



Some remarks on orthogonality of bounded linear operators-II

DEBMALYA SAIN, ANUBHAB RAY, SUBHRAJIT DEY,
and KALLOL PAUL

Abstract. Let \mathbb{X}, \mathbb{Y} be normed linear spaces. We continue exploring the validity of the Bhatia–Šemrl (BŠ) Property: “An operator $T \in L(\mathbb{X}, \mathbb{Y})$ satisfies Bhatia–Šemrl Property if for any $A \in L(\mathbb{X}, \mathbb{Y})$, $T \perp_B A$ implies that there exists a unit vector $x \in \mathbb{X}$ such that $\|Tx\| = \|T\|$ and $Tx \perp_B Ax$.” A pair of normed linear spaces (\mathbb{X}, \mathbb{Y}) is said to be a BŠ pair if for every $T \in L(\mathbb{X}, \mathbb{Y})$, T satisfies the BŠ Property if and only if $M_T = D \cup (-D)$, where D is a non-empty connected subset of $S_{\mathbb{X}}$. We show that (ℓ_1^n, \mathbb{Y}) is a BŠ pair for any normed linear space \mathbb{Y} , and also obtain some other results in this context. In particular, using the notion of norm attainment set, we characterize the space ℓ_∞^3 among all 3-dimensional polyhedral Banach spaces whose unit ball have exactly eight extreme points.

1. Introduction

Birkhoff–James orthogonality plays a central role in determining the geometry of normed linear spaces in general, and spaces of operators, in particular. One of the most interesting aspects of Birkhoff–James orthogonality is the relation between orthogonality of operators and that of norming elements in the ground space. The purpose of this paper is to continue the investigation of a certain property from [7], as mentioned in the abstract. Before proceeding further, let us fix the notations and the terminologies.

Letters \mathbb{X} and \mathbb{Y} denote normed linear spaces. Throughout the present article, we will assume the underlying scalar field to be \mathbb{R} . Let $B_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| \leq 1\}$ and $S_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| = 1\}$ denote the unit ball and the unit sphere of \mathbb{X} , respectively. Let $B[x, r] = \{z \in \mathbb{X} : \|x - z\| \leq r\}$ and $B(x, r) = \{z \in \mathbb{X} : \|x - z\| < r\}$ denote the closed ball and the open ball centered at x and radius $r > 0$, respectively. For a subset A of \mathbb{X} , let $|A|$ denote the cardinality of A . Let $L(\mathbb{X}, \mathbb{Y})$ be the normed space of all bounded

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Geometric properties of operator spaces endowed with the numerical radius norm

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Abstract

We characterize operators having equal operator norm and numerical radius norm. Then we explore a generalized notion of smoothness on $\mathbb{L}(\mathbb{X})_w$, the space of bounded linear operators on a real finite-dimensional Banach space \mathbb{X} endowed with the numerical radius norm. Furthermore, we explore extreme contractions in $\mathbb{L}(\mathbb{X})_w$, whenever \mathbb{X} is a finite-dimensional real polyhedral Banach space. Finally, we obtain the structure of the set of extreme points in the dual space of $\mathbb{L}(\mathbb{X})_w$, where \mathbb{X} is a two-dimensional polygonal Banach space.

Keywords Numerical radius norm · Nr-smoothness of order k · Linear operator · Banach space · Nr-extreme contraction

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From the journal:

Dalton Transactions

Azo-oximate metal-carbonyl to metalocarboxylic acid *via* the intermediate Ir(III) radical congener: quest for co-ligand driven stability of open- and closed-shell complexes †

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Abstract

The redox non-innocent behavior of the diaryl-azo-oxime ligand L^{NOH}**1** has been accentuated *via* the synthesis of metastable anion radical complexes of type *trans*-[Ir(L^{NO⁻})Cl(CO)(PPh₃)₂]**2** (CO is *trans* to azo group of the ligand) by the oxidative coordination reaction of **1** with Vaska's complex. The stereochemical role of co-ligands *vis-à-vis* the interplay of π-bonding has been found to be decisive in controlling the aptitude of the coordinated redox non-innocent ligand to accept or reject an electron. This has been clarified *via* the isolation of quite a few complexes as well as the failure to synthesize some others. The oxidized analogues of type *trans*-[Ir(L^{NO⁻})Cl(CO)(PPh₃)₂]⁺**2**⁺ (CO and azo group of the ligand are *trans*) as well as its *cis* isomer *cis*-[Ir(L^{NO⁻})Cl(CO)(PPh₃)₂]⁺**3**⁺ (CO and azo group of the ligand are *cis*) have been structurally characterized but the radical anion congener of the latter could not be synthesized. Furthermore, the closed shell complexes [Ir(L^{NO⁻})Cl₂(PPh₃)₂]**4** and [Ir(L^{NO⁻})₂Cl(PPh₃)]**5** have been well characterized by diffraction as well as spectral techniques but their corresponding azo anion radical complexes could not be isolated and this is attributed to the *trans* influence of ancillary ligands. The anion



A Study on Two Distinguished Culture by poets' on 'Nature'

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Abstract

The concept of culture is the characteristic way of behaving and believing that a group of people in a country or region have evolved over time. Thus a people's culture gives them a sense of who they are, provides them the capacity to adapt to circumstances, affect their emotion and lives. In human history, nature attraction and land cultivation are merged from the perspectives of culture. Natural beauty attracts the poets and they spontaneously reflect it in their writings. It is applicable for both the poets of east & west, especially in Romantic arena. They each require different psychological adaptations and transformations- needs, wishes, conflicts, anxieties and defenses. Wordsworth, Coleridge, Blake, Keats, Datta and Tagore beautifully mingle nature's beauty and sooth human sufferings. We, the human beings, identify with them and feel beauty and joy from our unconscious and are able to transform our owes and pain. They are the symbols of unique cultural identity.

Keywords: Culture, nature, psycho-dynamism, romantic poets.

INTRODUCTION

The concept of culture is the characteristic way of behaving and believing that a group of people in a country or region have evolved over time. Thus a people's culture gives them a sense of who they are, provides them the capacity to adapt to circumstances, affect their emotion and lives. In human history, nature attraction and land cultivation are merged from the perspectives of culture. Natural beauty attracts the poets and they spontaneously reflect it in their writings. It is applicable for both the poets of east & west, especially in Romantic arena. They perceived nature when the power of poetry is strongest and the creative impulse work are untrammelled. It is the union of deep feeling with profound thought, the fine balance of truth in observing with the imaginative faculty.

The art of creating the cultural organization of the environment that would look authentically natural is one of the great invented skills of cultivating the natural environments. Our contemporary efforts to care for the environment by being green are efforts of similar kind. (Valsiner, J, 2014)

The poets' creations are viewable long after the poets' were dead. They could be used as in a linear form of create, use, abandon and re-make.

Blake's the songs of innocence and songs of experience are contrasted elements in a single design. The first one sets out an imaginative vision of the state of innocence and second shows how life challenges and corrupts and destroys it. Childhood is a symbol of a state of a soul which may exist in maturity.

In 'Ancient Mariner' Coleridge visualizes an incredible events through narration which is neo-platonic in nature. According to Bowra(1950) such images of dream are so penetrated with emotional significance. '...such perplexity of mind/as dreams too lively leave behind'.

Wordsworth in his 'Ode to Intimations of Immortality' perceives the beauty of Nature-' There was a time when meadow, grove and stream, /The earth, and every common sight,/ To me did seem/ Apparellled in celestial light, the glory and freshness of a dream/.....The things which I have seen I now can see no more'.

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Some Records Of Eriophyoid Mites (ACARI: ERIOPHYOIDEA) From Malda District Of West Bengal, India

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Abstract

This paper reports a total of 15 eriophyoid species collected from Malda district of West Bengal, India providing their host records, collection localities (including GPS data) and a remark wherever observed. Out of this 15 species except only 1 species viz., *Aculops spondiasis* Chakrabarti and Sarkar all other 14 species has been reported for the first time from Malda district of West Bengal, India.

Key words: Eriophyoid mites, Malda, Records

Introduction

Eriophyoid mites are tiny, obligatory phytophagous arachnids. Many eriophyoids are potential plant pests causing several damage to plants which include different kinds galls, erineum, discoloration of leaves, witches' broom etc. Besides, a few are known as vectors of several plant viruses.

During general surveys for eriophyoid mites from Malda district of West Bengal in 2022, a total of 15 mite species viz., *Neocosella ichnocarpi* Mohanasundaram, *Circaces chakrabarti* Keifer, *Colomerus alangii* Keifer, *Aceria bambusae* Channabasavanna, *Aceria ficus* (Cotte), *Aceria granati* (Canestrini and Massalongo), *Aceria nerii* Channabasavanna, *Calacarus quisqualis* Chakrabarti and Mondal, *Neotegonotus indicus* Mondal and Chakrabarti, *Tegonotus basatus* Das and Chakrabarti, *Tegonotus jambolensis* Das and Chakrabarti, *Phyllocoptiruta citricola* Chakrabarti and Sarkar, *Abacarus arjunalis* Mondal, Ghosh and Chakrabarti, *Aculops dileniae* Ghosh and Chakrabarti, *Aculops spondiasis* Chakrabarti and Sarkar, were collected infesting *Ichnocarpus* sp., *Alangium salyfolium* Wangerin, *Alangium* sp., *Bambusa* sp., *Ficus* sp., *Punica granatum* L., *Nerium indicum* L., *Quisqualis indica* (L.), *Ficus bengalensis* L., *Madhuca indica* J.F.Macbr., *Syzygium cumini* Skeels, *Citrus maxima* Merr., *Terminalia arjuna* (Roxb.), *Dilena indica* L. and *Spondias pinnata* Kurz. host plants respectively. Except *Aculops spondiasis* Chakrabarti and Sarkar all other 14 species have been reported for the first time from Malda district. This paper embodies the host records, collection localities (including GPS data) along with Distribution and detailed remarks wherever applicable of all 15 species.

Material and methods:

The shoots of plants were collected and placed in separate polythene bags. These were finally stored in a refrigerator. Mites were picked up from the infested plant material with the help of a needle under stereo-binocular microscope and placed initially in a grooved slide containing lactic acid. The mites were kept for several days in lactic acid until these became transparent

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adequately. Subsequently, mites were transferred in the Hoyer's medium (Keifer 1975; Amrine and Manson 1996) for mounting. The slides were then placed on a hot plate having temperature of around 40° C for further cleaning of the mites. The mites mounted on slides were studied under a Labomed lx 500 phase contrast microscope with provision for phase illumination. The classification given by Amrine *et al.* (2003) has been followed here. After publication all slides will be deposited at Regional Horticultural Research and Training Station, Mashobra, Shimla.

Results

KEY TO THE FAMILIES, TRIBES AND GENERA OF FAMILY ERIOPHYIDAE

Key to the families of Superfamily-Eriophyoidea

1. Prodorsal shield with 1-5 setae, always with anterior setae present; gnathosoma of variable size, but with chelicerae straight or slightly and evenly curved; pedipalps usually short and truncate and enclosing the short form oral stylet. All empodia undivided or entire. Female genital coverflap without ridges. A few make galls on dicots; none are known to transmit

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k-SMOOTHNESS ON POLYHEDRAL BANACH SPACES

BY

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Abstract. We characterize k -smoothness of an element on the unit sphere of a finite-dimensional polyhedral Banach space. Then we study k -smoothness of an operator $T \in \mathcal{L}(\ell_\infty^n, \mathbb{Y})$, where \mathbb{Y} is a two-dimensional Banach space with the additional condition that T attains its norm at each extreme point of $B_{\ell_\infty^n}$. We also characterize k -smoothness of an operator from ℓ_∞^3 to ℓ_1^3 .

1. Introduction. The study of k -smoothness plays an important role in identifying the structure of the unit ball of a Banach space. The papers [1, 2, 3, 4] contain the study of k -smooth points of many Banach spaces. Several papers, including [1, 3, 4, 5, 6, 7, 9] study k -smoothness of operators on different spaces. In [7], the present authors have obtained a relation between k -smoothness and extreme points of the unit ball of a polyhedral Banach space.

The purpose of this paper is to characterize the order of smoothness of an element of the unit sphere of a finite-dimensional polyhedral Banach space; we also study k -smoothness of an operator defined between polyhedral Banach spaces. Let us first fix the notation and terminology.

The letters \mathbb{X}, \mathbb{Y} denote Banach spaces. Throughout the paper we assume all Banach spaces considered to be real. We denote the unit ball and the unit sphere of \mathbb{X} respectively by $B_{\mathbb{X}}$ and $S_{\mathbb{X}}$, i.e., $B_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| \leq 1\}$ and $S_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| = 1\}$. Let $\mathcal{L}(\mathbb{X}, \mathbb{Y})$ denote the space of all bounded linear operators between \mathbb{X} and \mathbb{Y} . For $T \in \mathcal{L}(\mathbb{X}, \mathbb{Y})$, M_T denotes the collection of all unit vectors of \mathbb{X} at which T attains its norm, i.e., $M_T = \{x \in S_{\mathbb{X}} : \|Tx\| = \|T\|\}$. For a set A , the cardinality of A is denoted by $|A|$. The dual space of \mathbb{X} is denoted by \mathbb{X}^* .

An element x of a convex set C is said to be an *extreme point* of C if $x = (1-t)y + tz$ for some $y, z \in C$ and $t \in (0, 1)$ implies that $y = z = x$. The set of all extreme points of C is denoted by $\text{Ext}(C)$. For $x, y \in \mathbb{X}$, let $L[x, y] = \{tx + (1-t)y : 0 \leq t \leq 1\}$ and $L(x, y) = \{tx + (1-t)y : 0 < t < 1\}$.

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Key words and phrases: k -smoothness, linear operator, Banach space, polyhedral Banach space.

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Some Remarks on Orthogonality of Bounded Linear Operators

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We explore the relation between the orthogonality of bounded linear operators in the space of operators and that of elements in the ground space. To be precise, we study if $T, A \in \mathcal{L}(\mathbb{X}, \mathbb{Y})$ satisfy $T \perp_B A$, then whether there exists $x \in \mathbb{X}$ such that $Tx \perp_B Ax$ with $\|x\| = 1$, $\|Tx\| = \|T\|$, where \mathbb{X}, \mathbb{Y} are normed linear spaces. In this context, we introduce the notion of Property P_n for a Banach space and illustrate its connection with orthogonality of a bounded linear operator between Banach spaces. We further study Property P_n for various polyhedral Banach spaces.

Keywords: Orthogonality, linear operators, norm attainment, polyhedral Banach spaces.

2010 Mathematics Subject Classification: Primary 46B20; secondary 47L05.

1. Introduction

The purpose of the present article is to continue the study of orthogonality properties of bounded linear operators between Banach spaces, in light of the seminal result obtained by Bhatia and Šemrl [1] regarding orthogonality of linear operators on Euclidean spaces. Let us first establish the relevant notations and the terminologies in this context.

The letters \mathbb{X} and \mathbb{Y} denote Banach spaces. Throughout the article, we work only with real Banach spaces. Let $B_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| \leq 1\}$ and $S_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| = 1\}$ denote the unit ball and the unit sphere of \mathbb{X} respectively. Let $E_{\mathbb{X}}$ denote the set of all extreme points of $B_{\mathbb{X}}$. For a set $\mathcal{S} \subset \mathbb{X}$, $|\mathcal{S}|$ denotes the cardinality of \mathcal{S} . Let $\mathcal{L}(\mathbb{X}, \mathbb{Y})$ denote the Banach space of all bounded linear operators from \mathbb{X} to \mathbb{Y} , endowed with the usual operator norm. We write $\mathcal{L}(\mathbb{X}, \mathbb{Y}) = \mathcal{L}(\mathbb{X})$, if $\mathbb{X} = \mathbb{Y}$. For a bounded linear operator $T \in \mathcal{L}(\mathbb{X}, \mathbb{Y})$, let M_T denote the norm attainment set of T , i.e., $M_T = \{x \in S_{\mathbb{X}} : \|Tx\| = \|T\|\}$. The notion of Birkhoff-James orthogonality in a Banach space is well-known and is used extensively in the study of the geometry of Banach spaces. For $x, y \in \mathbb{X}$, x is said to be *orthogonal* to y in the sense of Birkhoff-James [2], written as $x \perp_B y$, if $\|x + \lambda y\| \geq \|x\|$ for all $\lambda \in \mathbb{R}$. Similarly, for



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DYNAMICS OF INDIAN FEDERALISM DURING THE PANDEMIC

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Abstract: The article interrogates the implication that the pandemic had for the Indian federalism. It focusses not only on vertical federalism between Centre and State but also horizontal federalism involving the cooperation and contestation between the States. While attempting to analyse the federal dynamics, it enquires into the adequacy and effectiveness of the existing legislations namely the Disaster Management Act 2005 and Epidemics Management Act 1897 to deal with the health crisis and the role and responsibilities of the Centre and States therein. The article also takes into account administrative and financial relations between the Centre and the state. During the first wave, federal relations were marked by centralization which was evident in declaration of lockdown, zoning of districts, the crisis of migrant labourers etc. However, centralization proved to be in adequate and decentralization was the norm during the second wave. Autonomy of the states was evident in the vaccination policy, or deciding on extent of lockdown and unlocking. Clashes between Centre and state gave way to a more cooperative federalism which helped the Indian state to manage the pandemic effectively.

IndexTerms – Federalism, pandemic, Disaster Management Act 2005, centralization.

I. INTRODUCTION

The Constituent Assembly of India after much debate and discussion had adopted the federal framework of government for India. A federal government represents sovereignty which is held in common amongst multiple tiers of governance, where each governing unit is autonomous deriving its power from the Constitution. However, the Indian model of federation was markedly different from other federations, of the world like Australia, Canada, or The United States. In Case of India, it was not merely the Constitutional provisions, legal instruments and judicial decisions which carved the dynamics of Indian federalism. The compulsions and pragmatism demanded by circumstances, as well a political exigency shaped the federal institutions and dictated their working. Thus, there was considerable debate, both academic and political about how federal India is. The pandemic brought forth new challenges, whose enormity was unseen and unpredicted. It was evident that the State or the Central government had to put together their resources, both financial and infrastructural to combat the crisis. Also, the Covid-19 Pandemic was in no way a crisis limited to the health sector alone. As India went into lockdown, majority of Indians lost their jobs, incomes fell, and the economic health of the state was deeply affected. Also, decision making at government level was precarious and involved a tight rope walking between life and livelihood, the right to return for migrant workers vis a vis controlling the spread of disease. The Central government held the state governments at task for not doing enough (Aurora 2021) and the state governments blamed the Centre for holding back necessary resources (Waghmode and Sharma 2022). Though the virus knew no borders, yet the attempts to tighten borders snowballed into lack of cooperation and blame game among the states. However, as the pandemic progressed there were instances of cooperation between the federal unit. This article attempts to understand the impact that the pandemic had on the working of the Indian federation. It focusses not only on vertical federalism between Centre and State but also horizontal federalism involving the cooperation and contestation between the States.

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Alternatives to Sustainable Development: What can we Learn from the Pluriverse in Practice?

Mapping Self-Help Groups (SHGs) as alternatives to capitalist development: an ethnographic enquiry from India

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Abstract

This paper presents cases of Self-Help Groups (SHGs) from Chittoor district in Andhra Pradesh (AP) and Bardhaman district in West Bengal (WB) that we argue have the potential to demonstrate alternatives to capitalist development by strengthening the community economies of women belonging to marginal groups. SHGs in Kotha Indlu village in Chittoor district have provided the Dalit and backward women an alternative to earn their livelihood from practicing sericulture with local resources, indigenous knowledge and training. In Paarhaati and Ganti, villages of Bardhaman district, some SHGs have benefitted while some others have failed to cater to the economic needs of women from marginalized communities. With the help of empirical evidence from fieldwork, the paper aims to understand in what ways SHGs have helped or hindered the Dalit and tribal communities to enhance their self-reliance in the study areas. In regions where community participation and local self-government is proactive, SHGs are seen as strong sustainability initiatives for the rural marginalised groups. However, it is also seen that implementing SHGs as a sustainability program has been difficult in certain regions due to social inequality, financial dependence on local landowners and inadequate community participation. Thus, the paper puts forth both the successes and failures of SHGs as an important sustainability program at the grassroots level in rural India.

Keywords Sustainability · Marginalised communities · Rural India · Self-Help Groups · Local self-government · Social inequality · Community economies

Introduction

Self-Help Groups (SHGs) were introduced in India under the National Rural Livelihood Mission (NRLM) scheme as a movement for women's empowerment defined by 'quality

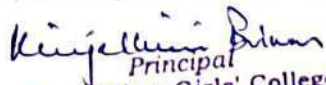
and sustainability' that can help in strengthening community ties and provide financial independence in rural India (Reddy and Reddy 2012; Sinha and Navin 2021; Sarkar and Malik 2019; Marzano 2002; Swain 2007; Swain and Walentin 2009, 2012; Chambers 1988; Carney 1998; Ahmed and Lipton 1997). The programme essentially consisted of formation of groups of around 10 to 20 persons and the members are to be self-selected to have trust in each other and have affinity to work together for mutual benefits. The groups save money by contributing a small amount every week to build up its own corpus fund. The groups are to be linked to credit by having sanctioned a cash credit limit usually two to three times of their savings after 6 to 8 months (NABARD 2019: pp. 10). The corpus fund thus created can be used by the group members for any new enterprise, for educational expenditures or for any other household needs. 'Self-help as a strategy for social development emphasises self-reliance, human agency and action' (Singh et al. 2011).


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Changing Pattern of Games in Rural Bengal Over The Past Five Decades: A Case Study of Benabendi Village in Bankura District

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Abstract : Presently, our society is standing at the cross-roads where the penetration of social media and internet via smart phones and eagerness to win the rat-race is ruling over the life of the present generation, bypassing all traditional and favorite pastime recreations including games. This empirical study thus aims to analyse how far the mass media and telecommunication revolution have been able to influence the rural gaming pattern in West Bengal over the long fifty years i.e., from 1970's when televisions and radios were considered to be as mere luxuries to the era of 2020's when the use of mobiles, iPods, tablets are considered to be as sheer necessities of our day-to-day life. This paper is primarily based on the empirical study designed for a micro level investigation in one of the villages of rural Bengal by interviewing the target participants mainly through a structured questionnaire. Besides, information regarding the journey of traditional game to modern games in rural Bengal is also collected through Focused Group Discussion (FGD) with the target participants in the study area. The research work reveals that the institutionalized games of global importance along with mobile and video games have gained preferences over the traditional games of rural Bengal over the past five decades. The telecommunication facilities and mass-media have played the pivotal role for the transformation of the gaming pattern in the study area. However, the study reveals that certain factors like frequent power failures coupled with weak mobile network and poor net connectivity amidst the dense forest, as well as the inability to buy regular data pack have acted as major hindrances against the popularity of the modern games in the study area.

Key Words: Traditional Games, Cultural Heritage, Rural Bengal, Mass Media and Telecommunication Revolution.

