread during the 17th century. There was a widespread movement for improvement of human health, which gave extra boost to the belief that physical activity was favourable for good health (Chase, Sui, & Blair, 2008a). As a result, women were encouraged to change the status of physical inactivity, previously imposed by society. Finally, from the late 19th century, swimming becomes a competitive sport, but only for men. The benefits of exercise, in people's physical and mental health, are numerous. Swimming as a physical activity can help improve health, physical fitness and quality of life (Saavedra et al., 2007, Fletcher et al., 1996, Gupta & Sawane 2012, Cox et al., 2010, Colado et al., 2009, Kargarfard et al., 2012, Nualnim et al., 2012).

Copyright ©2020 Authors




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA



Cu(OH)₂@Cd(OH)₂ core-shell nanostructure: Synthesis to supercapacitor application

Savita L. Patil^a, Shrikant S. Raut^b, Babasaheb R. Sankapal^{b,*}

^a Department of Physics, School of Physical Sciences, North Maharashtra University, Jalgaon-425001 (M.S.) India

^b Nano Materials and Device Laboratory, Department of Physics, Visvesvaraya National Institute of Technology, South Ambazari Road, Nagpur-440010 (M.S.) India

ARTICLE INFO

Keywords:
Chemical bath deposition
Thin films
Copper hydroxide
Cadmium hydroxide
Shell structures
Nanowires
Supercapacitor

ABSTRACT

The Cu(OH)₂@Cd(OH)₂ core-shell nanowire structure have been successfully synthesized by facile cation exchange reaction based on negative free energy of formation through topotactical transformation from their cadmium hydroxide to copper hydroxide. The encapsulation of the copper into the cadmium hydroxide nanowires was confirmed by X-ray diffraction studies, elemental analysis and Fourier transform infrared spectroscopy. Electrochemical study shows that Cu(OH)₂@Cd(OH)₂ core-shell nanowire structure possess high specific capacitance of 374 Fg⁻¹ in an aqueous 1 M NaOH electrolyte. Present work demonstrates Cu(OH)₂@Cd(OH)₂ nanowires, synthesis and application as supercapacitive electrode.

1. Introduction

Recently, one dimensional confined array architecture such as nanowire, nanorod and nanotube have attracted great interest in energy storage devices which exhibits unusual mechanical and electronic properties and provide short diffusion path for fast electron/ion transfer with better stress/strain accommodation which is essential for energy storage devices [1]. In addition, the presence of 1D network and interconnected pore channel can facilitate ion transport and shorten the diffusion pathway yielding excellent rate capability. The core/shell nanowire heterostructure with fascinating synergetic properties have been used to increase the supercapacitive performance due to its high surface area and porous configurations of shell while the core materials acts as both backbone and conductive pathway for the shell materials.

In terms of the 'energy-power' relationship, supercapacitors with moderate specific energy and high specific power bridge the gap between electrolytic capacitor and rechargeable batteries. Supercapacitor is an interesting device because of its high power density, fast charge/discharge ability and higher cyclic life [2–4]. The most significant advantage of supercapacitors over the batteries is their ability to charge and discharge continuously without degradation. Transition metal oxides have attracted great attention towards supercapacitor due to their interesting electrical and chemical properties [5–6].

Even Cd is toxic; Cu(OH)₂@Cd(OH)₂ core-shell nanowire structure electrode has several advantages predict the favorable potential of Cd based electrode material for supercapacitor. Literature survey shows

the cadmium element was widely reported as a cadmium nickel battery because of its high energy density, long lifetime, high discharge rates and good supercapacitor property [7]. Cadmium based sulphide and oxide possesses the merits of good electrical conductivity, larger abundance, lower cost and carries high theoretical capacitance 1675 Fg⁻¹ [8]. In the present investigation, initially Cd(OH)₂ was deposited and part of Cd was replaced with copper which is less toxic than cadmium which is better than using electrode material with complete use of only cadmium based compound.