Introduction

Throughout the world, games are not only considered as an important source of providing amusement, entertainment and recreation during the leisure time, but also as a means of developing a person's skills of creativity, concentration, logical thinking, improving memory power, mathematical skills, apart from keeping him physically and mentally active and sound. It also helps to influence

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TITLE-A THEORITICAL MODEL ON TRADE AND ENVIRONMENT IN THE PRESENCE OF FDI AND INFORMAL SECTOR

JOURNAL- VIDYASAGAR UNIVERSITY JOURNAL OF ECONOMICS

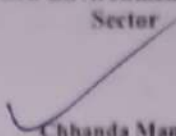
AUTHOR- CHHANDA MANDAL

YEAR-2022



Kinjal Chatterjee
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A Theoretical Model on Trade and Environment in the Presence of FDI and Informal Sector

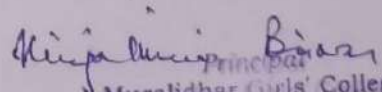

Chhanda Mandal
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Abstract

The paper examines the impact of foreign direct investment on the level of emission as well as tradable emission permit rate in a small open economy with four sectors. The model of Copeland and Taylor (2004) has been extended by incorporating an informal sector that produces non-traded input for the formal manufacturing sector for a small open economy. Foreign capital is used solely by the foreign enclave. In this framework with exogenous tradable emission permit rate FDI causes a reduction in the level of pollution. However, when tradable emission permit rate becomes endogenous the model shows that FDI causes a fall in the level of pollution along with a decline in emission permit rate. This result has strong implications regarding environmental governance in developing countries.

Keywords: Informal sector, Environmental pollution, Foreign capital, Tradable emission permit
JEL Classification: F11, F18, O17


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TITLE-RE-READING OF CHRISTOPHER MARLOWE'S EDWARD II IN THE LIGHT OF QUEER STUDIES

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AUTHOR-BIDISHA BISWAS

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RE-READING OF CHRISTOPHER MARLOWE'S EDWARD II IN THE LIGHT OF QUEER
STUDIES

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Abstract

Queer studies is an ever expanding field encompassing new histories, new cultures of intimacy and kinship, and this paper focuses on the homosexual tension that spins around the entire play Edward II. The acceptance of the homosexuals as a part of the society is the result of several movements and protests since the Elizabethan period. Christopher Marlowe (1565 -1593) an Elizabethan poet and dramatist was Shakespeare's most notable predecessor in the genre of English drama. He is remembered for his remarkable works and some of them are Tamburlaine The Great , The Jew of Malta and Edward II. The Troublesome Reign and Lamentable Death of Edward the Second, King of England, with the Tragical Fall of Proud Mortimer or Edward II was one of the most controversial plays of the time as it dealt with homosexuality. The tension arising out of the 'queer' relationship between King Edward and Piers Gaveston is felt from the beginning of the play. Though the presence of Gaveston is restricted to the first three acts of the play he strongly affects the lives and career of king Edward and Queen Isabella, and leaves a strong impact on the political scenario of England in the early 14th century.

Key words :- Christopher Marlowe, homosexuality, homophobia, queer studies

Being an integral part of this human world we are often forced to follow the 'norms' of the society

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TITLE PSEUDO SLANTS SUBMANIFOLDS OF QUASI SASAKIAN MANIFOLDS

AUTHOR-BANDANA DAS

JOURNAL- BULLETIN OF THE CALCUTTA MATHEMATICAL SOCIETY

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PSEUDO SLANT SUBMANIFOLDS
OF QUASI-SASAKIAN MANIFOLDS

✓ BANDANA DAS

(Received 25 March 2022 and revision received 15 June 2022)

Abstract. The purpose of the present paper is to study pseudo slant submanifolds of quasi-Sasakian manifolds. The integrability conditions of the distributions of pseudo slant submanifolds of quasi-Sasakian manifolds are obtained. Also an example of a proper pseudo slant submanifold of a quasi-Sasakian manifold has been given.

Key words: Quasi-Sasakian manifold, slant submanifold, pseudo slant submanifold.

Mathematics Subject Classification: 53C15, 53B25, 53C40

1. Introduction. In 1990, the notion of slant submanifolds was introduced by B.Y. Chen. Also slant immersions were defined by him in the complex geometry as a natural generalization of both holomorphic and totally real immersions (Chen, 1990). A. Lotta in 1996 extended the notion to the setting of almost contact metric manifolds. Further modifications regarding semi slant submanifolds of Kaehlerian manifold was introduced by N. Papaghuic (1994). J.L. Cabrerizo et.al. (1999, 2001) extended the study of slant and semi-slant submanifolds of Sasakian manifolds. Totally umbilical proper slant submanifold of a Kaehler manifold has been discussed by B. Sahin in 2009. Khan and Khan studied pseudo slant submanifolds of a Sasakian manifold in 2007 (khan and Khan 2007). Recently Rahman, Khan and Horaira worked on pseudo slant submanifolds of nearly quasi-Sasakian manifolds (2019).

In the present note, my aim is to extend the study of pseudo slant submanifolds

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Microstegium (Poaceae), a new generic record for Andaman & Nicobar Islands, India

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Abstract: The genus *Microstegium* Nees (Poaceae) is reported for the first time from Andaman & Nicobar Islands, India based on *M. fasciculatum* (L.) Henrard. *Microstegium fasciculatum* is a common species in mainland India. A brief description and photo plate are provided for easy identification.

Keywords: Andropogoneae, *Microstegium fasciculatum*, Taxonomy.

Introduction

Microstegium Nees (Poaceae, Andropogoneae) comprises c. 25 species (Clayton *et al.*, 2018) in the world, distributed in tropical and subtropical Africa, Asia, Australia and some Pacific islands (Clayton & Renvoize, 1986; Koyama, 1987; Watson & Dallwitz, 1992; Hsu, 2000). Chen *et al.* (2012), however, mentioned that *Microstegium s.str.* is represented by 16 species and one variety globally. Sur (1985) reported seven species and one variety while Karthikeyan *et al.* (1989) and Kellogg *et al.* (2020) enumerated eight species from India. During identification of different taxa in *Microstegium*, the authors came across five sheets of this genus at CAL, collected from Andaman Islands (probably South Andaman) by C.G. Rogers during March 1904. After critical study and careful scrutiny of literature (Rao, 1986; Matthew, 1998; Pandey & Diwakar, 2008; Murugan *et al.*, 2016) it is identified as *M. fasciculatum* (L.) Henrard, which is not yet reported from Andaman &

Nicobar Islands and hence constitute a new distributional record at genus level.

Taxonomic Treatment

Microstegium fasciculatum (L.) Henrard, Blumea 3(3): 453. 1940. *Tripsacum fasciculatum* (L.) Raspail, Ann. Sci. Nat. (Paris) 5: 306. 1825. *Andropogon fasciculatum* L., Sp. Pl. 2: 1047. 1753 ('fasciculatus'). *Lectotype* (designated by Cope in Cafferty *et al.*, 2000): Habitat in Indiis, Herb. Linn. No. 1211.27, lower central specimen (LINN). Fig.1

Perennial, mat-forming herbs, rooting from the lower nodes. Culms up to 4 m tall, robust or of moderate build; internodes glabrous, sometimes pubescent; nodes glabrous or bearded. Leaf sheaths bearded, outer margins pilose, mouth glabrous or hairy; ligule membranous, 1–3 mm long, blades linear-lanceolate, 8–30 × 0.5–2 cm, attenuate to slightly rounded at base, pseudopetiole absent, pilose, more densely on ventral surface, acuminate to setaceous at apex. Inflorescence of 3–25 digitate racemes, 5–15 cm long; racemes straight, 4–15 cm long; rachis angular, margins ciliate. Spikelets paired, sessile or pedicelled. Sessile spikelets 2.6–4.5 × 0.7–0.8 mm, oblong, acute at apex, awned; lower glume elliptic-oblong, 3–4 × 0.5–1 mm, dorsally shallowly grooved, 3–4-nerved, 2-keeled; keels ciliate to hairy towards apex, acute, obtuse or emarginate at apex; upper glume elliptic, 3–4 × 0.6–0.8 mm, strongly compressed, with 0.2–0.4 mm long bristle at tip, 3-nerved with prominent midnerve and 2 faint lateral nerves, midnerve keeled and scabrid. Florets 2, lower floret present, barren; lower lemma 0.5–0.6 × 0.2–0.3 mm, hyaline, with

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Alok CHORGHE^{a,*}, Sangita DEY^b and Pakshirajan LAKSHMINARASIMHAN^{c,†}:
Lectotypification of Names in the Genus *Themeda* (Poaceae: Panicoideae)

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Summary: As a part of the taxonomic revision of the genus *Themeda* (Poaceae: Panicoideae) in India, four names are lectotypified: *T. cymbaria* Hack., *T. huttonensis* Bor. *T. laxa* (Andersson) A. Camus and *T. tremula* (Nees ex Steud.) Hack.

The genus *Themeda* Forssk. comprising 27 species is distributed in tropics and sub-tropics of the World (Veldkamp 2016). Northern India and Yunnan, China are considered to be major distribution and diversification centers for the genus (Zhang and Liu 2012). In India it is represented by 18 species of which seven are endemic (Bor 1960, Karthikeyan et al. 1989, Kabeer and Nair 2009). As a part of a revision of the genus in India, four names are lectotypified here according to Art. 9.3 of ICN (Turland et al. 2018).

Typification

Themeda cymbaria Hack. in A.D.C. & C.D.C., Monogr. Phan. 6: 668 (1889).

Lectotype (designated here): “CEYLON”. *Anthistiria ciliata* Retz.: Thwaites 3257 (W1916-0028232, image; Fig. 1); remaining syntypes: “Peninsula” Wight 1707, 175 (E00697622, E00697625–E00697629, E00697631, K000245970, K000911709 images); “Maisur et Carnatic” Hook.f. & Thomson (W0028864, P01943328, P01943329, images); “Ceylon” Thwaites 3803 (P01943327, W0028859 images).

In the protologue of *Themeda cymbaria*,


Hackel (1889) cited four pieces of evidences for the species that “India or. in montosis (Roxb.): Peninsula (Wight 1707, 175 [h. prop.]; Maisur et Carnatic (Hook.f. & Thoms.); Ceylon (Thwait. 3257, 3803)”. The last three of these clearly indicate herbarium specimens, while the first one “India or. in montosis (Roxb.)” might refer to a note for *Anthistiria cymbaria* sensu Roxb. in Roxburgh’s Flora Indica (1832: 251) that *A. cymbaria* “grows amongst bushes in mountains”. No relevant specimens are however found in herbaria where Roxburgh’s specimens are said to be deposited. Among the other syntypes the following specimens were found in different herbaria: Wight no. 1707, 175 in E and K, Thwaites 3257 from Ceylon in W, and specimens with annotation “Maisur et Carnatic” collected by Hooker f. and Thomson in P and W. Among all the syntypes, Thwaites 3257 present in W (W1916-0028232) is a complete specimen with roots, leaves and inflorescence. It shows diagnostic features mentioned in the protologue such as well-developed decompound panicles ca. 50 cm long, in conformity with the 1–2 m tall habit of the plant, and aristate bisexual spikelets within solitary raceme. It also belonged to Hackel’s herbarium as “Herbarium E Hackel” is stamped over it and can be attributed with almost certainty that Hackel consulted it during his study. Therefore it is designated as the lectotype of *T. cymbaria*. Other syntypes are incomplete specimens (having the inflorescence only) and hence not suitable as lectotypes.





Nuclear Instruments and Methods in Physics
Research Section A: Accelerators, Spectrometers,
Detectors and Associated Equipment

Volume 1008, 21 August 2021, 165450

The background study at 555 m deep underground with superheated emulsion detector

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Abstract

The study of the background events is an important part in any Dark Matter direct search experiment. An exploratory run at a depth of 555 m is performed at Jaduguda Underground Science Laboratory (JUSL), Jaduguda, Jharkhand by using $C_2H_2F_4$ (b.p. $-26.3^\circ C$) superheated emulsion detector, fabricated at the surface laboratory at SINP. The active liquid $C_2H_2F_4$ is a potential target for the low mass DM search. The main objective was to study the background events including the noise level at the underground lab and compare it with the surface lab. It has been observed that the count rate of background events at JUSL is reduced by a factor of 2 than that at the surface lab. The expected event rate for the neutrons at JUSL has been estimated. The projected sensitivity of $C_2H_2F_4$ for 10 kgdays of exposure has also been discussed for the zero background events.

Introduction

Superheated liquid in the form of micron sized droplets known as superheated emulsion detector (SED) has been using for a long time in the various research fields where each droplet acts as a small bubble chamber [1], [2], [3]. SED is continuously sensitive to the energetic particles and is not needed to be pressurized after each cycle of bubble nucleation. The bubble nucleation in the SED occurs if the energy deposited by the incoming particles is equal or greater than the minimum required critical energy of the liquid at a given temperature and pressure. SED generates acoustic pulses during the bubble nucleation that can be detected by the acoustic sensors like piezoelectric transducer or condenser microphone. The acoustic pulses carries information such as power and frequency, which helps to discriminate the events originated from low and high linear energy transfer (LET) particles [4], [5]. The sensitive region of the SED can be changed by choosing suitable threshold energy of the detector as at a particular region it would be sensitive to high LET particles like neutrons and insensitive to low LET radiations like gamma rays, beta particles etc [6], [7]. SED

Archaeological Evidences of Early Indian Drama**Sushmita Sengupta**

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Abstract:

For centuries dramatic art had been one of the most popular forms of public and private entertainment used in India since the pre-historic times. The pre-historic cave dwellers of the Mesolithic period residing in the various rock shelters found scattered all over India had documented their lives on the walls of their cave shelters with vibrant hues. The evidences gathered from this rich gallery of cave paintings point to a highly evolved form of entertainment of the settlers. The deified animal figures, hunting dances, magico – religious rituals of these Mesolithic people had dramatic element in them. The complex urban culture of the Indus civilization witnessed a number of remarkable civic activities of the people. Drama or dramatic performance or any kind of performance as such was very much a communal civic activity among the Indus people. Puppet, masks, musical instruments, dancing statues all point to a highly evolved performance style of the Indus valley people. The famous dancing girl figurine and other dancing figures discovered from Harappa, are a pointer to this fact. The association of Shiva with the dramatic art also point to the pre-vedic origin of Indian drama, as Shiva or Pashupati cult was very much a pre-vedic practice. The Pashupati seals found at various Indus sites confirmed this theory. Archaeological discoveries of theatre architecture from all over the subcontinent testifies to a vibrant dramatic tradition of the ancient Indians. Inscriptional evidences of drama or dramatic production or even inscription pertaining to theatre censorship in ancient India confirms the widespread development of dramatic activities in ancient India.

Key words:

Drama, pre-historic, cave-paintings, rituals, cave-theatre, theatre architecture. The origin and development of early Indian drama is a history of myriad interactions, assimilations and interpolations which ultimately weaved its magic to make this art form reach a high level of excellence and become the cause of awe and envy of the other civilizations of the world. The history and development of early India drama cover centuries and regions and included all sections of the society. It was one of the most popular forms of public entertainment used in India since the pre-historic past. An attempt has been made in this paper to trace the development of Indian drama to the pre-historic past based on the archaeological discoveries of theatre architecture, inscriptional evidences as well as other related findings from all over the Indian sub-continent.

As mentioned by Bose (2001) and Varadpande (1987) anthropologists often argued that drama was the most primitive form of art and dance and music also accompanied it. In fact, in the early stages, the history of drama was the history of the origin and development of the different elements of this art, which came together in the course of time to weave its magic into a rich fabric. Thus, music and dance were the essential features of Indian dramatic tradition and were



On the occurrence of *Tripogonella minima* (Poaceae: Chloridoideae) in India

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भारत में ट्राइपोगोनेल्ला मिनिमा (पोएसी: क्लोरीडोइडी) की उपस्थिति पर आलेख

नागाराजू सिद्दाबाथुला, रवि किरण अरिगोला, के. अल्ताफ अहमद कबीर एवं संगीता डे

सारांश

भारत में ट्राइपोगोनेल्ला मिनिमा की उपस्थिति पर चर्चा किया गया है तथा ट्राइपोगोन पुरपुरासेंस की त्रुटिपूर्ण पहचान को ट्राइपोगोनेल्ला मिनिमा के रूप में सुधारा गया है।

ABSTRACT

The occurrence of *Tripogonella minima* in India is discussed and the erroneous identity of *Tripogon purpurascens* as *Tripogonella minima* is rectified here

Keywords: Exploration, Grass, Maharashtra, Rajasthan and Telangana

INTRODUCTION

The genus *Tripogon* Roem. & Schult. is represented by 51 species (Thoiba & Pradeep 2020) and distributed in old world tropics. *Tripogon* usually occurs in the moist rocky crevices, shola grasslands and on wet rocky slopes (Kabeer & Nair 2009, Thoiba & Pradeep 2020). Molecular phylogenetic studies of the subtribe Cynodontae (Poaceae: Chloridoideae), Peterson & al. 2016 established the genus *Tripogonella* P.M. Peterson & Romasch. It is a small genus of three species separated geographically such as *Tripogon loliiformis* (E. Muell.) C.E. Hubb. from Australia, *T. minimus* (A. Rich.) Hochst. ex Steud. from Africa and *T. spicatus* (Nees) Ekman from New World. Peterson & al. (2016) made three new combinations viz., *Tripogonella loliiformis* (E. Muell.) P.M. Peterson & Romasch., *T. minima* (A. Rich.) P.M. Peterson & Romasch. and *T. spicata* (Nees) P.M. Peterson & Romasch. by transferring the species from *Tripogon* to *Tripogonella*.

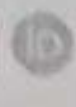
TAXONOMIC TREATMENT

Tripogon purpurascens Duthie

Lectotype: INDIA. Uttarakhand, Tehri Garhwal, Tons valley, 4000–5000ft. 05 May 1900, J.E. Duthie 23532 (K000907443!); **Isolectotypes:** B100279879!, DD!; **Syntypes:** BM012546532!, BM012546533!, CAL0000002443!, CAL0000002444!, DD19821!, K000245023!, K000245024!, P02268743! (Fig. 1)

Tufted perennial, 5.0–40 cm high. Culms simple, erect, slender, nodes glabrous. Leaf sheaths glabrous with tufts of cilia at apex, basal sheaths fibrous, persistent and invested base of culm; ligule 0.1–0.2 mm, truncate-fimbriate with line of cilia (c. 0.9 mm) at junction with leaf blade. Leaf blade filiform, 3.0–15 cm × 0.3–1.0 mm, adaxial surface densely covered with short, appressed hairs with longer cilia near margins, abaxial surface glabrous, often purple tinged. Inflorescence a single

Characterization of extreme contractions through k -smoothness of operators

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ABSTRACT

We characterize extreme contractions defined between finite-dimensional polyhedral Banach spaces using k -smoothness of operators. As application of results obtained, we explicitly compute the number of extreme contractions in some special Banach spaces. Our approach, in this paper, in studying extreme contractions lead to the improvement and generalization of previously known results.

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Extreme contraction; k -smoothness; linear operators; polyhedral Banach space; weak L-P property

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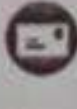
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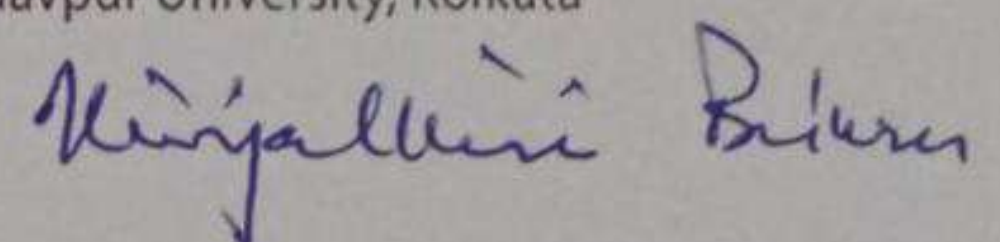
1. Introduction

The study of extreme contractions and smoothness of operators between Banach spaces are two classical and fertile areas of research in Banach space theory. While the characterization of extreme contractions defined between Hilbert spaces is well-known [1–4], the characterization of the same is still elusive, in the general setting of Banach spaces. There are several papers including [5–18] that deal with the study of extreme contractions of operators defined between some special Banach spaces. The purpose of this paper is to study extreme contractions between polyhedral Banach spaces and explore interesting connections between the order of smoothness of an operator and extreme contraction. In particular, we generalize and improve on the results obtained in [14] in an elegant way. Before proceeding further, we first establish the notations and terminologies.

We denote the Banach spaces by the letters \mathbb{X} and \mathbb{Y} . Throughout the paper, we assume that the Banach spaces are real. $|A|$ denotes the cardinality of a set A . An element x of a convex set A is said to be an extreme point of A , if $x = ty + (1 - t)z$ for some $t \in (0, 1)$ and $y, z \in A$ implies that $x = y = z$. The set of all extreme points of a convex set A is denoted by $\text{Ext}(A)$. The unit ball and the unit sphere of \mathbb{X} are denoted by $B_{\mathbb{X}}$ and $S_{\mathbb{X}}$, respectively, that is, $B_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| \leq 1\}$ and $S_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| = 1\}$. $L(\mathbb{X}, \mathbb{Y})$ denotes the

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GC-MS Analysis and Screening of Anti-Proliferative Potential of Methanolic Extract of *Garcinia cowa* on Different Cancer Cell Lines

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ABSTRACT

Introduction: *Garcinia cowa* (Clusiaceae) is popular among integrative medicine in several communities. This study undertook to evaluate the anti-proliferative activity on cancer cells and its cytotoxic effect on normal cells. Here we are reporting for the first time the metabolomic profiling of *G. cowa* leaf. **Methods:** Anti-proliferative potential of ethyl acetate and methanol extract of *Garcinia cowa* leaf assessed by MTT assay. Metabolomic profiling obtained by GC/MS analysis. Nuclear morphology visualized by DAPI staining. Caspase activation analysed through spectrophotometric assay. **Results:** The study reveals, that the methanolic extract is more potential in inducing anti-proliferative activity than ethyl acetate extract. Robust anti-proliferative activity of the methanolic extract evidenced in lung cancer cell line, A549 followed by MCF-7, HepG2, MOLT-4, MDA-MB-468 cells. The anti-proliferative effect was negligible in normal PBMC. Further, a dose-dependent increase of nuclear fragmentation visualized in A549 cells treated with the methanolic extract. Post methanolic extract treatment upregulation of caspase-3 and caspase-9 also evidenced in A549 cells. GC/MS analysis revealed the presence of phytoconstituents of different phytochemical groups comprising of 3.45% diterpenoid, 5.45% triterpenoid, 11.24% steroid, 2.03% phytosterol, etc. in methanol extract, as well as 4.53% diterpenoid, 2.88% triterpenoid, 1.09% steroid, 2.11% phytosterol, etc. in ethyl acetate extract with considerable biological importance. **Conclusion:** This is the maiden report of the metabolomic profiling of leaf extracts of *Garcinia cowa* which possess a good repository of potentially bioactive molecules that holds a great promise as a future therapeutic agent in combating lung cancer.

Key words: *Garcinia cowa*, Cancer, GC-MS, Metabolomic profiling, Anti-proliferative.

INTRODUCTION

From the ancient era to modern-day society, medicinal herbs and plants are playing a significant role in curing several diseases. Starting from ancient folk medicine to modern scientific medicine, plants have played a pivotal role. Natural products obtained from plant origin contain several bioactive compounds that are using as the base compounds of drugs. A large proportion of the drugs of modern medicine is either directly isolated from plants or in a synthetic form modified from a lead compound of a natural origin¹. Currently, more emphasis has given to natural drug discovery. Natural compounds may have the potential to inhibit cancer². According to food and drug administration, around 40% of the approved molecules are natural compounds or inspired by them. Among the approved natural compounds, 74% are used in cancer treatment. Natural products are more biologically friendly and less toxic to normal healthy cells³. In search of potentially bioactive natural compounds, the study of different secondary metabolites like alkaloid, diterpene, triterpene, and polyphenolic compounds is essential. One of the best method for the investigation of the wide range of secondary metabolites is complete metabolomic profiling. We are interested in identifying plants; as a repository of anti-cancer molecules, which will be clinically

useful and safe, which could modulate therapeutic response and may have a future in the clinic.

Garcinia cowa Roxb. Ex DC. is a tree species. Locally it is known as *Kau* tree among the people of the north-eastern region of India. This plant belongs to the Clusiaceae family. Local tribes use this plant extensively for preparing adhesive from the latex. Also, ethnomedicinally the plant is very famous among the local ethnic people. Fruits are edible. The plant occurs in China in the southern and western parts of Yunnan Province. Several bioactivities have been reported from the extracted chemicals from the plant. In several countries, the plant is in use as traditional medicine for a long time⁴. Until the present, a total of 397 accepted species are in the record⁵. About 30 species are indigenous to India. Several bioactivities are in the report from the numerous chemicals, extracted from the plant. In India, *G. cowa* grows in the Northeast region and the Andaman Islands. It is cultivated in the Assam state of India for their acidic fruits. Dry fruit slices used for the culinary purpose as well as to treat dysentery⁶. Previously *G. cowa* reported with good anti-bacterial activities, antiplatelet aggregation capacity, anticancer activity against human colorectal adenocarcinoma cells⁷⁻⁹. However, the least information is present about the complete metabolomic profiling and phytochemical potential of *G. cowa*. This study has been done to estimate the anti-proliferative potential

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**Memory As 'Her-Story':
Sherley Anne Williams's *Dessa Rose***

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Abstract:

History is always the story or narrative narrated from the side of oppressor or the colonizer. Historiography is rather a place of struggle and hardships of Afro-American women and indeed this is the case in *Dessa Rose*. This essay goes on to argue that history books are a poor place to search for the history of slave resistance, especially the narrative of female slave resisters. The history representing the voices of these black women has ignored or misrepresented their writing. Therefore, by employing a constituted memory Sherley Anne Williams has attempted to re-constitute 'her-story' in *Dessa Rose*. This paper further explores that how Sherley freely writes that 'other' history as a challenge to the one composed by Adam Nehemiah, the white male author.

Key words: History, Memory, Black Women, Resistance

History or historical account always gives credence to the ruling class. Thus, history is always the master narrative and dominant culture that tells about itself. The historical narrative effaces as many contradictions as it can, creating heroes and villains convenient to it. Cheryl Townsend Gilkes once commented that "history books are a poor place to look for history", adding that history books are "an even poorer

Psycho-Philosophical Aspect of Trigunas

Research Article

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Abstract:

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Keywords:

The Sankhya is a philosophy of dualistic realism attributed to the sage of Kapila. The origin of the name "sankhya" is shrouded in mystery. According to some thinkers, the name "sankhya" is an adaptation from 'sankhya' meaning number, and has been applied to this philosophy because it aims at a right knowledge of reality by the enumeration of the ultimate objects of knowledge. According to others, however the word 'sankhya' means perfect knowledge (samyag-jnana) and a philosophy in which we have such knowledge is justly named Sankhya.

It admits two ultimate realities, namely, purusa (consciousness) and prakriti (matter), which are independent of each other in respect of their existence. The purusa is an intelligent principle, of which consciousness (caitanya) is not an attribute but the very essence. It is the self which is quite different from the body, the sense and the mind (manas). It is beyond the whole world of objects and is the eternal consciousness which witnesses the changes and activities going on in the world, but does not itself act and change in any way. Thus it is the transcendental act self or pure consciousness. It is absolute, independent, free, imperceptible and unknowable through other agencies, above any experience by mind or senses and beyond any words or explanations. Prakriti is the ultimate cause of the world. It is an eternal unconscious principle (jada) which is always changing and has no other end than the satisfaction of the selves. It accounts for whatever is physical, both mind and matter-cum-energy or force.

Sattva, Rajas and tamas are three constituents of prakriti which holds them together in a state of rest or equilibrium (samyavashtha). The three are called Gunas.

Guna depending on the context means "string, thread or strand", or "virtue, merit, excellence", or "quality, peculiarity, attribute, property." In Sankhya philosophy, a guna is one of three "tendencies, qualities": sattva, rajas and tamas. They are not qualities or attributes in any sense. Rather, they are three substantial elements which constitute prakriti like three chords making up a rope. The existence of the gunas is inferred from the qualities of pleasure, pain and indifference which we find in all the things of the world. The reason why they are called gunas is either their being subservient to the ends of the purusa which is being intertwined like the three strands of a rope which binds soul to the world. The gunas are not perceived by us. They are inferred from the objects of the world which are their effects. Since there is an essential identity (tadatmya) between the effect and its cause, we know the nature of the gunas from the nature of their products. All objects of the objects of perception (eg. tables, pots, etc) are found to possess 3 characters capable of producing pleasure, pain and indifference, respectively. The same things are pleasurable to some person, painful to another, neutral to the third.

Krupalini Biswas

TITLE-Depression and Climate Change :A Study on Sustainable Development .

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AUTHOR-DR TINNI DUTTA

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DEPRESSION & CLIMATE CHANGE: A STUDY ON SUSTAINABLE DEVELOPMENT

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Abstract

Dysthymia and Generalized Anxiety Disorders (GAD) have seasonal affective syndromes. In Winter season they feel gloomy, due to lack of sunlight, shorter sunny day and cold weather. A secondary source of data of 120 people suffering from dysthymia and anxiety disorders were obtained and were subject to statistical analysis. Findings indicate that clear affective changes are pronounced. GAD patients suffer more anxiety and depression during winter season than depressive patients do. Cognitive Behaviour Therapy were administered for restoring psycho-social balances and steady sustainable development.

Key words: Environmental Psychology, Depression, Generalized Anxiety Disorder, Sustainable Development.

Introduction

Emotional experiences and moods are the most important part of the human beings in the world. Human beings sometimes cry, sometimes laugh. Very interestingly it is reflected in story, poetry, song and music. The most beautiful moments are often lost without us being consciously aware of losing them. It is observed and analyzed that like so called normal, patients suffering from depression and anxiety oscillate between negative to positive emotions. It is striking that during winter season anxiety and depressive patients suffer more due to lack of sunlight, cold weather and shortage of hours during day time. It has been corroborated with earlier researches. Literature survey in this field were done by Majeed, H; Lee, J (2017). Abdullatif, M, Sayyah, M & Rahim, F (2019) had also highlighted on this arena.

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Authored by

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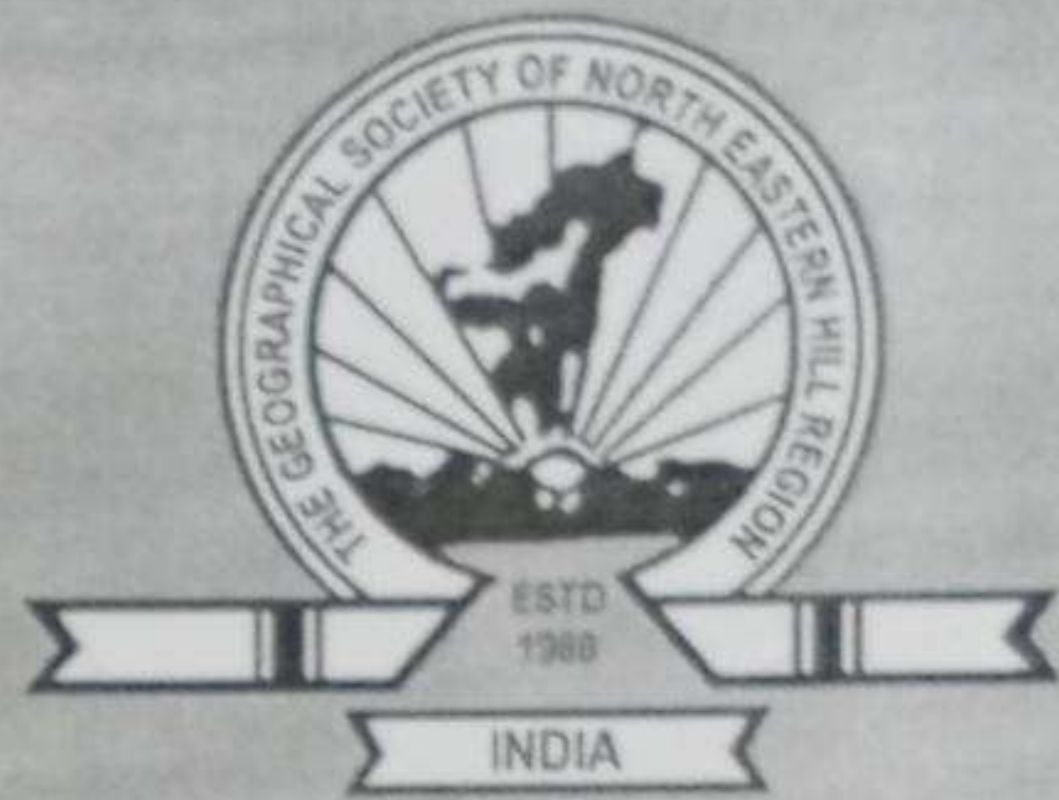
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Research Paper

Utilization of Health Care Services and Gender Differences in Urban West Bengal: A case study of Kamarhati Municipality

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Abstract

By nature's grace, women are generally more robust than men and have a natural edge in the expected life span. But, in many South Asian societies, this biological advantage is completely cancelled out by women's social disadvantage to date. Thus, gender discrimination in allocating resources or the elementary fields of education, nutrition, health, and survival is debatable even in this 21st century. In the rural areas being entangled in the patriarchal family dynamics and several social stigmas, women of the rural areas, across different socio-economic categories, get worse for their health issues. But the urban areas are expected to be free from such social constrictions. As a result, this research paper aims to ascertain whether gender discrimination in the utilization of health care services happens to exist in the urban areas or not, especially when our nation has promised to achieve "Health for all by the Year 2000". A case study of Kamarhati Municipality has been studied to examine the extent of gender discrimination regarding the utilization of health care facilities in the urban areas of West Bengal. The siting factors and the locational situation of this industrial town along the Hugli River, coupled with its good connectivity with the city of Kolkata, have been the primary reasons behind the choice of this study area. The study is purely based on the survey conducted through a structured questionnaire. Finally, the test of significance and the degree of dependence between the exogenous factors and the utilization pattern of the health care facilities have been analyzed by the chi-square method. The outcome of the research work confirms that the levels of development play a vital role in determining the practice of gender discrimination, even within the urban areas. Moreover, the study ensures that some of the exogenous factors play a dominant role in determining the pattern of gender discrimination regarding access to health care services in the selected study area.

Keywords: Gender Discrimination, Health, Health Care Services, Levels of Development, Determinants.

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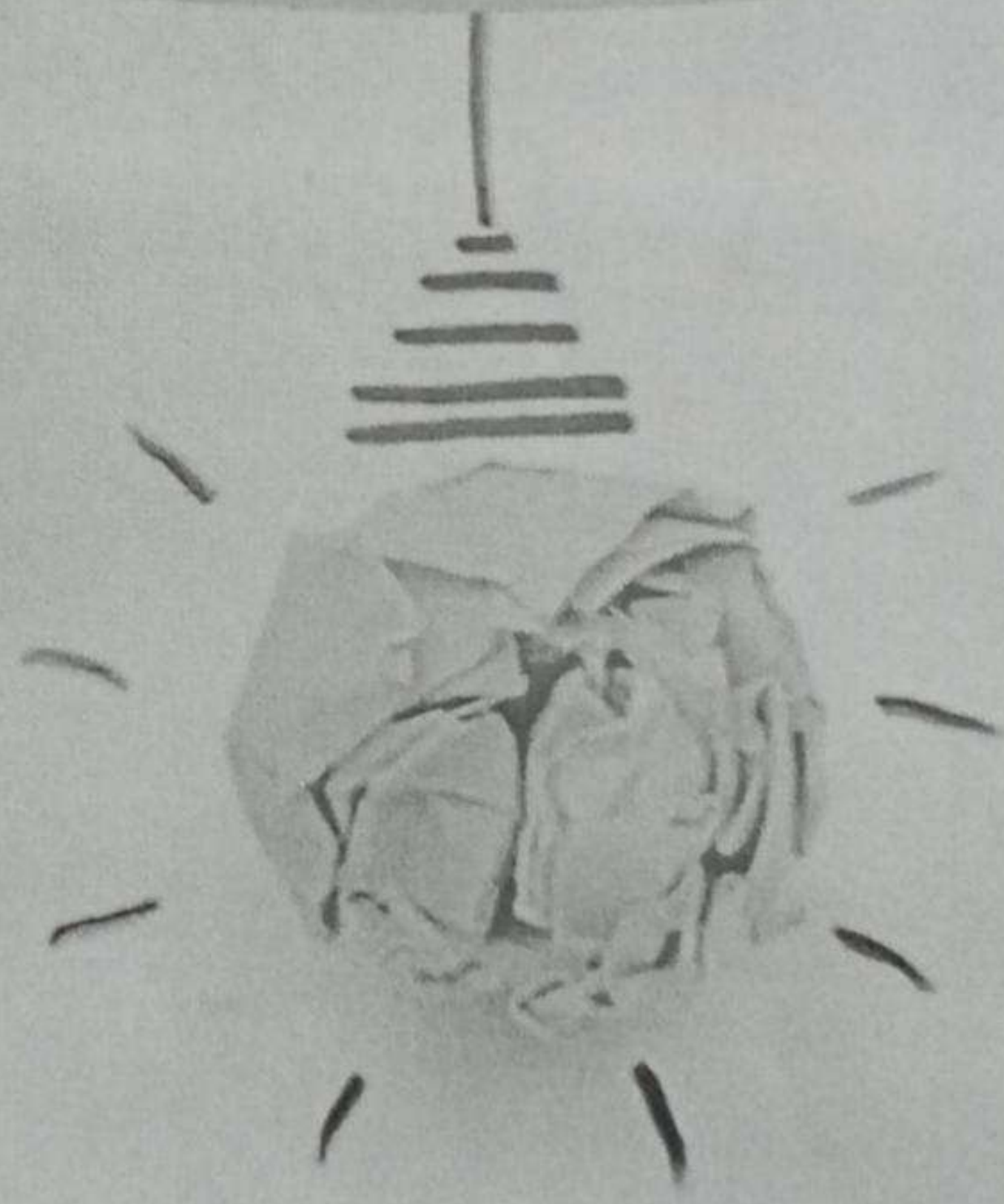


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Position Of Native Women In The Vision Of Katherine Mayo (20th Century Bengal)

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Abstract

Katherine Mayo was an American historian and researcher, by profession a journalist. She wrote two books on the condition of women in Bengal, first one was 'Mother India', and second one was 'Slaves of the God'. She might have been the most explosive bit of American journalism to make its mark on the history of British imperialism, Indian nationalism, and inter-war feminism. Based on her writing we get to know about poor sanitation, unsafe child birth, rampant illiteracy and mal nutrition of the women of the twentieth century Bengal.

The book 'Mother India' is primarily a tremendous frontal attack upon the whole social system of Bengal in all its aspects, and by implication one of the most powerful defences of the British raj that has ever been written. In a sense it contains nothing that is really new. Any informed person of that era was aware of the social evils of Hinduism, and of the brutalities of the caste system, of the filthy personal habits of even the most highly educated classes. But these evils have never before within our knowledge been addressed as faithfully and as ruthlessly as Miss Mayo describes them. The reason for this is not far to seek. The English officials and missionaries have never cared to write openly about India, because of the possible disastrous repercussions of such frankness upon their own way of governance in India. Miss Mayo's writing is so convincing that no civilised reader could fail to hope that its horrors were exaggerated.

In a sense the new arguments in this book is about the changing relationship between the social sphere and those that were characterised as political. The separation between the social and the political spheres allowed Mayo to demand that the colonial state carry on ruling India, as Indians in particular didn't have the ability to rule themselves.

Key words-mother, memsahibs, white, race, caste

Full paper

The white women who came in India around 1860s found a new place in the colony were vested with unseen powers specially over the colonized women. They were not allowed to exercise formal powers but indirectly they were given powers to exercise over the colonized women. The white women neither allowed to exercise their power in administration nor enjoyed any profits that her male compatriots had. But they had their own area of authority which they imbibed due to race and colour. European women were termed in the official documents as white women. The white women were from various nationalities like British, French, Irish, Russian etc.

The colony was the place where the British Raj found safe destination for dumping her machine made goods as well as her surplus population, specially in the time of Industrial

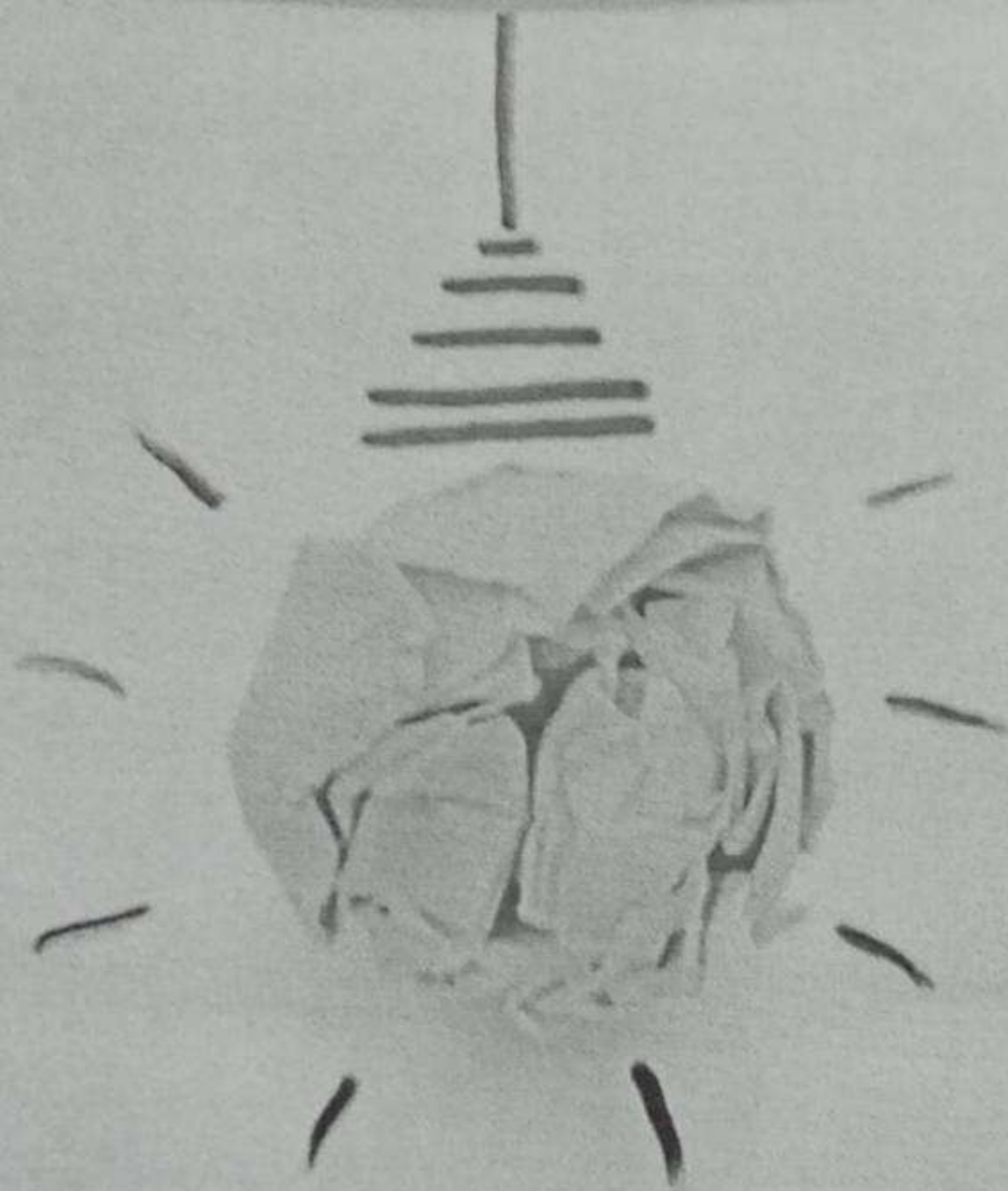


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White Women Missionaries in Colonial India (1860-1920)

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The White Women Missionaries were the other group of White Women who came to India in the colonial period. The British authors have negatively portrayed the history of the white women missionaries. The white women missionaries were seen as a negative force in the unfolding of imperialism. Though the white women missionaries worked to perpetuate the structure of imperialism, but at the same time, they were victims of the of its gendered manifestations, these became evident from the writings of the western women themselves. Contrary to earlier understanding left behind many works, which help us to construct an idea about these women. The period covered in this chapter is from 1860 to 1920. Though examples have been cited from beyond this chronological framework.

The white women missionaries came to India around the post-mutiny phase. The white women missionaries who numbered two-third of the overseas missionary force have been totally neglected in the British writings. In the post- mutiny phase when the inter-racial relation between the British Raj and the natives was unstable, the white women missionaries made India safe place for the Europeans.

The white women missionaries carried out their work both in the field of education and medicine. They functioned within the broader process of British cultural imperialism, in which the whitewomen missionaries sometimes consciously participated. The process of missionary activities began in the eighteenth century and it continued throughout the colonial period. In this context Montgomery Helen Barrett's 'Western Women in Eastern Lands: An Outline Study of Fifty Years of Women's Work in Foreign Missions' deserves special mention. Montgomery points out that the missionary activities were not confined to one country but were felt in varying degrees from one country to another and throughout all nations.

This chapter is on the work and the activities of the white women missionaries who came to India from Europe and their role in the structure of the imperial governance.