Here, we present the design and fabrication of core/shell Cu(OH)₂@Cd(OH)₂ film consisting of nanowires by ion exchange method and their electrochemical supercapacitive performance. The literature electrochemical studies shows that both Cu(OH)₂ and Cd(OH)₂ exhibits pseudocapacitive behavior. Particularly, intensive electrochemical supercapacitive studies on copper based nanostructure have recently attracted significant attention due to its environmentally friendly nature, good electrochemical performance and low cost of the raw material [9–11]. Gurav et al. have reported room temperature chemical route for the synthesis of nanograined and hydrophilic Cu(OH)₂ thin films which exhibited supercapacitive behavior with 120 Fg⁻¹ specific capacitance. [12]. The hierarchical structure of flower-like CuO standing on Cu(OH)₂ nanowire arrays reported by Hsu et al. exhibited the specific capacitance of 278 Fg⁻¹ with capacitance loss of 15% over 5000 cycle [13]. Nanoflowers-like CuO/Cu(OH)₂ hybrid thin films exhibit the maximum specific capacitance of 459 Fg⁻¹ at 5 mVs⁻¹ in 2 M KOH electrolyte reported by Shinde et al. [14].

* Corresponding author.

E-mail address: bsrunkapal@phy.vnit.ac.in (B.R. Sankapal).

https://doi.org/10.1016/j.tsf.2019.137584

Received 25 January 2019; Received in revised form 10 September 2019; Accepted 20 September 2019

Available online 17 October 2019

0040-6090/ © 2019 Elsevier B.V. All rights reserved.



[Signature]

PRINCIPAL

D. BHOJAP COLLEGE OF ARTS & SCIENCE
MOUDA



Anchoring of gold nanoparticles into aligned TiO₂ nanotube: Improved supercapacitive performance

Girish P. Patil^{a,b}, Shrikant S. Raut^c, Babasaheb R. Sankapal^{c,*}, Padmakar G. Chavan^{b,*}

^aSVKM's Institute of Technology, Dhule 424001 (MS), India

^bDepartment of Physics, School of Physical Sciences, Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon 425001, (MS), India

^cNano Materials and Device Laboratory, Department of Physics, Visvesvaraya National Institute of Technology, South Ambazari Road, Nagpur 440010 (M.S.), India

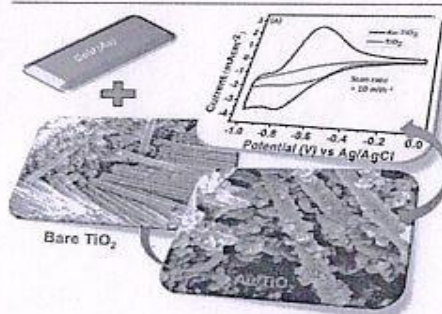


HIGHLIGHTS

- Au nanoparticles firmly anchored to TiO₂ nanotubes by thermal annealing method.
- Au/TiO₂ nanocomposite exhibit the remarkable specific capacitance of 876 Fg⁻¹.



GRAPHICAL ABSTRACT



ARTICLE INFO

Article history:
Received 30 July 2019
Accepted 2 August 2019

Keywords:
Au/TiO₂ nanocomposite
Supercapacitor

ABSTRACT

Firmly anchored Au nanoparticles onto well-defined architecture of aligned TiO₂ nanotube grown on Titanium substrate leads to the improved pseudocapacitive electrochemical performance in aqueous electrolyte. The electrode architecture of Au anchored TiO₂ nanotubes have been grown through anodization and thermal annealing approach. Cyclic voltammetry, charge-discharge and electrochemical impedance performed through three electrode configuration proven that the coating of Au nanoparticles onto TiO₂ remarkably enhance the supercapacitive performance compared to bare one. The remarkable specific capacitance of 876 Fg⁻¹ at 5 mVs⁻¹ scan rate in 1 M LiClO₄ electrolyte for the gold nanoparticles anchored TiO₂ composite electrode.

© 2019 Published by Elsevier B.V.

1. Introduction

One-dimension (1D) with tunable pore structure and tailored framework composition have gathered growing interest of researchers in the era of energy storage devices. Incorporation of

the electrochemically active nanoparticles on the surface of 1D nanotube provide fascinating properties of high surface to volume ratio and short electron/ion diffusion length in comparison with their bulk counterpart [1]. Various nanocomposites such as metal oxide-metal oxide, carbon nanotube-metal oxide and graphene-metal oxide have been studied for supercapacitor application [2–4]. The rational design of nanostructured current collector with enhanced conductivity is the primary requisite for supercapacitor application.