The first theme which becomes prominent from this survey of literature is the experience of the migration of the white women missionaries after the revolt of 1857. In this context the work of Geraldine Hancock Forbes's 'In Search of the Pure Heathen: Missionary Women in Nineteenth century India' deserves special mention. The sepoy mutiny of 1857 was a catastrophic event that led to much soul searching on the part of the British Raj. The mutiny was crucial because it determined the inter-racial relation between the British Raj and the native subjects. Generally in the first half of the nineteenth century the majority of the white women missionaries, who came to India, were help-mates of the male missionaries. Their role was to help their male partners by teaching the wives and the children of the male converts. The impact of the mutiny was so great that the British Raj stopped their process of westernization

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SHORT COMMUNICATION

Sporobolus tenuissimus (Poaceae) - a new record from Eastern India with notes on stem anatomy and phytoliths

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ABSTRACT

Sporobolus tenuissimus (Mart. ex Schrank) Kuntze, recently collected from West Bengal, India is reported here as a new record for Eastern India. A detailed taxonomic account, including description, key to the species present in West Bengal and illustration are provided for easy identification. In addition, phytolith characters and stem anatomical features are also provided for comparison with other taxa of *Sporobolus*.

KEYWORDS

Sporobolus tenuissimus, taxonomy, bilobate phytolith, sclerenchymatous band, West Bengal

Introduction

Sporobolus R. Br., Poaceae, Chloridoideae, Sporobolinae is represented by 160 species worldwide (Clayton & Renvoize, 1986, Shukla, 1996, Cope, 1998 and Mabberley, 2008). It is mainly distributed in tropical and sub-tropical regions of the world. Bor (1960) recognized 22 species, whereas Karthikeyan *et al.* (1989) recorded 18 species from India. During the study of grass flora of Hooghly district, the first author had collected some interesting specimens from Hooghly and Howrah districts of West Bengal state of Eastern India. After careful examination of specimens, scrutiny of literature (Hooker, 1896, Bor, 1960, Kabeer *et al.*, 2009, Sreekumar *et al.*, 1991, Potdar *et al.*, 2012) and consultation of protologues and types, it was identified as *Sporobolus tenuissimus* (Mart. ex Schrank) Kuntze, a species previously reported from Central, Northern, Peninsular and Western India. This taxon is so far not reported from Eastern India and hence forms a new distributional record for Eastern India. A detailed description and illustration are provided for its easy identification in the field. Additionally, phytolith characters and stem anatomical features have been provided to further correlate it with other taxa of *Sporobolus*.

Materials and Methods

During the study of grass flora of Hooghly *Sporobolus tenuissimus* was collected from different part of Hooghly, West Bengal (Mankundu, 22.5038° N, 88.2039° E; Diara, 22.4817° N, 88.1735° E; Serampore, 22.7505° N, 88.3406° E). Later on this species was also collected from Howrah, West Bengal (Dornjur-22.3728° N, 88.1242° E). Voucher specimens of collected plants are deposited at Central National Herbarium (CAL). The species is identified with the help of available literature *viz.* The Grasses of Burma, Ceylon, India and Pakistan, Flora of Tamil Nadu Grasses, Grasses of Maharashtra, Grasses of Kerala, etc. The relevant specimens of *Sporobolus tenuissimus* present at Central National Herbarium (CAL) are also consulted for identification. Fresh culm portion were used for the anatomical study. Culms were divided into several small pieces and preserved in 70% ethanol for 9–10 days to remove the starch grains. After 10 days culms were sectioned by hand with the help of razor. Thin sections were stained by double staining method and mounted in glycerin with proper labeling. The samples showing the anatomical details clearly were selected for Camera Lucida drawing.

Fresh leaf blades were used for the study of phytoliths. Leaves were cut into small pieces and washed with distilled water to remove any particles present on the surface. It was then immersed in 3:1 solution of conc. HNO₃ and 10% NaOH and placed in a water bath for 30–40 min to soften the tissue as well as to remove organic matter. The residue was placed in warm HCL (10%) for 20 min to remove carbonate. Serial washing was done with distilled water using centrifugation at 2000–2500 rpm for 8–10 min. Finally, the samples were washed with 99% ethanol and stored in storage vials. The clear segments of materials were mounted in glycerin and studied with the help of a trinocular microscope (Olympus CX 21i). The photographs were taken using the camera (CMOS TOUPCAM) attached to the microscope. Phytolith morphotypes characterization and analysis were done followed by Twiss *et al.* (1969), Madella *et al.* (2005) & Neumann *et al.* (2019).

Taxonomic treatment

Sporobolus tenuissimus (Mart. ex Schrank) Kuntze, Revis. Gen. Pl. 3 (3): 369. 1893; Bor, Grass. Burma Ceylon India & Pakistan: 633. 1960; B.D. Sharma & *al.* in Biol. Mem. 2 (1 & 2): 170. 1977; V.J. Nair in A.N. Henry & *al.*, Fl. Tamil Nadu Anal.3: 142.1989; Sreek & V.J. Nair, Fl. Kerala Grasses 440. 1991; S.Moulik, Grass. Bamb. India 2: 481.1997; Kabeer & V.J. Nair Fl. Tamil Nadu Grasses 175.2009; Potdar & *al.*, Fl. Maharashtra Grasses 621.2012; *Panicum tenuissimum* Schrank in Denkschr. Koenigl. -Baier. Bot. Ges. Regensburg 2: 26. 1822. *Sporobolus minutiflorus* (Trin.) Link. Hort. Berol.1:88. 1827; Hook.f., Fl. Brit. India 7: 248. 1896; C.E.C. Fisch. in Gamble, Fl. Madras 3: 1817. 1934. *Vilfa minutiflora* Trin., Gram. Unifl.Sesquifl.158. 1824. (Fig.1)

Tufted weak annuals. Culms slender, 50–90cm high, more or less ribbed, nodes glabrous. Leaf blade linear or linear-lanceolate, 5–25×0.3–0.6 cm, acuminate towards the apex, margins serrulate; ligule 0.3–0.5 mm, truncate, membranous with rim of hairs; leaf sheaths keeled at the base, more or less ribbed. Inflorescence open panicle, effuse, 15–30×4–6 cm branches capillary, lax, peduncle 8–9 cm, more or less ribbed. Spikelet long pedicellate, elliptic-lanceolate, 1–1.5 mm, acute, greenish to reddish; pedicels c. 6 mm. Lower glume hyaline, oblong-lanceolate,

infraspecific taxa cannot be validly published with illustrations as types (see Art. 40.4), which we believe was a beneficial change to the *Code*. It should be noted that, according to Art. 6.1 footnote of the *Code*, an illustration "designates work of art or a photograph depicting a feature or features of an organism, e.g. a drawing, a picture of a herbarium specimen, or a scanning electron micrograph".

A neotype is a "new type", i.e. an element designated to serve as the type that does not belong to the original material of a name (Art. 9.8). In this sense, neotypifications stand in an analogous situation to that of the indication of types of names of new species and infraspecific taxa (Art. 40.4), in that a completely new element is being selected as a nomenclatural type. Despite this similarity, the current version of the *Code* still allows the selection of a drawing or a photograph as neotype (Art. 9.8). We argue that the *Code* should be amended to allow only specimens to be designated as neotypes, microscopic algae and microfungi excepted (see Art. 40.5). A starting date will permit illustrations previously designated as neotypes to retain their type status. Also, it is important to highlight that illustrations would still be eligible to be designated as epitypes (see Art. 9.9), supporting the application of the type when needed.

Also relevant is the matter of inadvertent neotypifications (see Prado & al. in *Taxon* 64: 651. 2015) based on illustrations caused by misunderstandings regarding the nomenclatural status of photographs of specimens (see Staples & Prado in *Taxon* 67: 833–835. 2018).

According to Art. 9.10 of the *Code*, those incorrect typifications (e.g. Austin in *Ann. Missouri Bot. Gard.* 60: 403. 1973; Ronchi & al. in *Syst. Bot.* 41: 166. 2016) are to be automatically corrected to neotypifications. The approval of the present proposal would preclude future instances of this type of error from being effective typifications.

Based on the above comments we are proposing the following change to the *Code*.

(011) Add the following text to Art. 9.8 (new text in bold):

"9.8. A neotype is a specimen or illustration selected to serve as nomenclatural type if no original material exists, or as long as it is missing (see also Art. 9.16 and 9.19(c)). A neotype designated on or after 1 January 2025 must be a specimen, except for names of non-fossil microscopic algae and non-fossil microfungi, for which the type may be an effectively published illustration if there are technical difficulties of specimen preservation or if it is impossible to preserve a specimen that would show the features attributed to the taxon by the author of the name."

Acknowledgements

We are grateful to Mats Thulin (Uppsala Universitet) for contributing to the conceptualisation of the present proposal, and to Nicholas Turland (BGBM, Freie Universität Berlin) for improving this proposal.

(012) Proposal to modify Article 9.12

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Art. 9.4 has been amended in the *Shenzhen Code* (Turland & al. in *Regnum Veg.* 159. 2018) to make it clear that original material includes illustrations published as part of the protologue irrespective of whether or not they may have been used in the preparation of the validating description or diagnosis. In designating a lectotype, Art. 9.12 mentions as original material the illustration(s) cited in the protologue, but does not refer to the illustration(s) published as a part of the protologue. We are therefore proposing the following changes in Art. 9.12.

(012) Modify Art. 9.12 as follows (new text in bold, deleted text in strikethrough):

"9.12. In lectotype designation, an isotype must be chosen if such exists, or otherwise a syntype or isosyntype if such exists. If

no isotype, syntype or isosyntype is extant, the lectotype must be chosen from among the paratypes if such exist. If none of the above specimens exists, the lectotype must be chosen from among the ~~illustrations and uncited specimens and cited and uncited illustrations~~ that comprise the remaining original material, if such exist."

Acknowledgements

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Research Article

Association between Interpersonal Social Support and Perceived Depression among Undergraduate College Students of Kolkata during Unlock Phase of COVID-19 Lockdown

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Abstract: Present study aimed at finding out the interpersonal social support and perceived depression among under graduate college students of Kolkata during unlock phase of covid-19 lockdown. Two random samples of 200 participants (100 males & 100 females) aged 18 to 20 years residing in Kolkata were selected. The Beck Depression Inventory – Second Edition (BDI-II) and Interpersonal Support Evaluation List (shortened version) along with a general information schedule were administered on selected samples through online. Findings suggest that the as female college students scored higher in depression than male students and in case of social support female college students scored comparatively less than male students during unlock phase II for Covid-19 pandemic. Social support can be considered to be protective force against depression and there was a negative spiral between social support and depression. Results also confirmed that students are less depressed when they get more social support and especially the tangible support. Persons with strong social support are better able to cope with stressors, whereas those with less support may be more vulnerable to the adverse effects of stress, such as depression.

Keywords: Interpersonal Social Support, Perceived Depression and unlock phase.

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INTRODUCTION

Originating as a cluster of unexplained cases of pneumonia in Wuhan, China, novel coronavirus disease – officially designated as COVID-19 by the World Health Organization – has reached the level of a pandemic, affecting countries all across the world. With the world battling one of the biggest health emergencies in recent times, the coronavirus has brought with it a mental health pandemic as well. The uncertainty of the lockdowns across the world along with the fear and anxiety of the disease has taken a toll on mental health of a greater number of people. As a life threatening disease, we can consider COVID-19 outbreak as a specific stress. Psychosocial responses towards infectious disease outbreaks are variable and can range in intensity, including feelings of anxiety, a sense of shame, failure or weakness of the individual and society; an underestimation of likelihood of survival; an overestimation of likelihood of infection [1]; an urge to take flight from the outbreak; excessive, inappropriate adoption of precautionary measures; and increased demand for healthcare services during a critical shortage [2].

Widespread outbreaks of infectious disease, such as COVID-19, are associated with psychological distress and symptoms of mental illness [3]. With the global development of the coronavirus disease (COVID-19) outbreak, the psychological issues which accompany this pandemic have rapidly compounded its public health burden [4]. Emerging research assessing the mental health implications of COVID-19 has identified a heightened prevalence of moderate-to-severe self-reported depressive and anxious symptomatology among the general public [5]. Psychiatrists across the world should be aware of these manifestations, their correlates, and strategies to manage them that encompass both the needs of specific populations [6] and the precautionary measures necessary to contain the spread of COVID-19 [6]. Many studies have demonstrated the impact of infectious disease outbreaks on public mental health. These types of epidemics lead the public to experience psychological problems such as post-traumatic stress disorder, psychological distress, depression and anxiety [7]. Some studies have shown that post-traumatic stress disorder is closely related to depression and other psychological problems [8].

Students' Perception Towards e-learning through Online Sessions amidst Covid-19 Pandemic Situation

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ABSTRACT: Present study aimed at finding out the college students' perception towards e-learning in respect of four domains i.e., perceived usefulness of e-learning, perceived ease of use of e-learning, attitude towards using e-learning & intention to use e-learning during this pandemic situation. Two random samples of 309 Undergraduate college students (152 males and 157 females) studying in several undergraduate degree colleges affiliated to Calcutta University were selected. Students' Perception of E-learning Questionnaire (R. S. Mamattah, 2016) along with a general information schedule were administered on selected samples through online. Findings suggest that the perception of e-learning partially varied according to certain study variables viz., gender, residing areas, using type of electronic gadgets, academic years & educational programmes on the basis of four above mentioned domains.

KEYWORDS: students' perception, e-learning, pandemic situation.

I. INTRODUCTION

The Covid-19 pandemic has made a global impact in the past few months and continues to hit most of the sectors, with education being one of the most affected ones. Students across the world are losing valuable time in their education during the imposed lockdown amidst fears of pandemic. The situation has forced the schools & colleges to shut down and the students to stay at home.

No wonder, the children as well as parents feel emotionally and psychologically drained at this juncture. At such a time, the extended lockdown period is forcing the education sector in India to rapidly evolve. Most educational institutions have come up with the idea of online classes for students to start their respective academic years, instead of wasting time due to the delay in reopening of institutions.

A learning system based on formalised teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning. Terms such as "open education," "distance education," "distance learning," "virtual learning," "remote learning," "online learning," and "e-learning" are now part of educators' everyday lexicon. Use of such terminology helps to define and shape the creative innovations taking place. However, many overlaps can be seen within these terms. Urdan and Weggen (2000), for instance, found that online learning constitutes just one part of e-learning; and further define it as learning processes that take place via the Internet and in blended classroom contexts. They specified that e-learning covers a wide spectrum of applications and processes, including virtual classrooms and digital collaboration.

The term "e-learning," for example, has generated many different definitions according to Carry and Willis (2001), who broadly define e-learning as any form of learning that utilizes a computer or technological network for delivery, interaction, or facilitation. Becker (1991) opines that e-learning covers a wider set of applications and processes, which include Web-based learning and virtual classrooms. Hall and Snider (2000) define e-learning as the process of learning via computers over the Internet and Intranets. For the purposes of this article, the author will say that e-learning can be defined as "acquisition and use of information distributed and perceived by technological means."

E-learning comes in three different types – fully-online, mixed mode (also known as hybrid or blended learning), and web assisted (Anastasiades & Retalis, 2001). In fully-online learning, there are no physical contacts between the learner and the instructor, everything is done fully-online through the use of internet and its technologies. Unlike in face-to-face learning which enables face-to-face interaction, between learners and with instructors, in fully-online, this is not the case. Learning materials, assignments, teaching and learning are all done online (Young, et al, 2008).

ARTICLE

Ruthenocycles of benzothiazolyl and pyridyl hydrazones with ancillary PAHs: Synthesis, structure, electrochemistry and antimicrobial activity

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Two types of bivalent ruthenium complexes [RuL^{Py}(CO)Cl(PPh₃)₃] **3** and [RuL^{Benz}(CO)Cl(PPh₃)₃] **4** were synthesized starting from [RuH(CO)Cl(PPh₃)₃] and heterocyclic hydrazonoligands **1** and **2** respectively. X-ray diffraction studies reveal that in both type of complexes, the ligands behave as monoanionic bidentate N_{hydrazonyl} and N_{pyridyl}/N_{benzothiazolyl} donors towards ruthenium(II), thereby furnishing four-membered metallacycles. The multiple transitions in the electronic spectra have been elucidated by Time Dependent Density Functional Theory (TDDFT). The redox active nature of both **3** and **4** have been substantiated from the well-defined oxidative responses and theoretical scrutiny corroborates that one of them is exclusively ligand centred while the other one is chiefly due to the Ru^{II}/Ru^{III} oxidation. Both the type of complexes exhibit a significant antimicrobial activity, although the activity of **4** is more prominent, particularly over *Pseudomonas*. These are analyzed by measuring ZOI, MIC as well as extent of membrane damage and protein leakage studies. The complexes probably cause free-radical facilitated oxidative damage to the bacterial cells during the course of their activity.

Introduction

Among the major advances in medical science has been the development of antimicrobials that are the most indispensable armaments in combating bacterial infections.¹ Consequently, antibacterial substances are imperative in treating infectious diseases caused by pathogenic bacteria like *Enterococcus*, *Staphylococcus*, *Enterobacter*, *Klebsiella pneumoniae*, *Acinetobacter* and *Pseudomonas aeruginosa*.² It is owing to the extensive usage of antibiotics that have rendered such pathogenic bacteria progressively more resistant to commercially accessible antimicrobial agents, thereby reducing the competence of treatment and subsequently leading to significant economic losses.³ The escalating cases of microbial resistance has become a foremost challenge to the scientific community since it may create a global menace to human life.⁴ Therefore, the synthesis and exploration for new antimicrobials has become a prime requisite to sustain human

life. In the recent past, several hydrazone derivatives have been screened for their analgesic,⁵ anti-inflammatory,⁶ antioxidant,⁷ anticonvulsant,⁸ antiparasitic,⁹ antitubercular,¹⁰ anti-HIV¹¹ and anticancer¹² as well as antimicrobial¹³ activities. Interestingly, the biological activity of hydrazones have been found to be appreciably improved upon coordination to ruthenium(II). This may be attributed to their ability to mimic iron when bound to biomolecules.¹⁴ Thus, the synthesis of new ruthenium hydrazone complexes and exploration of their biological activities is significant for the further advancement in the medicinal research and welfare of the society.

In this connection and also as a part of our pursuit for new antimicrobials, we have designed and efficaciously synthesized three pyridyl hydrazone ligands of type HL^{Py}**1** and two benzothiazolylhydrazone ligands of type HL^{Benz}**2** containing pendant polyaromatic hydrocarbons (PAHs). The design of the ligands was based upon the well-known biological activity as well as fascinating pharmacological profile of the benzothiazole framework. In fact, benzothiazole is still one of the well understood resourceful group that can exhibit antimicrobial activity¹⁵ and its derivatives are characterized by diverse biological functions. The dangling polyaromatic hydrocarbons, especially the pyrene moiety are known to display remarkable fluorescence and this property may be suitably exploited for biological and bio-imaging investigations.¹⁶ These ligands have been employed to isolate the heterocyclic hydrazone derived four-membered ruthenocycles of type [RuL^{Py}(CO)Cl(PPh₃)₃] **3** (**3a**, **3b**, **3c**) and [RuL^{Benz}(CO)Cl(PPh₃)₃] **4** (**4a**, **4b**) upon treating [RuH(CO)Cl(PPh₃)₃] with **1** and **2** respectively. The complexes

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[†] Electronic supplementary information (ESI) available: X-ray crystallographic data for **3a**, **3b**, **3c** and **4b**, selected experimental and theoretical bond parameters, absorption spectra, electrochemical data, NMR spectra of all compounds, relevant DFT results. CCDC 1887300(**3a**), 1937129(**3b**), 1948734(**3c**) and 1951462(**4b**). For ESI and crystallographic data in CIF or other electronic format See DOI: 10.1039/x0xx00000x

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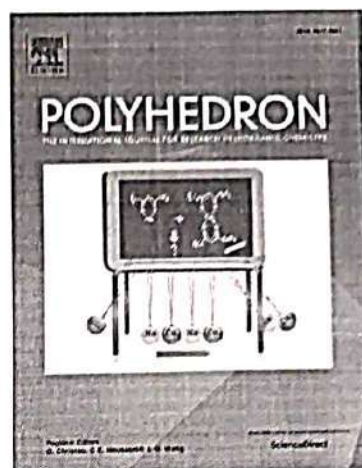
Rhodium assisted *peri*-C–H activation in benzothiazolyl-hydrazone derivatized pyrene

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Rhodium assisted *peri*-C–H activation in benzothiazolyl-hydrazone derivatized pyrene

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Abstract

Benzothiazolyl hydrazones incorporating polyaromatic pyrene moiety, **1** (H_2L^{Pyr}), have been smartly employed as a directing group (DG) to bring about the rhodium assisted C–H bond activation at the *peri* position of pyrene. The formation of *peri*-metallated $[Rh^{III}(L^{Pyr})(H)(PPh_3)_2]$ **3** is a logical consequence of its co-product, a dihalo complex $[Rh^{III}(HL^{Pyr})Cl_2(PPh_3)_2]$ **2**, in due course of the reaction between the ligand and Wilkinson's catalyst. The initial formation of the complex **2** in the initial stage of the reaction has been envisaged as the driving force for the generation of organometallic complex **3**, where paucity of chloride ion triggers the tridentate coordination mode $[L^{Pyr}]^{2-}$ via *in situ* C–H activation. The underlying mechanism of formation of **3** has been observed to proceed via oxidative addition, involving a two electron transfer from the appropriate electron reservoir $[Rh^I]$ to the ligand scaffold and this is accompanied by an intramolecular ligand to metal hydride transfer via a PCET pathway. Complexes **2** and **3** have been found to be redox active and are prone to oxidation at moderate potentials where the responses are analyzed to be exclusively ligand-centred in nature. Significantly, cyclometallated complex is more prone to oxidation relative to the non-activated compound, **2**. The redox event has been meticulously scrutinized by DFT, revealing the destabilization of HOMO in **3** by ~ 0.5 eV in comparison to **2**. Both complexes provide rich optoelectronic features that have been analyzed to be predominantly 1ILCT in nature.

Keywords: Hydrazone, Directing group (DG), C–H activation, Hydride transfer, Electrochemistry.