* Corresponding authors.
E-mail addresses: bresankapal@phy.vnit.ac.in (B.R. Sankapal),
pgchavan@nmu.ac.in (P.G. Chavan).



[Signature]
PRINCIPAL
D. D. BHOYAP COLLEGE OF ARTS & SCIENCE
MOUDA

Accepted Manuscript

Flexible iron-doped $\text{Sr}(\text{OH})_2$ fibre wrapped tuberose for high-performance supercapacitor electrode

Kavyashree, Shama Parveen, Shrikant S. Raut, Manoj K. Tiwari, B.R. Sankapal, S.N. Pandey

PII: S0925-8388(18)34570-5

DOI: <https://doi.org/10.1016/j.jallcom.2018.12.023>

Reference: JALCOM 48664

To appear in: *Journal of Alloys and Compounds*

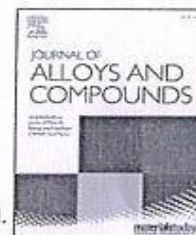
Received Date: 2 October 2018

Revised Date: 30 November 2018

Accepted Date: 3 December 2018

Please cite this article as: Kavyashree, S. Parveen, S.S. Raut, M.K. Tiwari, B.R. Sankapal, S.N. Pandey, Flexible iron-doped $\text{Sr}(\text{OH})_2$ fibre wrapped tuberose for high-performance supercapacitor electrode, *Journal of Alloys and Compounds* (2019), doi: <https://doi.org/10.1016/j.jallcom.2018.12.023>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.




PRINCIPAL
D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
MOUDA



CHEMISTRY & BIOLOGY INTERFACE

An official Journal of ISCB, Journal homepage; www.cbijournal.com

Anti-breast cancer and antiangiogenic potential of substituted thiazolo[2,3-b]quinazoline derivatives: synthesis, *in vitro* and *in vivo* analysis

Sonali S. Kamble¹, Shrikant V. Hese², Bhaskar S. Dawane², Rajesh N. Gacche^{3*}

¹School of Life Sciences, Swami Ramanand Teerth Marathwada University, Nanded-431 606 (MS), India

²School of Chemical Sciences, Swami Ramanand Teerth Marathwada University, Nanded-431 606 (MS), India

³Department of Biotechnology, Savitribai Phule Pune University, Pune-411007 (MS), India

*Corresponding Author E. Mail: rmgacche@rediffmail.com, Phone: +91-9423656179 Fax: 91-2462-259461

Received 8 May 2019; Accepted 29 June 2019

Abstract: Herein, a series of novel substituted thiazolo[2,3-b]quinazoline derivatives has been synthesized. The capability of the synthesized compounds **3a-i** to hinder the viability of human breast cancer cell line (MCF-7) was assessed. The compounds were evaluated as possible inhibitors of angiogenesis by using *in vivo* chorioallantoic membrane (CAM) model. Amongst the compounds **3a-i** screened, **3d** and **3f** exhibited excellent cytotoxicity with IC_{50} values $6.0 \pm 0.03 \mu\text{M}$ & $5.0 \pm 0.36 \mu\text{M}$ respectively. Compounds were further tested to evaluate potential to inhibit the pro-angiogenic cytokines associated with tumor development. Both the compounds were found to be potent antiangiogenic agents against VEGF, $\text{TNF}\alpha$, IL6, TGF β , and EGF. The outcome of the present study reveals that, compound **3d** and **3f** showed the promising inhibitory activity on the viability of MCF-7 cells. In the *in vivo* CAM model, treatment with all the compounds resulted in the significant decrease in blood vessels density. The findings of the study suggest that, compounds **3d** & **3f** may act as potential anti-breast cancer and antiangiogenic agents.

Keywords: Breast cancer, angiogenesis, chorioallantoic membrane, angiogenic cytokines.

Introduction

Breast cancer is the most frequent cancer worldwide and a second foremost cause of cancer related death among females in the world [1, 2]. Unfortunately, in spite of enhanced diagnostic approaches and development of effective treatment, breast cancer continues to be the major reason of cancer associated deaths

amongst the women worldwide. The trouble alters between countries and regions exhibiting divergence in incidence, mortality and survival rates [3].

Although there are several therapeutic approaches including chemotherapy to treat cancer, high systemic toxicity and drug resistance limit the successful results in the




PRINCIPAL

D. D. BHOYAP COLLEGE OF ARTS & SCIENCE
MOUDA

2018-19

A study on the toxicity of 4-nonylphenol on the histopathology of testes of African catfish *Clarias gariepinus* (Burchell, 1822)

Suresh Zade

PGTD Zoology, RTM Nagpur University Nagpur, (MS), India

Aashikkumar Nagwanshi*

PGTD Zoology, RTM Nagpur University Nagpur, (MS), India

Milind Shinkhede

DRB, Sindhu Mahavidyalaya, Panchpaoli Nagpur, (MS), India

Durgesh Agase

DD Bhojar, Arts, and Science College Mouda, Dist. Nagpur, (MS), India

*Corresponding author. E-mail: aashunagwanshi@gmail.com

Abstract

In the present study, the effects of long term exposure (5 and 10 days) of 100 µg/lit 4-NP (nonylphenol) on the testis were investigated in African catfish *Clarias gariepinus* (Burchell, 1822). Histological examination of the testis of fish treated with 100 µg/lit 4-NP for 5 days showed the disintegration of cysts, separation of cells within the cysts, hypertrophy of sertoli cells and vacuolation in testis. Histological examination of the testis of fish exposed to 100 µg/lit for 10 days showed alteration in structure of the primary spermatocytes. The structure of the spermatocytes changed from spherical to sickle shaped. Hypertrophy of sertoli cell, severe destruction of germ cells (spermatogonia), and vacuole formation was also seen. The study indicated that 4-nonylphenol had marked effects on the histology of testis of *C. gariepinus*. The severity of effects of fish increased with the time of exposure and it was noticed that there were marked structural changes in the testis exposed to 4-Nonylphenol for long term exposure.

Keywords: Endocrine disruption, Hypertrophy, 4-nonylphenol, Sertoli cells, Vacuolation, Spermatocytes

Article Info

DOI:10.31018/jans.v10i2.1765

Received: December 31, 2017

Revised: April 11, 2018

Accepted: May 1, 2018

How to Cite

Zade, S. et al. (2018).

A study on the toxicity of 4-nonylphenol on the histopathology of testes of African catfish *Clarias gariepinus* (Burchell, 1822). *Journal of Applied and Natural Science*, 10(2): 676 - 680

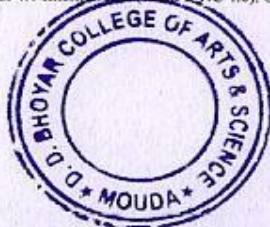
INTRODUCTION

The pollution of aquatic environment has received considerable attention in recent years owing to the toxicity of chemicals. Chemical pollution appears to be due to increase of industrialization. A large number of chemicals can contaminate aquatic environments and their animals including fish and amphibians during their adult life and sensitive stages of development (Radhaiah et al., 1987). These chemicals affect the organism by either interfering in their development during their developmental stages or in the physiology of adults altering their normal homeostasis. Their toxicity appears because of their persistence in the environment and their accumulation in the biota tissue (Mekaway et al., 2011). There is growing concern worldwide, especially in developing countries, about a group of xenobiotics, which is known to disrupt the endocrine system of organism. These groups of chemicals are called as endocrine disrupting chemicals (USEPA, 2000). Endocrine disruptors can interfere with the production, release, metabolism, and elimination of or can mimic the occurrence of natural hormones

(Tabb and Blumberg, 2006; Matthiessen et al., 2006). The pollution of the aquatic environment caused by the discharge of non-ionic surface active substances such as alkylphenols (APs) and their biodegradation products nonylphenol (NP) and octylphenol (OP) has attracted the attention of scientists due to their estrogenic and toxic effects on living organisms (Jobling et al., 2003; Weber et al., 2002; Liney et al., 2005). Nonylphenol ethoxylate (NPE) has been found in aquatic environments, particularly in river water (Rivero et al., 2008). This compound is widely used in the manufacture of non-ionic surfactants, lubricants, stabilizer polymers, antioxidants, alkylphenol chemicals, detergents, paints, anaerobic treated sewage sludge, polystyrene tubes, insecticides and herbicides. In the aquatic environment NPE breaks down to 4-nonylphenol (NP), which is more stable and persistent (Guenther et al., 2006; Rivero et al., 2008).