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Screening Data Reveals that *Spirogyra triplicata*, a Fresh Water Algae Induces Robust Anti-Proliferative Activity Against A549 Cells

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ABSTRACT

Introduction: Algae comprise a promising source of novel components with potent therapeutic agents. In particular, algae have been considered as a potential source of new bioactive compounds. The antioxidant data of our previous study with six different algal methanolic extract reveals the presence of high antioxidant, total phenol content and total flavonoid content in *Spirogyra triplicata*. Thus, we further focused on screening the anti-proliferative activity of six different green algae on five different cancer cell lines like MCF7, A549, HEPG2, REH, MOLT4. **Methods:** To fulfill our aim we performed MTT assay for testing anti-proliferative activity and DAPI staining for observing nuclear morphology. We also looked into the metabolomic profiling of *Spirogyra triplicata* by GC-MS chemometric study. **Results:** The result indicates that after 24 hours of treatment with methanolic extract of *Spirogyra triplicata* A549 was the most sensitive cell line with IC_{50} value of $24.07 \pm 1.09 \mu\text{g/ml}$. Followed by *Rhizoclonium fontinale* and *Hydrodictyon reticulatum* with IC_{50} value of $25.97 \pm 1.94 \mu\text{g/ml}$ and $32.50 \pm 1.97 \mu\text{g/ml}$ respectively. The HEPG2 cell line was the second most sensitive cell line against *S. triplicata* with IC_{50} value of $30.20 \pm 1.45 \mu\text{g/ml}$. The MOLT4 cell line was detected as most resistant cell line against the green algal extract in this study. Though the methanolic extracts of six green algae showed maximum to moderate anti-proliferative activity on different cancer cell line but no significantly affect on normal PBMC was observed. Nuclear fragmentation was observed in a dose dependent fashion by DAPI staining on A549 cells treated with methanolic extract of *Spirogyra triplicata*. We further looked into the chemo profiling of *Spirogyra triplicata* by GC-MS analysis. The result of GC-MS clearly indicates presence of nineteen major components and twenty-three minor components which have more or less bioactivity and would help in therapeutics in future. **Conclusions:** In brief this study indicates for the first time that green algae *Spirogyra triplicata* induces anti-proliferative activity specifically against A549 cell but not in normal PBMC. It can be concluded that *Spirogyra triplicata* holds a great promise as a good repository of anti cancer compounds which may be used in future drug discovery.

Key words: *Spirogyra triplicata*, Anti-proliferative, A549, GCMS.

INTRODUCTION

Cancer is a major health problem characterized by uncontrolled cell proliferation and its propagation.¹ Statistical report of GLOBOCAN reveals that 18.1 million new cancer cases evolved within which 9.6 million cancer deaths eventuated in 2018 worldwide.² Cancer treatment follows chemotherapy using cytotoxic drugs, radiation therapy and surgery.³ Though all these procedure have been reported to combat this dreaded disease, people still suffers with undesirable side effects.⁴ The use of plant-based bio-products for cancer treatment is rapidly growing in medical practices.⁵ Thus our vision was to hunt more natural sources for the treatment of cancer with minimum side effects. Scientists worldwide are engaged in designing the targeted therapies that can exterminate cancer cells without harming normal one. Natural products like algae,⁶ angiosperms,^{7,9} lichens,¹⁰ Mashroom¹¹ have been a continuous source of medicines to treat diseases and injury. Epidemiological studies proclaimed that the people of Asian countries who

consumes high amount of fish and seafood have low incidence of particular type of cancers such as lung, breast, colorectal and prostate cancers.¹² Reports consider algae as a repository of promising novel phytochemical as a source of biomedicine.¹³ Such therapies primarily try to understand how and by what mean cancer cells are different from normal non-transformed cells. It is explicit that cancer cells and normal cells are morphologically and behaviorally different. Current information suggests that bioactive components extracted from algae, as well as methyl jasmonate (a natural compound derived from the plant of jasmonates family), seem to have anti-cancer activities through multiple mechanisms of action, including downregulation of cancer-cell proliferation and metastasis, and through the promotion of apoptosis of cancerous cells.¹⁴ Many algae are still untouched to unmask. After getting positive results in antioxidant activity of some green algae, our focus was to check the anti-proliferative activities of six green algae in human cancer and metabolomic studies of the most potent

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Characterization of k -smoothness of operators defined between infinite-dimensional spaces

Arpita Mal , Subhrajit Dey & Kallol Paul

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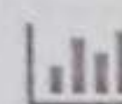
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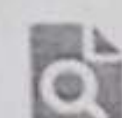
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Characterization of k -smoothness of operators defined between infinite-dimensional spaces

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ABSTRACT

We characterize k -smoothness of bounded linear operators defined between infinite-dimensional Hilbert spaces. We study the problem in the setting of both finite and infinite-dimensional Banach spaces. We also characterize k -smoothness of operators on some particular spaces, namely $\mathbb{L}(\mathbb{X}, \ell_\infty^n)$, $\mathbb{L}(\ell_\infty^3, \mathbb{Y})$, where \mathbb{X} is a finite-dimensional Banach space and \mathbb{Y} is a two-dimensional Banach space. As an application, we characterize extreme contractions on $\mathbb{L}(\ell_\infty^3, \mathbb{Y})$, where \mathbb{Y} is a two-dimensional polygonal Banach space.

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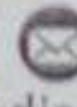

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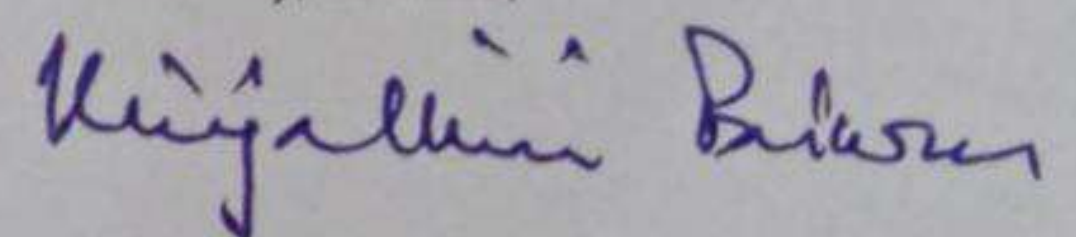
1. Introduction

The problem of characterizing k -smooth operators defined between arbitrary Banach or Hilbert spaces is relatively new but an important area of research in the field of geometry of Banach spaces. There are several papers including [1–6] that contain the study of k -smoothness of operators on different spaces. In this paper, our objective is to study the k -smoothness of bounded linear operators defined between infinite-dimensional spaces. We first fix the notations and terminologies to be used throughout the paper.

Let \mathbb{X} , \mathbb{Y} denote Banach spaces and \mathbb{H} denote Hilbert space. Throughout the paper we assume that the spaces are real unless otherwise mentioned. The unit ball and the unit sphere of \mathbb{X} are denoted by $B_{\mathbb{X}}$ and $S_{\mathbb{X}}$, respectively, i.e. $B_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| \leq 1\}$, $S_{\mathbb{X}} = \{x \in \mathbb{X} : \|x\| = 1\}$. The space of bounded (compact) linear operators between \mathbb{X} and \mathbb{Y} is denoted by $\mathbb{L}(\mathbb{X}, \mathbb{Y})$ ($\mathbb{K}(\mathbb{X}, \mathbb{Y})$). If $\mathbb{X} = \mathbb{Y}$, then we write $\mathbb{L}(\mathbb{X}, \mathbb{Y}) := \mathbb{L}(\mathbb{X})$ and $\mathbb{K}(\mathbb{X}, \mathbb{Y}) := \mathbb{K}(\mathbb{X})$. \mathbb{X}^* denotes the dual space of \mathbb{X} . An element $x \in S_{\mathbb{X}}$ is said to be an extreme point of the convex set $B_{\mathbb{X}}$ if and only if $x = (1 - t)y + tz$ for some $y, z \in B_{\mathbb{X}}$ and $t \in (0, 1)$ implies that $y = z = x$. The set of all extreme points of $B_{\mathbb{X}}$ is denoted by $\text{Ext}(B_{\mathbb{X}})$. For $x, y \in \mathbb{X}$, let $L[x, y] = \{tx + (1 - t)y : 0 \leq t \leq 1\}$ and $L(x, y) = \{tx + (1 - t)y : 0 < t < 1\}$. A Banach

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Foreword

Mahatma Gandhi National Council of Rural Education (MGNCRE), Department of Higher Education in the Ministry of Human Resource Development, Government of India, brings out the Sixth issue of its Journal in the field of Rural Community Engagement and Rural Education to diffuse development research and scholarly information as part of meeting its objectives.

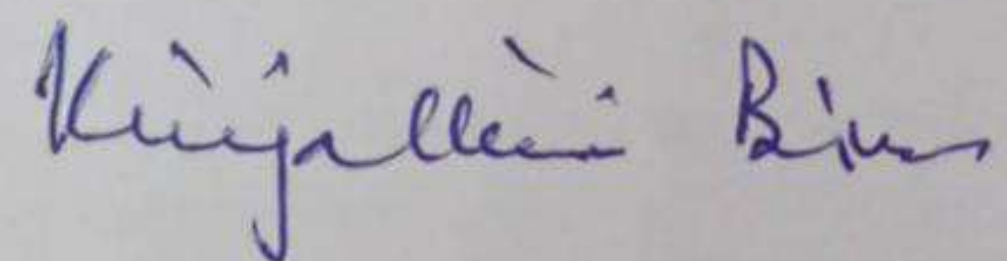
The blind peer reviewed Journal's scope has been identified broadly to cover the areas of Academia-Rural Community Engagement and Higher Education focusing on Rural Concerns. Areas covered include: Rural Education, University-Community Engagement, Rural Tourism, Rural Entrepreneurship, Rural Management and Rural Communication among other aspects of rural concerns. The Journal publishes research papers, review papers, case studies, including Notes on current issues of concern to the Rural Community Engagement and Rural Education sectors. Efforts have been made to identify potential authors and scholars who have been working in rural community engagement and rural education through the journal databases and the literature scan in the field. Request letters have been sent to the research institutes and universities in India and also to the individual scholars and academics to contribute their research manuscripts for publishing in the journal.

All the manuscripts received have been put for anti-plagiarism verification and those articles which have more than 25% of similarity have been sent back to the authors concerned to minimize and edit their papers. Further, those articles which were well within the limits of plagiarism have been sent to the identified Reviewers and Peer Reviewers to review and to offer their remarks on the papers about their worthiness and also to suggest any corrections needed in the paper before they are accepted for publishing. This is the Sixth issue of the Journal based on recommendations by peers. The journal includes research articles and caselets on rural concerns by academicians and management students from IRMA and XSRM. We have also included few caselets on Waste Management, a sector in which MGNCRE has made great strides through curricular and academic interventions.

The Journal takes pride in having eminent scholars, researchers and administrators on its Editorial Board. The Journal is intended primarily for the academia, policy makers, departments in the government and for all others interested in Rural Community Engagement and Rural Education. Majority of India still lives in villages and so the topic of rural education in India is of utmost importance. Further, we firmly believe that the Journal will meet the objective of disseminating the current developments in rural community education and engagement.



Dr. W G Prasanna Kumar
Chairman MGNCRE



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Marginalisation of Santhals in Rural Economy of Bengal

Prof. Atrayee Saha

Abstract

The field work in Bardhaman District of West Bengal has been done for a period of one year. This paper is part of PhD thesis on Agrarian relations and agricultural development in West Bengal under the supervision of Professor Amit Kumar Sharma. Tribal groups in rural economy of Bengal are in dire need of developmental works. My fieldwork in two villages, namely, Paarhaati and Gangte of Memari II block of Bardhaman district show that the rural economy of Bengal is not only reeling under lack of agricultural development, but it is also affected by discrete division along caste and class lines where the dominant castes; the sadgops, enjoy an important position along with the aguris and the namashudras (to some extent) in the rural economy. In the rural economy, the worst affected is the social and economic condition of the adivasis, residing in the two villages of the district, who are mostly the santhals and work as agricultural and landless labourers. These tribal groups have migrated from the districts of Purulia, Bankura and Birbhum to settle in Bardhaman. These groups are mostly engaged in the agricultural occupation as wage labourers and are completely dependent on the local landlords and self-help groups for their financial requirements. In this paper, I have tried to point out the dynamics of the rural society and analyse the difficulties faced by the tribal groups by taking narratives of the landless labourers belonging to this group from the villages.

Keywords: agrarian caste, agrarian class, social inequality, dominant caste, agricultural infrastructure

Introduction

"The tribal people of India are a virile people who naturally went astray sometimes. They quarrelled and occasionally cut off each other's heads. These were deplorable occurrences and should have been checked. Even so, it struck me that some of their practices were perhaps less evil than those prevailing in our cities...." Speech delivered by Shri Jawaharlal Nehru at the opening session of the Scheduled Tribes and Scheduled Areas Conference in June 1952¹.

To a layman tribal population in India has a typical identity which has always segregated them from the rest of the 'so-called' civil society. While their 'congeniality to the soil', 'their closeness to natural existence' or 'their untutored savage survival', have been a form of

expression of beauty and difference of life and living from the 'urban' and 'sophisticated' product of modern world. Equally they have been relegated from the mainstream society by denoting them as backward and unwilling to development, as an important excuse for the lack of initiatives taken after Independence for their socio-economic and political revival. Rousseau's 'back-to-nature' movement followed by the emergence of an attitude to life which has been valorised by the idea of 'primitivism' and studied in great details by the American scholars like, Lovejoy, Boas and Margaret (Elwin 1973: 12)², comes to a naught when reality of their existence comes alive. The tribal problem in India is a major problem which has remained unanswered since decades. The majority of the tribes in India live in extreme poverty and illiteracy. Their sustenance for some of the groups is still dependent on the forest plants and animals where they dwell.

¹ See the manual of *The Tribal People of India*, published by the Ministry Of Information and Broadcasting, Government of India. Published in July 1973. See chapter 1, "The Tribal Folk" by Jawaharlal Nehru.

² Ibid. see chapter 2, "Do We Really Want to Keep Them in a Zoo?" by Verrier Elwin.

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Polyaromatic hydrocarbon derivatized azo-oximes of Cobalt(III):
ligand-redox controlled electro-catalytic oxygen reduction reaction

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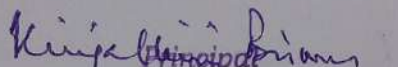


THE GEOGRAPHICAL
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Swarupa Datta
29/12/22*

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 22/12/22

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Labour Absorption in Indian Agriculture: A Macro Level Analysis

Suvasree Dutta (Dasgupta)*

Abstract : Besides land and technology, labour force is undoubtedly an important agricultural input. Therefore, a detailed insight into the trend of work-force participation is also essential in understanding and determining the level of economic activity performed by the nation, as a whole. This paper thus aims to analyse the recent dynamics of labour absorption in Indian agriculture. This study is basically a macro level analysis covering the entire country as a whole. The paper focuses on the changes in the employment structure in India over the past four decades and identifies the spatio-temporal patterns regarding the employment conditions in the agricultural sector over the period of 2001-2011. It makes a modest attempt in mapping out the state level relationship between the agricultural workforce and state domestic product along with a statistical analysis that measures a state's occupational specializations, in terms of the sharp decline in the size of cultivators and the bulging agricultural labour category in a decade, relative to the national average.

Key Words: Indian agriculture, labour absorption, state domestic product, cultivators and agricultural labourers.

Introduction

Labour force is often considered to be the primary factor of production and a major resource factor throughout the world, not only because of its productive value but also because it initiates other factors to make them useful for production purposes. Therefore, the size of the labour force in a country is of crucial importance for determining the level of economic activity performed by the nation, as a whole.

In general, the sectoral composition of employment in different parts of the world (Table 1) shows that unlike the developed nations, a large proportion of the workers of any developing nation which is experiencing rapid rising populations, does not enter into formal wage employment but instead are engaged in self-employment or as unpaid family workers, such as in agriculture and subsistence farming in particular. In fact, India's employment pattern mirrors those in other developing regions (Srinivasan, 2013). As per 2011 census, 54 per cent of the total workforce in India is engaged in agriculture and allied activities, while industrial and tertiary sector accounts for 22 per cent and 24 per cent of the total labour force, respectively.

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22/12/22

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রবীন্দ্রগল্পে রূপকথার ভাব ও রূপ ড. মণিশংকর অধিকারী

সেই কবে ঠাকুরমা নিদ্রামানের মুখে মুখে রচিত হয়েছে রূপকথা; তার প্রসারও ঘটেছে মুখে মুখে। শিশুর গল্প শোনার ইচ্ছাকে যুগে যুগে শক্ত করে আসছে এই রূপকথা। কিন্তু শুধু শিশুচিন্তে নয়, পূর্ণাঙ্গ মানুষের মনেও এর প্রভাব অত্যাধিক-অত্যাধিক তার ভাব করে চলে। ছোটবেলার শোনা রূপকথার গল্পে যে ভাব, ভাবনা, কল্পনা শিশুচিন্তে ধরা বাঁধে তার বেশ বুজো যায়সেও-রূপ হস্তে কিছুটা বদলে যায়-মনকে বেশ সজীব ও রসাল করে রাখে। রবীন্দ্রনাথ ঠাকুরের ক্ষেত্রেও তা ঘটেছে।

রবীন্দ্রনাথ তাঁর ছেলোবেলার গল্প বলতে গিয়ে শৈশবে রূপকথা শোনার স্মৃতির কথা উল্লেখ করেছেন বিভিন্ন জায়গায়। ছেলোবেলায় তিনি শব্দী, তিনকড়ি দাসী প্রভৃতির মুখ থেকে রূপকথার গল্প শুনে শুনে তুলিয়ে যেতেন যুগের পুরীতে। রূপকথার অপার রহস্য তাঁকে নিয়ে বেশ হুমসারাজ্যে। রবীন্দ্রনাথ তাঁর রূপকথা শোনার স্মৃতি সম্পর্কে হিন্দীরাঙ্গণীকে একটি চিঠিতে লিখেছিলেন-

"আজকাল ওরূপক-খানিকটা বেড়াতে বেড়াতেই চাঁদের আলো ফুটে ওঠে তখন চাদের সীমাহীন হৃদয় বালি চাঁদের আলোতে এমন একটা ছায়াবর্তিত কামিনিকে অকারণ ধরল করে, মনে হয় এ বেনে স্বভাবিক পৃথিবী নয়, আমারই মনের একটা অপরাধ ভাব। কোনকালে ছেলোবেলার তিনকড়ি দাসীর কাছে রাত্রে মশারির মধ্যে শুয়ে রূপকথার প্রসঙ্গে একটা কবিতা শুনেছিলাম, 'তাপাত্তর মাঠ-জোছনার ফুল ফুটে রয়েছে'-যখন জোছনার রাস্তা করে বেড়াই তিনকড়ি দাসীর এই কথাটি মনে পড়ে।"

অন্য এক জায়গায় লিখেছেন,-"ছেলোবেলায় যদি আরব্য-উপন্যাস রবিন্সন ক্রুসোর না পড়তুম, রূপকথা শুনতুম, তা হলে নিশ্চয় বলতে পারি ঐ নদী তীর এবং মাঠের প্রান্তের মূর দুখা সেখা ঠিক এমন ভাব মনে উদয় হত না-সমস্ত পৃথিবীর চেহারা আমার পক্ষে অর এক রকম হয়ে যেত। এইটুকু মানুষের মনের ভিতরে বাস্তবিক কাল্পনিক জড়িয়ে জড়িয়ে কী-যে একটা জাল পাকিয়ে আছে!"

বালাকালে শোনা রূপকথার জগৎ রবীন্দ্রমননে বিশেষ প্রভাব বিস্তার করেছিল। তাঁর বহু কবিতা এবং কয়েকটি গল্পে এই রূপকথার ছায়া লক্ষ্য করা যায়। 'গল্পওছ'র দুটি গল্প 'একটা অজানা গল্প' এবং 'অসম্ভব কথা' রূপকথার আনলে রচিত। 'একটা অজানা গল্প'-এ রূপকথার প্রভাব প্রত্যক্ষভাবে লক্ষ্য করা যায়। উপন্যাস, বাচনভঙ্গি সবকিছু থেকেই গল্পটির মধ্যে রূপকথা সুলভ পরিবেশ সৃষ্টি হয়েছে,

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বনফুলের উপন্যাস

ড. মণিশঙ্কর অধিকারী

তারপন্ন লিখেছেন, 'জীবন এক ছোট কেন্দ্র'। এই 'ছোট' জীবনে কত মানুষের
-কার, হতাশা-ভালোবাসা, দুঃখ-বেদনা-যশা, ব্যর্থতা-সফলতা চিকিৎসক হবার সূত্র
ল (১৮৯৯ - ১৯৭৯) অত্যন্ত কাছ থেকে প্রত্যক্ষ করেছিলেন। তাদের মনের গভীরে
। করে তিনি তাদের বেদনার স্রোত করেছেন। 'জন্ম' উপন্যাসে জীবন সম্পর্কে তাঁর
হত—

"জীবনই তো কাছ, প্রত্যেক জীবনের হাসি-করা, হতাশা-বৈরাগ্য, প্রকৃতির
এক সেই নীচন হইতে জীবনকে মুক্ত করিবার ব্যর্থ প্রয়াস, ইহাই মানব-জীবন
ইহাই মানব-জীবনের কথা। ... ছোট খেঁচায় বড় পখির পাখ-আপটনির যে
টি- মনুষ্য-জীবনের চিরন্তন ট্রাজেডি, প্রকৃতি-শাসিত মানুষের দুর্ভাগ্য, মৃত প্রকৃতি
কৃতির অবলম্বন, এই উভয়ের দ্বন্দ্বই কাব্যলেখকের আলো ছায়।"

আবার 'রূপকথা এক তারপন্ন' উপন্যাসে তিনি লেখেন—

"প্রত্যেকেই জীবন এক। জন্ম হয়, কিছুদিন ছুটফট করে, তারপন্ন মারা যায়।
ই সুখভোগ করে। কর্মের অনুসরণে পৃথ পৃথকের চেহারাটি হতে অলোলা আলোকে।
। সোকারে নানা-রকমের জুতো থাকে, কিন্তু আসলে সবই চামড়ার জেরি। কেউ
টি পাত্ত, কেউ বুট, কেউ চোঁটী, কেউ স্যাজল— জ্ঞাও নানা রকম কিন্তু সবাই
সবাই চামড়া।"

মানব-জীবন সম্পর্কে তাঁর এই বাস্তবিক দৃষ্টির পিছনে আছে পটীর অস্তিত্ব ও
। মানুষকে অত্যন্ত কাছ থেকে দেখার সুযোগ। বিভিন্ন প্রয়ে রোগী দেখার সূত্র
র বাস্তব সমস্যা, সর্ববীর্ণতা, হত দরিদ্র মানুষের অসহায়তা তিনি অনুভব

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এবং মহুয়া

(বাংলা ভাষা, সাহিত্য ও গবেষণামূলক মাসিক পত্রিকা)
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জুলাই, ২০২০

সম্পাদক

ড. মদনমোহন বেরা

সহসম্পাদক

প্রবোধ দাস বেরা

মৌমিতা দত্ত বেরা

যোগাযোগ :

ড. মদনমোহন বেরা, সম্পাদক।

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কে.কে. প্রকাশন

গোলকৃষ্ণাচক, মেদিনীপুর, পশ্চিমবঙ্গ।

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কাহাকে : স্বর্ণকুমারীর নারীভাবনার
আলোকে মৃগালিনী
ড.মধিশংকর অধিকারী

ঊনবিংশ শতাব্দীর দ্বিতীয়ার্ধে যে কয়েকজন অত্রপুরবাসিনী নারী সাহিত্য
তথাতে আবির্ভূত হয়েছিলেন তাঁদের মধ্যে অন্যতম স্বর্ণকুমারী দেবী (১৮৫৫-১৯৩২)
বহুমুখে আবির্ভূত হলেও বহুম-প্রতিভার তাঁর প্রতিভা সনে হয়ে যায়নি। শুধু সাহিত্য
রচনা নয়, নানা সামাজিক কর্মকাণ্ডের নেতৃত্বেও তিনি গিয়েছেন। তবু একসঙ্গে
গবেষক-পাঠকের কাছে তাঁর সাহিত্যপ্রতিভাই আকর্ষণের কেন্দ্রবিন্দু হয়ে উঠেছে।
কারণ ঊনবিংশ শতকের কোনও মহিলা সাহিত্যিক তাঁর মতো বহুমুখী প্রতিভার
অধিকারিণী ছিলেন না। কবিতা, গান, নাটক, প্রবন্ধ, গল্প-উপন্যাস রচনার ক্ষেত্রে তিনি
যে প্রতিভার সাক্ষর রেখে গিয়েছেন, যে অসংখ্য দক্ষতার পরিচয় দিয়েছেন সেগুলোর
কোনও নারীর পক্ষেই তা সম্ভব হয়নি।

মহর্ষি দেবেন্দ্রনাথ ঠাকুরের কন্যা ও রবীন্দ্রনাথের অগ্রজা স্বর্ণকুমারী দেবী ১৮৫৫
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প্রথাগত শিক্ষার সুযোগ না পেলেও তিনি গৃহেই বিদ্যাচর্চা করেন। বাংলা, ইংরেজি
ও সংস্কৃত— তিনটি ভাষাতেই তাঁর দক্ষতা ছিল। স্বর্ণকুমারী দেবীর ব্যক্তিগত সাহিত্য
রচনার তাঁকে বিশেষভাবে প্রভাবিত করেছিল। ঠাকুরবাড়ীর আলোকিত পরিমণ্ডলে
কেড়ে ওঠার সুযোগ পেয়েছিলেন তিনি। সাহিত্য রচনার ক্ষেত্রে তাঁর দীক্ষা শুরু ছিলেন
জ্যোতিরিন্দ্রনাথ ঠাকুর। স্বর্ণকুমারী দেবীর বিবাহ-পূর্বকর্তী জীবনে সাহিত্য সাধনার প্রধান
প্রেরণাসূত্র ছিলেন জ্যোতিরিন্দ্রনাথ। ১৮৬৭ খ্রিস্টাব্দের ১৭ই নভেম্বর জনকীনাথ
মোহালের সঙ্গে তাঁর বিবাহ হয়। স্বামীর অনুপ্রেরণায় তাঁর সাহিত্যসাধনা বহুদূর অগ্রসর
হয়। খুব অল্প বয়সেই তাঁর প্রতিভার স্ফূরণ ঘটেছিল। মাত্র একশ বছর বয়সে

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তারশঙ্কর জন্মসূত্রে বীরভূম অঞ্চলের মানুষ। এই রাঢ় অঞ্চলের প্রকৃতি ও মানুষের থেকে তিনি ছিলেন অবিচ্ছিন্ন। বীরভূমের নল-নদী-খাল-বিল-মাঠ-ঘাট-ধর্ম-কর্ম সর্বকিছুর সঙ্গে ওতপ্রোতভাবে তিনি জড়িয়ে ছিলেন। তাঁর শিল্পী মানসের অনেকখানি জুড়ে ছিল রাঢ় অঞ্চলের জন-জীবন, তাদের সংস্কৃতি, ধর্মীয় বিশ্বাস। এই অঞ্চলে বিভিন্ন ক্ষুদ্র-বৃহৎ ধর্মীয় সম্প্রদায় ছিল। শাক্ত, বৈষ্ণব এবং লৌকিক ধর্মের ধারা পাশাপাশি বহমান ছিল। এখানেই আছে ব্যাক্য্যাপার সাধনপীঠ, তারাপীঠ, ৫১পীঠের অন্যতম নলহাটের নন্দাটোবড়ীর মন্দির, বক্তেশ্বরের মন্দির, তঙ্কালীতলার মন্দির। তবু এই রাঢ় অঞ্চল তারশঙ্করের কথায় 'অতি প্রাচীন বৈষ্ণবের দেশ'। এখানে 'কানু বিসে গীত নাই'। জয়সেব-চতুর্দশের জীবনসীলোচ্ছ্বাস বীরভূম। জয়সেব-চতুর্দশ-মিতানন্দের প্রভাব এখনও এখানে বর্তমান। তারশঙ্কর বৈষ্ণব ধর্মে নীকিত ছিলেন না। তাঁর সাক্ষর সবার সম্পর্কে তারাপ্রণব ব্যঙ্গ্যচারী বলেছেন-

"তারশঙ্কর এখন ধরণের সাক্ষর তিনি মহাশঙ্করের সঙ্গে নিজের শক্তিকে মিলিয়ে

নিজের নিজের শক্তি থেকে হারাতে পারেননি। প্রকৃতপক্ষে তার শক্তিই তার জীবনযাত্রার পক্ষে

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Livelihood and Lifestyle of the Fishing Community in Digha-Shankarpur Region: A Case Study of Gangadharpur Village in Purba Medinipur District, West Bengal, India

Suvasree Dutta (Dasgupta)¹ and Lakshmi Sivaramakrishnan²

Abstract : Nearly 16 million people in India are employed in the fishing activities for earning their livelihood. However, according to International Collective in Support of Fish-workers (ICSF) Report 2015, more than 61 percent of these fisherman families in India are still living under Below Poverty Line (BPL) category. Fishing is considered as a principal source of livelihood for a large section of economically underprivileged population of the country, especially in the coastal areas, for example in the coastal villages of Digha-Shankarpur region in West Bengal, where most of the people live below the poverty line. This paper thus makes a modest attempt in analyzing the life style of the sample population of the fishing community living in one of the major fishing zones of West Bengal viz. Digha-Shankarpur region. It also aims to study the socio-economic conditions of the fishermen living in Gangadharpur village of Old Digha and tries to probe into their work culture and level of exposure to the local and global market. It also tries to explore their major present challenges related to their profession and provide some strategic approaches to overcome such hindrances for their future generation.

Key Words: fishery, fishing Community, global and local exposure.

Introduction

The term 'fishing' embraces all aspects of Man's pursuit of the aquatic animals in the seas and in inland waters all over the world. Men were hunters and fishermen before they became cultivators and fishing is therefore one of the oldest occupations of mankind. Fishing in India has also been considered as an important source of livelihood since time immemorial. It has been regarded as supplementary enterprise of the fishermen community on the subsistence level with little external input (NCAP, 2004). However, at present this sector has emerged as an important commercial activity from its traditional role as subsistence supplementary activity.

In the year 2020, India ranked third in fisheries production (after China and Indonesia) and second in aquaculture (after China) among the major fish producing countries in the world. Accordi

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TAXONOMIC STATUS OF SOME RECENTLY DESCRIBED SPECIES OF *TRIPOGON* ROEM. & SCHULT. (POACEAE) FROM INDIA

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Abstract

Tripogon polyanthus Naik & Patunkar and *Tripogon vellarianus* Pradeep, two new species described from Maharashtra and Kerala have been relegated to variety and subspecies of *Tripogon jacquemontii* Stapf and *Tripogon major* Hook.f., respectively. *Tripogon malabarica* Thoiba & Pradeep described from Kerala, adjacent to the type locality of *Tripogon vellarianus* and *Tripogon uma-ganeshii* B.R.P. Rao & M. Anil Kumar from Horsley hills, Andhra Pradesh are new synonyms of *T. major* subsp. *vellarianus* (Pradeep) Sang.Dey & Prasanna. All the taxa (except *Tripogon uma-ganeshii*) are illustrated with the help of photo plates to facilitate identification. A key to the varieties of *T. jacquemontii* are provided.

Keywords: Poaceae; *Tripogon*; Endemics; Synonyms; Status; New Combinations

Introduction

The genus *Tripogon* Roem. & Schult. (Poaceae: Chloridoideae - Tripogoninae) is represented by 28 species in India (Rasingam & Swamy, 2018). Naik & Patunkar (1973) described *Tripogon polyanthus* as a novelty from Maharashtra (India), characterized by 2-lobed lemma with a very minute (1-1.25 mm) median awn and acute, unawned side lobes. It was compared with *Tripogon bromoides* Roth ex Roem. & Schult. having 4-lobed, 3-awned (median and lateral awns present) lemma though it is rather closer to *Tripogon jacquemontii* Stapf and growing sympatric with it. *Tripogon polyanthus* is distinct in bearing 20-50 or more florets per spikelet whereas the number is 10-20 florets per spikelet in *T. jacquemontii*. The inflorescence is obviously much longer and sometimes curved in *T. polyanthus* but except this, it is morphologically very close to *T. jacquemontii* and needs to be treated as a variety of *Tripogon vellarianus* Pradeep, another recently described species,

is similar to *Tripogon major* Hook.f. in having lemma conspicuously narrowed above the middle, apex minutely 2-lobed or subentire, palea distinctly winged on the keels, inconspicuously scaberulous along the margins, apex much variable. However, *T. vellarianus* is relatively robust and tall (30-90 cm high) with linear, flat, ribbon-like leaf blades (8-15 mm wide) and 5-5.5 mm long upper glumes whereas *T. major* is 30-65 cm high with narrow, setaceous leaf blades (0.5-4 mm wide) and 6-9 mm long upper glumes. *Tripogon major* is confined to African subcontinent and hence *T. vellarianus* is treated as a subspecies of *Tripogon major*. *Tripogon malabarica* Thoiba & Pradeep described from Kakkayam, Malabar Wildlife Sanctuary, Kozhikode district, Kerala is conspecific with *T. major* subsp. *vellarianus* described from the adjacent locality, viz., Vellarimala, Kozhikode district, Kerala. Recently, Rao & Kumar (2018) described *Tripogon uma-ganeshii* from Horsley hills, Andhra Pradesh, India which is also similar to *T. major* subsp. *vellarianus*, and hence relegated to its synonymy.

Materials and Methods

Specimens of *Tripogon* from five herbaria viz. BAMU, CAL, DD, K and SUK (Index Herbariorum: <http://sweetgum.nybg.org/science/ih/>) and our own collections in the field were examined. In addition, related literature and the protologue of all published names were reviewed and collated.

The diagnostic characters of *Tripogon* mainly include habit, leaves, lemma and its awns (median and lateral). The taxonomic treatment included accepted names, synonyms, types, morphological description, distribution, habitat, phenology, taxonomic notes and specimens examined. The distribution range of each species in this study was compiled from the World

New genera, a new species, and a key to the genera of Ashieldophyinae (Acari, Eriophyoidea) from India

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Abstract

Two new genera, *Brevishieldophyes* Chakrabarti & Pandit, **gen. n.** and *Mesoshieldophyes* Chakrabarti & Pandit, **gen. n.**, and a new species *Mesoshieldophyes varecae* Chakrabarti & Pandit, **sp. n.** are described. These mites are leaf vagrants. The morphological characters of the afore-mentioned genera and those of *Ashieldophyes* Mohanasundaram are compared. A key for separating the genera within the subfamily Ashieldophyinae is provided. The diagnostic characters of the subfamily Ashieldophyinae are also revised.

Keywords

Ashieldophyes, *Brevishieldophyes* gen. n., comparison, descriptions, *Mesoshieldophyes* gen. n., *Mesoshieldophyes varecae* sp. n., *Brevishieldophyes glochidionae* comb. n.

Introduction

Ashieldophyes pennadamensis Mohanasundaram, 1984, infesting *Casearia tomentosa* Roxb. (Salicaceae) from near the Pennadam Sugar Factory, Arcot district, Tamil Nadu, south India, was the type species for the genus *Ashieldophyes* Mohanasundaram within the new family Ashieldophyidae Mohanasundaram. Later, the family Ashieldophyidae was made one of the subfamilies (Ashieldophyinae) of the Eriophyidae Nalepa (1898)

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Two new species of *Diptilomiopus* Nalepa (Acari: Eriophyoidea) from India

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Original research

ABSTRACT

Two new species, *Diptilomiopus indogangeticus* n. sp., infesting *Ficus tinctoria* subsp. *gibbosa* (Blume) Corner (Moraceae), and *Diptilomiopus mohanasundarami* n. sp., infesting *Mangifera indica* L. (Anacardiaceae), are described from West Bengal, India. *Diptilomiopus holoptelus* Chakrabarti and Mondal and *Diptilomiopus strebli* (Boczek) are possible junior synonyms of *Diptilomiopus integrifoliae* Mohanasundaram and *Diptilomiopus asperis* Ghosh and Chakrabarti, respectively.

Keywords Eriophyoid mites; Diptilomiopidae; *Diptilomiopus indogangeticus*; *Diptilomiopus mohanasundarami*; dye fig; mango

Zoobank <http://zoobank.org/465F8BB9-9D65-4138-B433-D0D12331EF04>

Introduction

During periodical samplings of eriophyoid mites from different host plants in West Bengal, India, two *Diptilomiopus* species on dye fig, *Ficus tinctoria* subsp. *gibbosa* (Blume) Corner (Moraceae) and mango, *Mangifera indica* L. (Anacardiaceae) were collected. In general, mites in the *Diptilomiopus* Nalepa (1916) are mostly distributed in the Oriental region. Newkirk and Keifer (1975) set *Sectipes* Keifer (1962) as a junior synonym of *Diptilomiopus*. Similarly, Hong and Zhang (1997) set *Vilaia* Chandrapatya and Boczek (1991) as a junior synonym of *Diptilomiopus*. Craemer *et al.* (2005) confirmed this synonymy and transferred all additional 16 species described in *Vilaia* to *Diptilomiopus*. At present, 102 valid species of *Diptilomiopus* are known (Craemer *et al.*, 2017; Sur *et al.*, 2018; Amrine 2019, personal communication). So far 9 species of *Diptilomiopus* have been described on plants of the family Moraceae and 5 species on Anacardiaceae (Table 1). In this account, descriptions of two further *Diptilomiopus* species and keys for separating these from closely related species are provided. A note has been provided on *Diptilomiopus strebli* (Boczek, 1992 in Boczek and Chandrapatya 1992) infesting *Streblus asperis* Lour. (Type locality- Dusit zoo, Bangkok, Thailand) and *Diptilomiopus holoptelus asperis* Lour. (Type locality- Kalyani, Nadia, India) suspecting their possible synonymies with *D. asperis* Ghosh and Chakrabarti, 1989 and *D. integrifoliae* Mohanasundaram, 1981, respectively.

Material and methods

Eriophyoid mites were collected and mounted as described by Chakrabarti *et al.* (2017) and Hoyer's medium was used for mounting the specimens. The terminology and classification given by Lindquist (1996) and Amrine *et al.* (2003), respectively, are followed here. The specimens were examined with a phase contrast microscope Leica DM3000 and photographs

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OPEN ACCESS

The Body of Excess : Representation of Female Body in the late 19th Century Medical Narratives and Popular Fiction

Rituparna Das and Balagopal S. Menon

Abstract

Cultural influences play a major role in shaping medical treatise and how they form representative images of female sexuality for producing docile bodies. Medical narratives through ages have tried to exert a moral control over women by medicalization of perceived aberrant conduct. There is a sense of power that comes with scientific training and is implicit in much of the medical writings till date. The authority procured from it has a far-reaching impact culturally as the lay reading public are likely to believe them as absolute truths. From the latter half of the 19th century, medical narratives showed an interest regarding what constituted normality in female sexual behaviour and the boundary at which such desires could be termed as excessive. There was a rise of medical attention to acts of self-pleasuring and how it affected the body. It was accompanied by a developing industry in pornography and the emergence of a new kind of medical narratives that were guided with erotic sensibilities. Popular culture took up the empty space left unexplored regarding the physical effects of female masturbatory habits on the one hand, and paranoia about dire consequences of such transgression on the other. However, the idea of embedding such desires in the textual realm of reading and writing ran common in both medical texts and popular fiction of the period. It had the effect of putting the female reader at stake, representing her as a prototypical victim of imaginative excess. The scientific ideas that are found in the historical studies of Western medicine mostly fail to place them in the socio-political milieu of that period. By employing the theoretical tool used in literary criticism as well as history, this paper attempts to analyse the prejudices, ideologies, and fault line running through the specialized understanding of sexual representation of women.

Key words: Late 19th century England, medical narratives, popular fiction, sexual excess, female reader, female sexuality, historiography of medical texts.

Since the latter half of the nineteenth century, medical narratives showed interest about what constitutes normality regarding female sexual

ARTICLE

Coligand driven diverse organometallation in benzothiazolyl-hydrazone derivatized pyrene: ortho vs peri C–H activation

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Benzothiazolyl hydrazones **1** (H_2L^{PAH}) incorporating polycyclic aromatic hydrocarbons (PAHs) have been fabricated as hemilabile scaffolds and elegantly utilized the inbuilt nitrogen donors as proficient directing group (DG) to bring about the ruthenium(II) assisted C–H activation in PAHs at both peri and ortho positions. An isomeric pair of organometallics having formula $[Ru^{II}(L^{Per})(CO)(PPh_3)_2]$ (peri: **3a**, ortho: **5a**) have been conveniently prepared by varying the $[Ru^{II}]$ precursors with H_2L^{Per} . In contrast, only one type of activated product viz. $[Ru^{II}(L^{Anc})(CO)(PPh_3)_2]$ **3b** has been obtained with 9-anthracene derivative of **1**, H_2L^{Anc} , under analogous reaction conditions. The underlying mechanistic aspects have been elucidated by isolating the thermally unstable intermediates viz. $[Ru^{II}(HL^{Per})Cl(CO)(PPh_3)_2]$ **2a** and $[Ru^{II}(HL^{Per})H(CO)(PPh_3)_2]$ **4a** in due course of peri and ortho C–H activation processes, respectively. Coligand (Cl/H) plays a vital role to bring about the C–H activation at desired positions via formation of either a four- or five-membered metallacycle in **2a** and **4a**, respectively. The activation process vis-à-vis Ru–C bond formation in **3a** can be achieved smoothly from **2a** by thermal transformation route, which proceeds via an initial rupture of Ru–N_{hydrazone} bond. On the contrary, trans influential hydride coligand prefers a five-membered chelate to avoid confrontation with N_{hydrazone} in **4a**, which in turn furnishes exclusively an ortho activation owing to the close approach of the Ru–H bond towards ortho-H in pyrene. The organometallated complexes exhibit oxidative responses at mild potential. EPR and computational studies indicate that redox activity originates from the ligand-centered orbitals. The observed rich optoelectronic features are analysed primarily as ³ILCT admixed with ¹MLCT component by theoretical means, indicating an appreciable accumulation of electron density over the ligand backbone in their ground states.

Introduction

C–H bond activation is a long-standing issue under the exploration in synthetic organic chemistry, primarily owing to its prospect in simplifying varied chemical conversion in an atom-efficient technique.¹ The efficacy of this ingenious synthetic approach have been efficiently applied to the fabrication of pharmaceuticals² and agrochemicals³ as well as certain materials.^{4,5} One of the prime strategy involved in the activation of the aromatic C–H bond is by introducing a directing group (DG) that coordinates a transition metal lying in the vicinity of the aromatic C–H bond, with subsequent activation via cyclometallation.⁶ Since the C–H bond strength is much higher than that of M–C, the thermodynamic barrier for

C–H bond cleavage is expected to be high.⁷ Nevertheless, this can be attained with the aid of chelation of a directing group enabled ligand, which in turn affords organometallacycle at target specific position.⁸ Although C–H transformation of aldehyde-derived hydrazones are documented,⁹ directing ability of benzothiazole blended hydrazones is yet to be explored to bring about aromatic C–H functionalization in polyaromatic hydrocarbons (PAHs). Indeed, the bifunctional groups are enviable for diverse chemical reactivity as they can typically exhibit supplementary flexibility during coordination.

Controlling the site-selectivity of C–H activations is a prime barrier for the advancement of synthetically convenient methodology. In the present work, we report the designed synthesis of a pair of alluring PAH derivatized benzothiazolyl-hydrazone ligands **1**, H_2L^{PAH} (PAH = pyrene and anthracene). They offer two types of nitrogen donors viz. N_{benzothiazole} and N_{hydrazone} apart from the N_{azomethine}. The directing ability of the benzothiazolyl-hydrazone framework has been skillfully exploited towards the site selective activation of C–H bond in the ancillary PAH. Notably, both ortho and peri activations can be accomplished by inducing a subtle variation in the metal precursors, where coligand Cl/H derived from the respective starting complexes plays a crucial role for the differential fate in activation process. This event thus provides a

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* Electronic Supplementary Information (ESI) available: X-ray crystallographic CIF of **2a**, **3a**, **3b**, **4a** and **5a** (CCDC 1887301, 1908528, 1908529, 1943129 and 1943130), Selected Experimental and Theoretical Bond Parameters, Absorption spectra, Electrochemical data, π - π stacking interaction in **2a** and **4a**, NMR spectra of all compounds, Relevant DFT results, See DOI: 10.1039/x0xx00000x.

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REGULAR ARTICLE

Rhodium(III) complex with pyrene-pyridyl-hydrazone: synthesis, structure, ligand redox, spectral characterization and DFT calculation

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Abstract. The pyridylhydrazone ligand incorporating a pendant pyrene moiety **HL** has been synthesized starting from 2-hydrazinopyridine and its coordinating behaviour towards rhodium(III) have been scrutinized. The complex of type $[\text{RhL}(\text{PPh}_3)_2\text{Cl}_2]$, incorporating five-membered chelate ring has been isolated and the structure has been authenticated by single-crystal X-ray diffraction study. The ligand exhibits an oxidative response at ~ 1.2 V upon coordination with rhodium(III) and the optoelectronic properties as well as theoretical exploration have been performed by the density functional theory (DFT) as well as time-dependent density functional theory (TD-DFT) analyses.

Keywords. Polycyclic aromatic hydrocarbon (PAH); hydrazone; photoluminescence; redox activity.

1. Introduction

Metal complexes of Schiff bases have been comprehensively used as building blocks to fabricate a large variety of topologies. Among them, hydrazones have captivated the researchers due to their illustrious aptitude towards chelation, biological activities as well as due to their structural flexibility that can provide rigidity to the synthesized metal-ligand scaffold.^{1–11} Hydrazones can generate an environment comparable to the one present in biological systems usually by coordination through oxygen and nitrogen atoms. A variety of significant characteristics of carbonic acid hydrazides, along with their applications in medicine and analytical chemistry have led to significant awareness in their complexation characteristics with transition metal ions.^{19–21}

In recent times, it has been authenticated that the N–N bond in the hydrazones participates as a key activating unit and plays a decisive role as Lewis base that emerges as a directing group (DG) towards rhodium-catalyzed C–H activation reactions.^{24–26} It has been further validated that Rh(III) is connected to the N-atoms of the hydrazone group during the catalytic cycle.²⁴ In

this connection, the exploration of the molecular and electronic structures of novel rhodium(III) hydrazone complex is imperative for the search of suitable electron transfer as well as optoelectronic characteristics within the metal–organic framework. In this paper, we report the designed synthesis of a new pyridylhydrazone ligand incorporating a pendant pyrene group, **1** (Scheme 1) starting from 2-hydrazinopyridine. The rhodium (III) complex **2** has been synthesized and it has been observed that the ligand and the complex is emissive in nature. The rhodium complex has been characterized comprehensively by X-ray diffractometry which discloses the formation of a five-member metallacycle. Spectral characterization, as well as theoretical analysis of **2**, has been reported extensively. An additional remarkable feature in the complex is that the ligand framework can function as an electron donor upon coordination and this has been corroborated from the nature of the redox orbitals.