NP has been reported as estrogenic, toxic and carcinogenic effects in various teleost fish species, birds and mammals, and enhanced resistance towards biodegradation, potential ability to bio-accumulate in a aquatic organisms (Cionna

This work is licensed under Attribution-Non Commercial 4.0 International (CC BY-NC 4.0). © 2018: Author (s). Publishing rights @ ANSF



PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA

Studies on the toxicity of 2-Methyltetrahydrofuran on the histopathology of gills of African catfish *Clarias gariepinus*

S. B. Zade

Department of Zoology, R.T.M. Nagpur University, Nagpur (MS), India

D. M. Agase*

D. D. Bhojar Arts and Science College Mouda, Dist. Nagpur (MS), India

A.M. Nagwshi

Department of Zoology, R.T.M. Nagpur University, Nagpur (MS), India

H. N. Nenwani

Department of Zoology, R.T.M. Nagpur University, Nagpur (MS), India

S. N. Qureshi

Department of Zoology, R.T.M. Nagpur University, Nagpur (MS), India

H. Jagyasi

Department of Zoology, R.T.M. Nagpur University, Nagpur (MS), India

*Corresponding author. E-mail: sbt.durgesh@gmail.com

Abstract

In the present study, investigation were carried out on gills of African cat fish *Clarias gariepinus* exposed to sub lethal concentrations (80mg/ml, 400mg/ml and 800mg/ml) of 2-Methyltetrahydrofuran for 10 days. Lesions were observed in gills tissue of treated fish for long term exposure to Methyltetrahydrofuran (2MTHF). The occurrence and degree of alteration were positively related with the concentration of 2MTHF. Histological examination of the gills of fish treated with 80 mg/ml of 2MTHF for 10 days showed architectural loss, necrosis and desquamation of epithelial layer. Histological examination of the gills of fish treated with 400 mg/ml of 2MTHF for 10 days showed architectural loss, necrosis and mild vacuolation. The gill filament exhibited telangiectasis, disorganisation of secondary gill lamellae and complete vacuolation of gills treated with 800 mg/ml of 2MTHF for 10 days. The study indicated that 2MTHF had marked effects on the cyto-architecture of the gills of *C. gariepinus*. The degree of vacuolation and necrosis were positively related with the concentration of 2MTHF.

Keywords: Gill lamellae, 2-Methyltetrahydrofuran (2MTHF), Necrosis, Telangiectasis, Vacuolation

Article Info

DOI:10.31018/jans.v10i2.1775

Received: December 31, 2018

Revised: April 9, 2018

Accepted: May 15, 2018

How to Cite

Zade, S.B. et al. (2018). Studies on the toxicity of 2-Methyltetrahydrofuran on the histopathology of gills of African catfish *Clarias gariepinus*. *Journal of Applied and Natural Science*, 10(2): 765 - 769

INTRODUCTION

At present a large number of pollutants and waste are eliminated to the environment because of human activities. A wide range of man-made chemicals used for several industrial and household activities have been shown to disturb normal physiology and endocrinology of aquatic organisms (Balabanic et al., 2011, Rhind., 2009). In the present study, investigation were carried out on gills of African cat fish (*Clarias gariepinus*) exposed to 2-MTHF. 2-MTHF is mainly used as a higher boiling substitute for tetrahydrofuran and used in secondary lithium electrodes, as a component in alternative fuels. This compound is widely used as a reaction medium for Grignard and metal hydride reactions, in the fabrication of articles for packaging, transporting, and storing of foods, as a solvent for dyes and lacquers and as a chemical intermediate in polymerization solvent for fat oils, unvulcanized rubber, resins, and plastics. It is also

an indirect food additive when it is in contact with the surface of articles intended for use in food processing. It is discharge form power plants, plastic industries and electrolyte industries (Aycok et al., 2007, (Man et al., 2003).

Its high toxicity, lower sensitivity to photo-oxidation, high persistence in water and low molecular weight, 2-MTHF accumulates rapidly in aquatic animals and affects normal vital functions. It is generally found in greater concentrations in fish tissues which are direct and continuous contact such as gills. 2-MTHF in fish organs are not directly responsible for the death of the organism, but sublethal concentrations may affect its functionality and normal physiology by damaging biological structures (Liquin et al., 2014). Tetrahydrofuran has been reported as carcinogenic effects in rat and mice (Chhabra et al., 1998). Its mutagenic effects have been reported in Chinese hamster ovary cells and in mouse bone marrow cells

This work is licensed under Attribution-Non Commercial 4.0 International (CC BY-NC 4.0). © 2018: Author (s). Publishing rights © ANSF



PRINCIPAL

D. D. BHOJAR COLLEGE OF ARTS & SCIENCE
MOUDA



FOSSIL FRUIT OF THE BIGNONIACEAE FAMILY BELONGING TO *KIGELIA PINNATA* DC FROM THE LATE CRETACEOUS DECCAN CHERTS OF INDIA.

V.D. Kagate

Department of Botany, D.D. Bhoyar Arts & Science College, Mouda M.S. 441104, India.
 vdkagate65@gmail.com

ABSTRACT:

Fossil fruit of the bignoniaceae family closely belongs to the fruit of extant genus *kigelia pinnata* DC. (sausage tree) reported from the late cretaceous Deccan Intertrappean cherts of Mohgaonkalan chhindrawara District, Madhya Pradesh, India. The fruit is unilocular, pedicelate, multiseeded, dehiscent, capsule pod like fruit with compressed, discoid, often prominently winged seeds without endosperm.

Keywords: Late cretaceous, Deccan Intertrappean, Madhya Pradesh, Chhindrawara District, Bignoniaceae, *Kingelia pinnata* DC., winged seeds.

INTRODUCTION:

A large number of Angiospermic fruits such as capsule, schizocarp, buccate, samara, achene, berry etc. are reported from the Deccan Intertrappean cherts of central India. There are only two records of petrified fruits, which bears winged seeds. Wingospermocarpon Mohgaonse Sheikh & Kagate, 1984 and Gyrocarpusocarpon intertrappea Mistri & Kagate, 1990. The present fossil fruit is the first to be reported from the Deccan Intertrappean exposure. It is unique in having its broad expanded sclerotic winged seeds with long pulvinous pedicel.

METHOD AND MATERIAL:

The fruit was investigated by studying serial peel section of cherts. The morphological and anatomical characters were compared with extant and fossil genera.

Systematic description:

Order- Bignoniales

Family- Bignoniaceae

Genus- *Kigeliocarpon* Kagate gen. nov.

Type Species- *Kigeliocarpon deccanensis* Kagate sp. nov.

(Plate 1 fig. 1; Plate 2 fig. 1 to 8 text fig. 1 to 8)

Generic and Specific diagnosis-

The fruit is small elongated, oval in shape 9.00 mm in length with stalk. It is 3.2 mm in breadth at the middle portion, 1.2 mm broad at the terminal end and 1.3 mm broad at the basal end. Length is 6.9

mm, without stalk. Pericarp is differentiated into epicarp, mesocarp and endocarp. Seeds are ellipsoid, obovate with broad wing arranged as free central placentation. Stalk of the fruit is with pulvinous base. The fruit shows loculicidal dehiscence at the terminal end.

Pericarp

Pericarp is broad, smooth and 150 to 160 μ m thick. It shows three distinct zones- epicarp, mesocarp and endocarp (pl.2 fig. 3; text fig. 1 & 5). Epicarp is stony, 5 to 6 layered, 60 to 70 μ m thick and is made up of thick wall sclerotic cells. Mesocarp is soft 4 to 5 layered, 50 to 60 μ m thick and is made up of thick walls parenchymatous cells in which rounded crystals (sphaerocrystals) are deposited (Fahn,1972) (text fig.5). Endocarp is stony, 20 to 30 μ m thick with 1 to 2 layered sclerenchymatous cells. Pericarp breaks at its apical end through the locule, showing loculicidal dehiscence. (Pl.1 fig.1; text fig.1)

Seed Morphology

The fruit possess numerous well preserved seeds cut at different planes. Seeds are fully matured, ellipsoid, obovate to rectangular in shape with two lateral broad expanded sclerotic wings at both the sides of the seeds (pl.2 fig.5 to 8, text fig.2 & 3). Wing in each seed is bitegmic. Outer integument forms an expanded fleshy mass like wing while the inner integument forms micropyle and chalaza. (pl.2. fig. 6 to 8 text fig. 2 & 3). Seeds lies free within



[Signature]
 PRINCIPAL

D. D. BHOYAR COLLEGE OF ARTS & SCIENCE
 MOUDA