2. Experimental

2.1 General

The chemicals used in this work were purchased from the following sources: 2-hydrazinopyridine from TCI Chemicals

*For correspondence

Electronic supplementary material: The online version of this article (<https://doi.org/10.1007/s12039-019-1598-5>) contains supplementary material, which is available to authorized users.



Synthesis, X-ray crystal structure, DFT calculations, spectroscopic characterization and redox behaviour of a rhodium(III) complex of an anthracene–pyridylhydrazone ligand

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Abstract

A pyridylhydrazone incorporating an anthracene moiety, designated as **HL^{Anc}**, has been synthesized in order to examine its coordination behaviour towards rhodium(III). The complex $[\text{RhL}^{\text{Anc}}(\text{PPh}_3)_2\text{Cl}_2]$, incorporating a four-membered metallacycle, has been isolated and authenticated by a single-crystal X-ray diffraction study. The complex shows interesting redox and optoelectronic properties, and to better understand these, theoretical investigations have been performed using density functional theory (DFT) and time-dependent DFT. The visible excitation for the complex arises from primarily mixed singlet-manifold ¹ILCT and ¹LLCT transitions.

Introduction

Hydrazones are important building blocks in synthetic organic chemistry owing to their easy availability and versatile reactivity [1, 2]. They have been extensively applied for the synthesis of molecular switches, metallo-assemblies and sensors [3, 4], decoration of nanoparticles [5, 6], syntheses of alicycles and heterocycles [7], and derivatization of carbohydrates for mass spectrometric analysis [8]. Other aspects and applications of hydrazones that have previously been reviewed include their biological activities [9] and their utility as valuable synthetic intermediates [1, 10–12]. It has been recently reported that the hydrazone N–N bond operates as a key activating unit and plays a crucial role as a Lewis base that acts as a directing group (DG) towards rhodium-catalysed C–H activation reactions [13–15]. It has

been further authenticated that during the course of such catalytic reactions, Rh(III) is chelated by the N-atoms of the hydrazone moiety [13].

In the present work, we have undertaken the synthesis of a pyridylhydrazone incorporating the polycyclic aromatic hydrocarbon (PAH), anthracene, **HL^{Anc}** (Scheme 1), starting from 2-hydrazinopyridine. The rhodium(III) complex of **HL^{Anc}** has been synthesized. We found that the ligand is luminescent, and so is its complex. The complex has been characterized by its X-ray crystal structure, which shows the formation of a typical four-membered metallacycle upon coordination. An interesting feature of this complex is that the ligand can behave as an electron donor and this has been substantiated from the nature of the redox orbitals.

Experimental

Materials and methods

2-Hydrazinopyridine was obtained from TCI Chemicals (India) and 9-anthranaldehyde was procured from Alfa Aesar. Triphenylphosphine was purchased from Sigma-Aldrich. Rhodium trichloride salt was purchased from Arora-Matthey. All solvents and other chemicals were utilized as received, without further purification. UV–Vis spectra were recorded on a PerkinElmer LAMBDA 25 spectrophotometer. ¹H NMR spectra were recorded on a Bruker FT instrument for complex **1** and a 600-MHz

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Development of Humane Qualities in Adolescent Students Through the National Service Scheme (NSS)

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ABSTRACT

After independence the Government of India appointed a number of committees and experts to design an appropriate student programme to develop awareness and respect for the Indian constitution. Any community cannot progress without optimal development of every individual in the society. And it is the social responsibility of every educated individual to create a healthy surrounding and congenial environment for all other person's well being. Education aims at all round development of the individual; and the interaction with peers and teachers that takes place in schools and colleges shape human behavior desirably. A person's psychological and mental health is nurtured through the social exposure and experiences that he/she faces in the course of development in different stages of life. Development and progress of every person in the society is very important as by developing himself he becomes self sufficient and independent. It is our i.e. the teachers' social responsibility to create healthy surrounding and congenial atmosphere for a student's development. Organised extension work in India was started during post independence era to build sense of social responsibility through teacher and students involvement in constructive service with the motto of "Not Me But You". National Service Scheme, under the Ministry of Youth Affairs & Sports Govt. of India was launched in 1969 and more than 3.75 crores student volunteers from Universities, Colleges and Institutions of higher learning are enrolled under this scheme. Effective implementation of NSS on the youth and society at large can be mutually beneficial to the NSS volunteers and the society. In this study an attempt is made to find out how the objectives of National Service Scheme can be fulfilled through different general activities and activities undertaken in special camps, which can ultimately lead to inculcation of humane qualities in Indian youth.

Key Words: National Service Scheme, humane qualities

INTRODUCTION

The National Service Scheme, popularly known as the NSS, is a major youth activity intended to engage the students of colleges and universities in community service on a voluntary basis. The history of this National Service Scheme dates back to the post independence days of India. The University Grants Commission headed by Dr. Radhakrishnan recommended introduction of national service in the academic institutions on a voluntary basis for developing healthy contacts between the students and teachers on the one hand and establishing a

AN ATTEMPT TO UNDERSTAND THE INCLUSIVE ENVIRONMENT IN SECONDARY SCHOOLS

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ABSTRACT

For the children with special needs the prime focus in India is rehabilitation, not education. In fact, even today the issue of education of children with disabilities remains hardly noticeable in the public domain and is considered more as a private problem for families and NGOs to deal with. The government agencies as well as mainstream institutions woke up to the reality that segregation of children with special needs is morally unjustifiable and a violation of human rights. Children from marginalised sections especially the differently-abled should get the maximum benefit in the area of education, and schools need to become centres that prepare children for life (National Curriculum Framework, 2005). The term Inclusion is used to describe the education of students with disabilities in general education settings. Centrally Sponsored Scheme of Sarva Shiksha Abhiyan (SSA) allocated an amount of Rs. 3000/- per child per annum for the interventions related to education of children with special needs (CWSN). Under the scheme of Inclusive Education for Disabled at Secondary Stage (IEDSS) as part of Rashtriya Madhyamik Shiksha Abhiyan (RMSA) central assistance of Rs.3000/- per child is provided to complete four years of secondary schooling (Class IX to XII). But how far the secondary schools are prepared and equipped to accommodate these special students is a million dollar question. This paper attempts to explore the present status of inclusive education in secondary schools in the post-RTE period and also focuses on significance of knowledge and skill of using assistive technologies for making education inclusive. This might help in significant rise in academic enrolment of special needs children in secondary schools which, at present is strikingly poor in all Govt., Govt.-aided and Private secondary schools.

Keywords: Inclusive Education, Inclusive environment, children with Special needs, Assistive Technologies.

A Journey from 19th to 21st Century Women Education in India

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ABSTRACT

Traditionally woman in India had very rigid status roles as - daughter, wife, and mother - well defined and almost fixed. But woman in modern times are actively participating in social, economic, and political activities; they are even entering into certain new fields that were unknown to the woman's sphere of role-sets, thus women in the society, is now experiencing far-reaching changes. The reason behind is, women of the present generation generally receive higher education than the women of their preceding generations. There have been far reaching consequences in the economic status of their families. Indian women exist because of the family and for the family in the 19th century. In 21st century we find Indian women as educated, empowered and enlightened having secured eminent positions and offices in administration and public life in free India. Now this transformation could not happen overnight. Evolution of Indian education, more specifically Women education in 19th and 20th century has very significantly influenced the present status of women. This journey was initiated in the 19th century with the emergence of "new woman" in Indian social scenario. The latter half of the 19th century was more eventful, when India started seeing the rise of womanhood to freedom and assertion and women's education started spreading its wings. This paper attempts to portray the condition of women and their education in India in 19th century on the basis of published documents. The contribution of the eminent social reformers in the field of women education for this period is also described here. An attempt is also made to analyse the present status of Indian women in the light of 19th century.

Key Words: Women education, 19th century education

INTRODUCTION

Education has always been regarded as the most significant instrument for changing women's subjugated position in any country. In India too promotion of women's education is considered as a part of the overall change in society. The progress of women's education is closely interlinked with the basic, changes in Indian educational system. Education develops the personality and rationality of individuals and qualifies them to fulfil certain economic, political and cultural functions and thereby improves socio-economic status of people.

Caste Inequality, Land Relations and Agrarian Distress in Contemporary Agrarian Economy of Bardhaman, West Bengal

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Abstract

The contemporary agrarian economy of rural West Bengal is characterized by distinct division of the farming community along caste and class lines. Unlike the belief that the communist regime in the state has significantly reduced instances of caste and class inequalities, the present article based on a fieldwork in Paarhaati village of Memary II block of Purba Bardhaman district argues in favour of the persistence of such inequalities till date. With the help of narratives collected and instances captured in a year-long fieldwork in the village, the present article attempts to bring forth the existence of domination of economically and politically powerful castes of landowners, deprivation of agricultural and landless labourers, formation of factions at the local party level, lack of initiative from the panchayat and increasing intervention of merchants, traders and middlemen that is hindering social, economic and political developments in these regions. The article argues that the 'change' proclaimed by the new regime has done nothing exceptional for the contemporary rural economy than the previous regime.

Keywords

Agrarian economy, caste and class inequality, land relations, agrarian distress, factionalism

Introduction

Rural life has transformed, although not drastically, but significantly, to an extent where one cannot find people only staying in mud houses or working solely in farming occupation (Gough, 1989). Some of the social practices still remain prevalent in the village, like denoting the *munibs* or the local landlords in the villages as *Babus* and not referring to them by their surnames by the agricultural labourers or the

This article is an original work of the author and has not been submitted anywhere else for consideration of publication. The ideas and notions expressed in the article are completely the sole responsibility of the author. Any queries related to the article should be addressed to the author at atrayee.dse@gmail.com or atrayeesaha88@gmail.com.

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14-Deoxy-11,12-Didehydroandrographolide: A Novel Compound Isolated from *Andrographis paniculata* Nees. Induces Robust Apoptosis in Leukemic Cells

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ABSTRACT

Objective: *Andrographis paniculata* is widely cultivated in South and Southeast Asian countries and popularly used in "Ayurveda" medicine. We attempted to investigate antileukemic activity of the biomolecules extracted from this plant and a probable mechanism of action.

Materials and Methods: Biomolecules from methanolic extract were isolated using silica gel column chromatography and high-performance liquid chromatography. The structures were determined by liquid chromatography-mass spectrometry (LC-MS), ¹H nuclear magnetic resonance (NMR), and ¹³C NMR. *In vitro* antiproliferative activity was measured by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. The apoptotic efficacy of the most potent molecule was investigated by annexin V and propidium iodide (V/PI) staining and flow cytometry. Caspase activation, cell cycle distribution pattern, and nuclear morphology of the treated leukemic cells were also investigated.

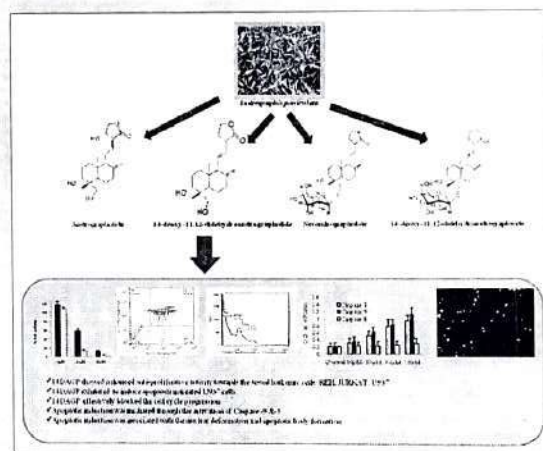
Results: From the methanolic extract, four biomolecules were isolated, namely 14-deoxy-11,12-didehydroandrographolide (1), andrographolide (2), neoandrographolide (3), and 14-deoxy-11,12-didehydroandrographiside (4). Results of MTT assay exhibited that out of four compounds, compound (1) showed the most potent activity against all the cell lines tested with the lowest IC₅₀ values of 13 μM on U937 cells. Annexin V/PI staining revealed that the compound was able to induce apoptosis in concentration-dependent manner with IC₅₀ value being 17.66 μM. Apoptotic induction was mediated through elevated activation of caspase-3 and caspase-9. Cell cycle analysis revealed that the compound (1) effectively increased the sub-G0-G1 population in the treated U937 cells (73.25% at 50 μM) in comparison to control set (3.12%). DAPI nuclear staining indicated that compound (1) increased the number of deformed nuclei and an increased level of apoptotic body formation in the treated cells.

Key words: 12-didehydroandrographolide, 14-deoxy-11, *Andrographis paniculata*, antiproliferative, apoptosis, cytotoxicity, leukemia

SUMMARY

- Four biomolecules were isolated from methanolic leaf extract, namely 14-deoxy-11,12-didehydroandrographolide, andrographolide, neoandrographolide, 14-deoxy-11,12-didehydroandrographiside
- 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay result showed that 14-deoxy-11,12-didehydroandrographolide was most effective molecule in comparison to the other three molecule
- 14-deoxy-11,12-didehydroandrographolide effectively induced apoptosis in U937 cells which was evidenced by annexin V and propidium iodide assay
- Apoptotic potential of 14-deoxy-11,12-didehydroandrographolide toward U937 cells was also mediated through the activation of caspase-9 and caspase-3

- 14-deoxy-11,12-didehydroandrographolide effectively arrested cell cycle progression at a G0-G1 phase in U937 leukemic cells
- It also induced nuclear fragmentation in U937 cells, which was evidenced by DAPI staining and fluorescence microscopy.



Abbreviations used: LC-MS: Liquid chromatography-mass spectrometry; NMR: Nuclear magnetic resonance; B-ALL: B-cell acute lymphoblastic leukemia; CML: Chronic myeloid leukemia; DAPI: 4',6-diamidino-2-phenylindole; Bcl₂: B-cell lymphoma 2; Bcl-XL: B-cell lymphoma-extra large; FITC: Fluorescein isothiocyanate; PI: Propidium iodide; RPMI: Roswell Park Memorial Institute; PBS: Phosphate-buffered saline; ROS: Reactive oxygen species; DNA: Deoxyribonucleic acid; XIAP: X-linked inhibitor of apoptosis protein; HPLC: High-performance liquid chromatography.

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MIGRANT PORTERS OF KALIMPONG TOWN

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Abstract

Purpose: The purpose of the paper is to examine the migration strategies of Nepalese porters. The nature and trend of their migration along with the exploitation in the Host areas.

Design/Methodology/Approach: The paper uses primary data for which an interview schedule was prepared to conduct a survey and to know about their problems. Secondary information is collected from the relevant articles and journals.

Findings: In far Eastern and mid Eastern Nepal where food shortages are prevalent, migration to India for work purposes has been a common livelihood strategy for a large part of rural household for at least one or two generation. The findings of the study confirm that these porters are male migrant who comes from Udaipur and Khotan district of Nepal and are return migrant. These male migrants are illiterate whose economic conditions are not good they work as part time peasants in Nepal and part time workers (porters) in Kalimpong, India.

Originality/Value of paper: Porters are individual who carry goods in and around markets and commercial centres in town for a fee. Carrying loads is a physically labourious work to sustain a livelihood. A majority of the Porters in and around Kalimpong town who have migrate from rural parts of the Nepal engage themselves in this activity to earn their living and to support their family back in their native place. Porters choose this place due to availability of work and networks ties with other migrant. The living conditions of these porters are poor due to lack of basic amenities. They work under vulnerable environment and are very much prone to diseases and exploitation. This paper shows the condition of these porters in the host area and how much they are deprive of their rights in the working areas. Their plight is the hard hitting reality of rural Nepal poverty.

Keywords: Migrant, Porter, Kalimpong, Vulnerable.

Introduction

Migration from one area to another in search of improved livelihood is a key feature of human history. Migration has become a universal phenomenon in modern times. Due to the expansion of transport and communication, it has become a part of worldwide process of urbanization and industrialization. From the demographic point of view migration is one of the three basic components of population growth of any area the other being fertility and mortality. But whereas both the fertility and mortality operate within the

Journal Name

ARTICLE

Palladium(II) and platinum(II) complexes of glyoxalbis(N-aryl)osazone: molecular and electronic structures, anti-microbial activities and DNA-binding study

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Palladium (II) and platinum(II) complexes of types [Pd(L^{NHPh}H₂)Cl₂] (1), [Pd(L^{NH(CPh)}H₂)Cl₂] (2), [Pt(L^{NHPh}H₂)Cl₂] (3) and [Pt(L^{NH(CPh)}H₂)Cl₂] (4) were successfully isolated, where L^{NHPh}H₂ and L^{NH(CPh)}H₂ are osazone ligands. Molecular and electronic structures of 1-4 and their reduced analogues were confirmed by single crystal X-ray crystallography, EPR spectroscopy, and DFT calculations. Osazone is a redox non-innocent ligand and the redox activities of 1-4 were investigated by cyclic voltammetry. The redox activities of 1-4 are solvent dependent. In cyclic voltammetry, no redox wave of 1-4 is discernible in CH₃CN, while in less polar CH₂Cl₂ solvent, the cathodic waves of 3 and 4 gain some reversibility. Mulliken spin density analyses and EPR spectral data reveal that the unpaired electron of [3]⁻ and [4]⁻ ions is dominantly localized on the diimine fragment of osazone ligands. Cell viability performed by MTT assay against leishmania promastigote shows that these compounds are strong leishmanicidal agents while they are little responsive towards anti-bacterial and anti-fungal activities. All the reported compounds are completely non-cytotoxic within the limit of 0-50 μM upto 72 hr revealing their potentiality in therapeutic measure. The leishmanicidal activity of 1 and 3 are found to be higher than the ligands as well as 2 and 4. Furthermore, the interaction of 1 and 3 with DNA has been assessed as possibly intercalating in nature that correlates with one of the requisite modes for anti-leishmanial activity.

Introduction

Square planar palladium(II) and platinum(II) complexes with heterocyclic α-diimine ligands have been investigated over last few decades owing to their attractive redox activity¹, rich photoluminescence properties² and high antiproliferative profile.³ Although their aliphatic analogues⁴ those are less documented in literature, have parallel remarkable chemistry. Osazones represent a special class of α-diimine ligands containing a RNN=CH-CH=NNR moiety and the chemistry of it is different from that of α-diimine ligands containing RN=CH-CH=NR fragment. In our previous investigation on osazone complexes, we reported that osazones are redox active⁵ and

phenyl osazone (L^{NHPh}H₂) is a better π-acceptor [E_π(L^{NHPh}H₂) = -2.613 eV] than that of phenyl diimine ligand [E_π(L^{Ph}H₂) = -1.421 eV].^{5a} Thus, osazones have been considered to generate tunable Pd^{II}N₂Cl₂ and Pt^{II}N₂Cl₂ coordination spheres. In the early 1970's, Vigato et al. reported some complexes of osazones⁶ of the types [M^{II}(L₁)Cl₂], [M^{II}(L₂)Cl₂] (M = Pd, Pt), [Pd₂(L₂-H)₂Cl₂], and [Pd^{II}(L₂)Cl], where L₁ = cyclohexane-1, 2-dionebisphenylhydrazone, L₂ = biacetylbis-(N-methyl, N-phenyl)hydrazone. However, a detailed molecular and electronic structures of the complexes of general formula M^{II}(N⁻N)Cl₂ (M = Pd, Pt) with parent osazones is under-explored. The -C=NNHR moiety in osazones closely resembles with that of semicarbazone and thiosemicarbazones. The anti-leishmanial activity of platinum and palladium complexes containing bioactive nitrofuryl thiosemicarbazones⁷ is well established and the same with hydrazone ligands⁸ is rare. Navarro et al. reported a series of palladium(II) polypyridyl complexes⁹ of types [PdCl₂(phen)], [PdCl₂(biquinoline)] and [PdCl₂(phen diamine)] which exhibit leishmanicidal effect, particularly inhibiting the growth rate. [PdCl₂(phen diamine)] was found to be the most effective causing 58 % growth inhibition. The investigation provides an useful information that the heterocyclic α-diimine complexes of palladium(II) and platinum(II) are potential leishmanicidal agent and in this study we have been persuaded to explore such activity with 1-4.

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X-ray crystallographic CIF, materials and physical measurements, DFT calculations, cyclic voltammograms, EPR spectra [3]⁻ and [4]⁻, Mulliken spin density of [3]⁻, gas phase optimized geometries, FMOs of 1-4, comparative study of IC₅₀ values, anti-leishmanial activity of the compounds 1 and 3, minimum inhibitory concentration (MIC) of 1 and 3 in bacterial system, antifungal activity (MIC) of 1 and 3, optimized coordinates. See DOI: 10.1039/x0xx00000x.

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5 **Glucose triggered dissolution of phenylboronic acid functionalized**
6 **cholesterol based niosomal self-assembly for tuneable drug release**
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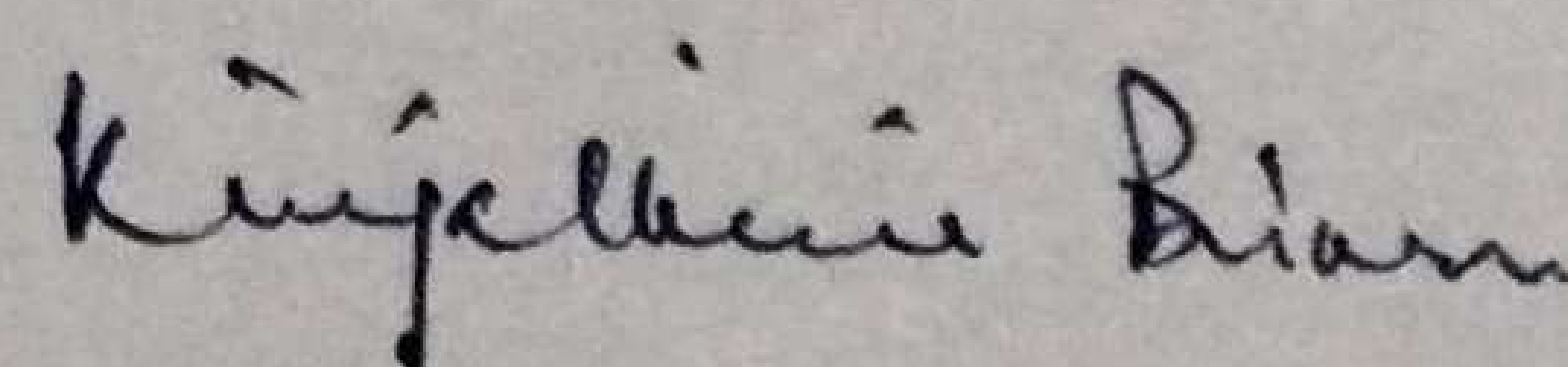
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New Journal of Chemistry Accepted Manuscript

Abstract

The present study described the design and development of a new class of non-ionic vesicular self-aggregates and its utilization as glyco-responsive drug release vehicle. Cholesterol based phenylboronic acid (PBA) functionalized amphiphile was synthesized that formed non ionic spherical vesicular aggregates in aqueous milieu and hence termed as 'niosome'. Various non-covalent forces involved in the formation of niosome were thoroughly investigated by microscopic and spectroscopic techniques. The PBA group in the amphiphilic backbone rendered di-ol sensitivity in the niosome due to which it showed morphological and physicochemical change in response to external glucose stimuli. Fascinatingly, the niosomes underwent dissolution on addition of glucose owing to the formation of reversible boronate-diol adduct. This unique diol-sensitivity of the niosomes was utilized in initiation of enzymatic reaction using glucose as a switch. Substrate entrapped within niosome interacted with enzyme in presence of glucose as a consequence of glucose triggered dissipation of the niosome encapsulation followed by accessibility of the substrate to the enzyme. However, in absence of glucose the enzymatic reaction failed as enzyme can't have close proximity to the substrate. This glyco-responsive behaviour of the niosome was further employed in the field of tuneable drug release. Insulin was entrapped within the niosome without disconcerting the stability of the self-assembly. When external glucose was introduced to the drug-niosome conjugate the niosomal encapsulation destroyed followed by release of the insulin. This unique glyco-sensitivity, drug encapsulation efficacy and sustained drug release ability of the niosomal self-assembly make this soft-material highly promising in the hunt of developing cutting edge drug delivery vehicles.

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SOCIO-ECONOMIC PROFILE OF THE ARTISANS OF THE BRASS AND BELL-METAL INDUSTRY: A DYING COTTAGE INDUSTRY OF BISHNUPUR, BANKURA, WEST BENGAL

Suvasree Dutta (Dasgupta)* and Dinabandhu Kumbhakar**

The brass and bell-metal industry is one of the well-known, indigenous cottage industries in the district of Bankura, West Bengal. This empirical paper tries to understand the current position of the brass and bell-metal craftsmen in the heritage city of Bishnupur, Bankura. It focuses on their socio-economic background, employment potentialities, work culture and their level of exposure to the regional and global market. The study concentrates on the issues responsible for the present decline of this age-old cottage industry. This analysis, however, highlights on the significance and impact of this metal art for the development of the state's economy. The present study tries to throw light on the holistic approaches for the escalation and endurance of the industry, with a view to improve the quality of life of the local craftsmen and promote the dying industry, so that the glory and legacy of this industry could be passed on to the generations to come.

INTRODUCTION

A cottage industry is generally defined as a market-oriented household enterprise, carried on basically with traditional technological know-how to produce traditional items with locally available raw materials. It is operated mostly at or near the home, primarily with the help of the paid family members, either as a whole or part-time occupation, along with little or no hired labour, who have inherited artistic skills from their past generations.

In India, cottage or household industry holds an important position by providing employment to a vast segment of both skilled and semi-skilled artisans along with the unskilled labours, and generates substantial foreign exchange for the country, while preserving its cultural heritage. It plays a significant role towards the economic growth of the country especially in the developing countries like India.

Metal handicraft is one such cottage industry which has a long tradition of excellence and unique craftsmanship in India. In fact, the origin of metal handicrafts in India dates back to the era of Indus Valley Civilization. The discovery of the small bronze statue at the ancient site of Mohenjo Daro testifies the antiquity of Indian metal crafts 5000 years ago (Ganguly, M. et. al., 2016). Archaeological evidences ensure that Indian craftsmen have been using different metals especially copper and its alloys like bronze, brass, bell-metal etc. since time immemorial. Variety and form of style is evident in different states and each region has its wide range of items for utilitarian, decorative and aesthetic purposes with a unique distinctiveness of its own identity (Table 1).

Every Indian family even today tries to possess and maintain these metal items as marks of their cultural identity. The practice of giving Bell and Brass metal products to the brides, during

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Does the quality of marriage depend on the ability to manage conflict?: A comprehensive study on males

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The study was conducted to understand empirically if husbands in harmonious marriages have better ability to manage communication conflict with their spouses as opposed to that of the husbands in discordant marriage. Total numbers of subjects included were 160 among which the number of discordant husbands and harmonious husbands were 80 in each case belonging to the Bengali Hindu community from the different parts of the city of Kolkata, India with purposive sampling technique. The two groups were compared using the scales: 'Marital Quality Scale' (M.Q.S.) and 'Communication Conflict Predisposition' (C.C.P.). Statistics, correlation and multiple regression analysis were conducted to analyze the data. Results showed that discordant and harmonious husbands differed significantly in their quality of married life as well as abilities of managing conflicts with their spouses. Moreover, harmonious husbands had better feelings and respect for their spouses with better values while cooperating with others in comparison to discordant husbands. Poor marital quality was correlated with poor ability to manage conflicts and vice versa. But Proneness to manage conflict was unable to predict marital quality for both harmonious and discordant husbands.

Keywords: conflict management, marital quality, harmonious husband, discordant husband

'Once the human being arrives on earth, communication is the largest single factor determining what kinds of relationships he/she makes with others and what happens to him/her in the world' -Virginia Satir (1983) Through communication relationships form, grow and terminate (McAdams, 1988). The absence of effective communication causes relational failure (Alexander, 1973). The more intimate the relationship, the more important high quality communication becomes.

Marriage is considered not only the most intimate relationship but the most important sources of social support also that an individual receives as an adult in every culture and society. Marriage as a social agreement between two individuals unites their lives legally, economically, and emotionally (Sheri & Stritof, n. d). The definition of marriage varies according to different cultures, but it is principally an institution in which interpersonal relationships, usually intimate and sexual are acknowledged. The quality of marriage depends on a number of factors like understanding, feeling of rejection from spouse, satisfaction of sexual and security needs, affectional needs, feeling of despair, decision making ability, feeling of discontent, consideration of separation or divorce as an alternative, dominance, self-disclosure, trust and role functioning (Shah, 1995).

Ideally, a good marriage with good communicational skills of the partners is to be conflict free and it must avoid the expressions of anger. In reality, there is no such thing as a conflict free marriage or the one in which anger is never expressed. Conflict goes with the territory of marriage (Wallerstein & Blakeslee, 1995). Marital conflict becomes dysfunctional where it causes psychological

/physical injury, decreased interpersonal trust and fails to generate changes in subsequent marital interactions (Feldman, 1992). Much of the recent works of social scientists, conducting longitudinal researches on marriage has been based on social learning theory (Karney & Bradbury, 1995) which focuses on emerging conflict and negativity as the key ingredient of marital discord as well as marital failure. In most cases, the root resides in moment-to-moment perception of clashing interests of husband and wife. The extent to which a person manages such clashes or conflicts, either constructively or destructively, reflects his/her 'communication conflict predisposition' (Brown, Yelsma, & Keller, 1981). The ability of couples to communicate constructively about disagreements and relationship conflicts is a well-established predictor of marital health and longevity (e.g. Clements, Stanley, & Markman, 2004; Markman, 1981; Rogge & Bradbury, 1999).

Conflict management becomes productive in preserving relationships when both the conflicting parties win. Conversely, when human perceptions are such that people can see and understand resolutions that only permit themselves to win, the others involved paying a price, then the arrangements are win-lose in character and are destructive to relationships. People who are predisposed to manage conflicts constructively, tend to be advantageous, both to self and to others as both win in a conflict situation, on the other hand, people predisposed with destructive management of conflict, tend to inflict injury or avoid conflict situation, where one person wins and the other feels losing (Brown, Yelsma, & Keller, 1981).

While proposing the Theory and an Instrument of Communication-Conflict Predisposition, Brown, Yelsma, and Keller (1981) discussed six tensions or constructs that bear an individual's ability to manage conflict, namely, Feelings, Task Energy, Other Value, Community Value, Control value and Self Value. After several years of statistical and exploratory field research, Brown, Yelsma, and Keller (1981) conceptualized that conflict of each of these

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Amber SRIVASTAVA^a, Sangita DEY^{b,*}, Sunil Kumar SRIVASTAVA^a and Lakhi Ram DANGWAL^c: Lectotypification of *Eremostachys superba* (Lamiaceae, Phlomidaceae)

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Summary The lectotype is designated here for the name *Eremostachys superba* Royle ex Benth., the basionym of *Phlomidoides superba* (Royle ex Benth.) Kamelin & Makhm. (Lamiaceae).

The genus *Eremostachys* Bunge (Lamiaceae) consists of ca. 60 species primarily distributed in Western and Central Asia (Mabberly 2008). Only a single species *Eremostachys superba* Royle ex Benth. currently accepted as *Phlomidoides superba* (Royle ex Benth.) Kamelin & Makhm. is found in India and is reported from India, Pakistan and East Afghanistan (Srivastava et al. 2017).

The species is endangered due to its overexploitation (numerous roots used to increase lactation in cattle) and habitat loss (natural habitat encroached for cultivation). In India it is nearly extinct from its type locality (Kheree Pass, Dehradun, Uttarakhand) and is now known only from ten localities of Jammu & Kashmir, Himachal Pradesh and Uttarakhand in India (Srivastava et al. 2017).

A search of the international herbarium databases B, BR, BSD, CAL, CGE, DD, E, G, K, LE, LIV [originally Royle's herbarium, donated by his wife in 1859, after his death (Heywood 1956)], PH and TCD (Thiers 2017) and examination of type images made accessible by the Global Plants website (JSTOR 2017) was undertaken to find out the original material belonging to this name. In addition a thorough study of the relevant literature has also been done.

Typification

Bentham (1833) described *Eremostachys superba* based on John Forbes Royle's gathering from Kheree Pass (now Mohand Pass), Dehradun, Uttarakhand, India. We traced specimens that could be considered as original material (Art. 9.4 of the ICN: Turland et al. 2018) at LIV (acc. no. 1952.121.6339) [one specimen mounted on several herbarium sheets, but clearly labelled as part of the same specimen (Art. 8.3 of the ICN: Turland et al. 2018)], K (K000894387 and K000894388), CAL (CAL0000026670), P (P00686229 and P00686230) and LE (LE01018491). According to the protologue (Bentham 1833), *E. superba* was collected from Kheree Pass and since Royle (1839a) collected it from the same locality, it can be assumed that all the Royle's specimens are from this locality only.

The specimen in LIV bears sketches similar to the illustration of *Eremostachys superba* published by Royle (1839b), but it is in poor preservation status and the diagnostic characters of the species viz. pinnatisect leaves and ovate, acute floral bracts are not clear. The specimen housed in CAL (N-W India, J. F. Royle) is not well preserved and hence inflorescence features are not visible. The specimens at K (K000894388) and LE (LE01018491) both collected from NW India by J. F. Royle are well preserved showing all the details and bear original label of Royle herbarium. These specimens are however without any annotation.

Check for updates

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Redox-active diaminoazobenzene complexes of rhodium(III): synthesis, structure and spectroscopic characterization†

Sima Roy,^a Shuvam Pramanik,^b Tapas Ghorui, Soumitra Dinda, Sarat Chandra Patra and Kausikisankar Pramanik^{b*}

Herein, the reactivity of an aromatic diamine, 2,2'-diaminoazobenzene **1** [$H_2N^+NH_2$], with rhodium salts was investigated. Diverse coordinations, specifically single and double NH deprotonated forms, of the title ligand are obtained during metallation, affording mononuclear **2** and dinuclear **3** complexes, respectively. An unprecedented edge-shared bioctahedral geometry with a *syn* configuration (sterically encumbered) about the $Rh_2^{III}N_2$ core is obtained with pincer-type NNN ligation. Both complexes are redox-active and provide well-defined oxidative responses, and the reversibility of the redox-couples is enhanced with the decreasing temperature. The spectroscopic study indicates the formation of open-shell species derived from the precursor amido complexes, and these species are believed to be ligand-centered π radicals. The incorporation of both electron-poor azo and electron-rich amido moieties imparts the possibility of low-energy electronic transitions within the tridentate ligand (the push-pull effect). Furthermore, the occurrence of ILCT has been substantiated theoretically (TDDFT and NTO).

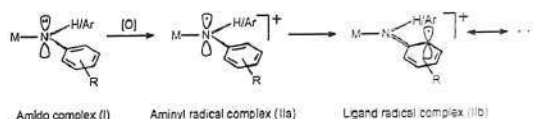
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Introduction

Amido \ddot{z} (R_2N^-) chelating agents are an interesting class of redox-active ligands that confer significant electronic and spectroscopic control over their metallo-conjugates.^{1–3} In particular, multi-dentate diamido ligands with suitable linkers provide an added influence towards structural rigidity, stability, and robustness *via* the formation of possible $[NEN]^{2-}$ tridentate or $[NEEN]^{2-}$ tetradentate scaffolds ($E =$ a spacer donor).² In recent years, there has been significant focus on metal complexes bearing redox-active pincers embedded within the amido functions;^{2b,d–h} this class of ligands provides attractive scope for the development of basic understanding of the electronic structure and bonding in open-shell molecules as well as realizing desirable reactivity and uses associated with ligand-based electron (or hole) transfer processes. Amido complexes may behave as apposite precursors of aminyl radical complexes ($R_2N^{\bullet}-M$) of type IIa^{1c,i–m,2a,c} or ligand



Scheme 1 Metal amido, aminyl radical, and amido-based ligand π radical complexes.

π radicals (IIb)^{1a,c} (Scheme 1). In addition to these, another type of metal-coordinated delocalized aza-allyl ligand has been recognized from amido complexes.³ These radical systems have attracted attention due to their importance in catalysis apart from their exciting physicochemical properties.⁴ Moreover, the strong π -donor ability of amido ligands makes them appropriate as electron-rich domains, providing a platform for atypical reactivity in addition to their plausible contribution in stabilizing reactive intermediates.⁵ It is worth noting that late transition metal-mediated NH activation and concomitant hydroamination are imperative for the realization of new catalytic routes in a more convenient way.⁶

The paucity of facile synthetic protocols for air- and moisture-stable diamido late-transition-metal ($R'RN-M-NRR'$, $R' = H$, alkyl and aryl) compounds^{2a,c,6,7} prompted us to explore the reactivity of aromatic amines towards rhodium salts. From this perspective, we chose an organic diamine platform (a potential diamido precursor) together with a typical electron-poor azo moiety, specifically 2,2'-diaminoazobenzene, with the expectation

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† Electronic supplementary information (ESI) available: Experimental details, analytical and spectroscopic data of new compounds. CCDC 1448292 and 1448293. For ESI and crystallographic data in CIF or other electronic format see DOI: 10.1039/c7nj04790h

‡ Some authors articulated M-NR₂ and M-NHR coordinated complexes differently as amido and amino compounds, respectively, and the corresponding oxidized N-centered radical cation species as aminyl and aniliny complexes. We, however, described both forms jointly as the former type in this article.

Status of Working Limbu Women in Different Plantation Areas of Darjeeling Himalaya: Some Observation

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ABSTRACT

Women's role in plantation areas of Darjeeling Himalaya is very significant. They contribute about 60 to 70 percent of the labour requirement. In rural areas of Rangli-Rangliot and Kalimpong I block both male and female are employed in this sectors. The women are usually employed in those operations most of which have not been mechanized. They have less access to information and technology due to their poor educational status. But they equally participate in the decision making activities of households and other socio-cultural affairs of daily life. At an average they spend 8 hours a day to work but at the same time manage all the domestic chores of their household. They play a very important role in the family and society. In spite of positive economic role played by the women their overall status in the family as well as society is still subordinate and gender inequality is also rampant. Hence the question arises why women's role is not recognized and why they enjoy the subordinate position? Therefore an attempt has been made to show the status of rural women and their role in overall development of the economy and society. The paper is completely based on empirical research. Field studies were conducted at Teesta Valley Tea Garden and Cinchona Plantation area of Sangser Village (Kalimpong) of Darjeeling Himalaya.

Keywords: The tribes, General view of their History, sources of information, Local distribution.

[1]

Introduction

The Economy of Darjeeling Himalaya highly depends on the plantation sectors. The sections of people who inhabited these plantation areas are living in relative isolation where prime focus is the whole day work with a meager income to look after their family. The lack of the alternative source of income generation and employment opportunities had led the both male and female counterparts of the rural folk community to work in the plantation for providing better amenities in life. The rural womenfolk who are less educated employed themselves as labourer in the plantation areas. These women apart from doing domestic chores also bring cash in family to support their children education. The whole day work of 8 hours has shown their status, strength and positive mentality towards the important economic role played in the society. The rural womenfolk of Himalayan society radical differ from their plain counterparts not only in terms of physiognomy but also in attitudes, social, economic and traditional perspectives. The Limbus is one of the ethnic groups of Darjeeling Himalaya professing *Yumasim* religion as their way of life. The supreme Goddess *Tagera Ningwaphuma* holds an immense important in the life of Limbus who is regarded as the creator of this world. The whole idea belief, faith and customs of Limbu tradition revolves around the worshipping of *Yumasam (female household deity)* for better future and prosperous life. In Limbu society women signifies an honour and respect to her family. The family structure is well knitted by her compassion and tolerant quality. Being in the subordinate position she maintains herself to cope with every change which is beneficial for her family. The rigid social fabric of village is always attached with certain rudiments of orthodox norms which have restricted her to freely exercise her power and judgement in the daily affairs of village life. The plantation sectors has been always been a focus of study to scholars to show various problems associated with owner and labourer. The marginalized sections of these sector women have always remained obscure from the main scenario apart of being an instrumental in the process of productions. The authors have made a modest attempt to study the conditions of Limbu womenfolk of marginalized tribal sections of Darjeeling Himalaya.

Objectives, Methodology and Study Areas

The present paper is the modest attempt of authors to show the position and status of Limbu women folk of the study areas. The aim objectives of the paper are to study socio-cultural profile of the Limbu women and to analysis how far the educational attainment among them has aroused the level of consciousness. The paper also tends to focus on the positive role played by them in the family and their participation in the

Andrographolide Induced Apoptosis in NALM-6 Cells Mediated Through the Cell Cycle Arrest and Nuclear Fragmentation

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ABSTRACT

Introduction: *Andrographis paniculata* is an herb widely cultivated in South and Southeastern Asia. It has been traditionally used to treat infections and other Physiological disorders for several hundreds. We investigated the anti-leukemic potential of Andrographolide (AGP) isolated from the leaves of this plant against an array of cancer cells to investigate its most efficacies in a particular cancer type. **Methods:** AGP was isolated from *Andrographis paniculata* leaves by using column chromatography. The structure was further determined by LC-MS, ¹H NMR and ¹³C NMR. AGP was initially tested against four different cancer cell lines, namely NALM-6 (pre B-ALL), K562 (CML), A549 (lung carcinoma) and MCF-7 (breast carcinoma) using MTT assay at different time points and different concentrations. The effect of the isolated bio-molecule was also investigated in inducing apoptosis through the study of cell cycle progression using flow cytometry by PI staining and nuclear fragmentation pattern by DAPI staining and fluorescence microscopy. **Results:** the spectral analysis of the isolated bio-molecule assured that the compound was AGP. MTT assay data indicated that AGP was most potent to induce cytotoxicity in NALM-6 cells. Further investigation revealed that it effectively induced apoptosis by arresting cell cycle progression and increased the nuclear break down in NALM-6 leukemic cells. **Conclusion:** Our study efficiently demonstrated that the AGP isolated from *Andrographis paniculata* induced apoptosis in NALM-6 cells, which could be used in the therapeutic intervention of leukemia in the future.

Key words: *Andrographis paniculata*, Andrographolide, Apoptosis, Cell cycle, Cytotoxicity, Leukemia.

INTRODUCTION

Leukemia is the most common childhood cancer and associated with increased proliferation and decreased apoptosis in neoplastic blood cells. According to Cancer Research (UK),¹ 9634 new cases and 4584 deaths occurred in 2014 from leukemia. Induction of apoptosis is the best strategy to destroy these malignant cells. These cells carry a number of mutations in their genome/proteome, that results in the up-regulation of anti-apoptotic proteins (e.g. Bcl-2, Bcl-XL etc.) as well as down-regulation of different pro-apoptotic proteins (e.g. Bid). Therefore, utilization of multi-target drugs is most important for treating leukemia. Now-a-days a higher percentage of commercial drugs contain active principles from natural sources, particularly from plants for its multiple targets and least side-effects e.g. Paclitaxel, Podophyllotoxin etc.

Andrographis paniculata Nees. (Acanthaceae), commonly known as 'Kalmegh', is a wonder drug and very popular in 'Aurvedic' and 'Siddha' systems of medicine in India for its wide spectrum of biological activities.² Three major labdane type diterpenoids to which the main biological activities of the plant are attributed, are Andrographolide (AGP), 14-Deoxy-11,12-didehydroandrographolide and Neoandrogra-

pholide (NAGP).³ AGP, the major diterpenoid of this plant, has hepatoprotective, hepatostimulant,⁴ anti-inflammatory,⁵ anti-viral⁶ and anti-leukemic activities.⁷ 14-deoxy-11,12-didehydroandrographolide, the second major diterpenoids of this plant, has cardiovascular⁸ and anti-inflammatory⁹ effects. Anti-leukemic activity of this compound has not yet been established, although its anti-cancer activity has been reported in the last few years.^{10,11} In the present paper, we have isolated AGP (diterpenoids) from the aerial parts of *Andrographis paniculata* plant by column chromatography and repeated crystallization. The structure of the isolated compound was established by spectral analysis and screened against different types of cancer cell lines, namely NALM-6 (pre B-ALL), K562 (CML), A549 (lung carcinoma) and MCF-7 (breast carcinoma). NALM-6 appeared to be the most sensitive in response to AGP treatment in comparison to the other types of cancer cells, as evidenced by MTT assay. In this article we first time investigated the anti-apoptotic activity of AGP against NALM-6 which was established by cell cycle analysis and nuclear break down assay.

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Two new eriophyoid mites (Acari: Eriophyoidea) from West Bengal, India

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Abstract

Two new species of eriophyoid mites viz. *Abacarus sundarbanensis* n. sp. infesting *Pongamia glabra* L. (Fabaceae) and *Diptilomiopus augustifoliae* n. sp. infesting *Ambroma augusta* (L.) (Sterculiaceae) respectively, are described from West Bengal, India.

Key words: Eriophyidae, Diptilomiopidae, new species, West Bengal, India

Introduction

Surveys for eriophyoid mites in different districts of West Bengal, India were made at regular intervals to explore their diversity. This study resulted in the discovery of two new eriophyoid species, one in the genus *Abacarus* infesting *Pongamia glabra* (Fabaceae) and the other in the genus *Diptilomiopus* infesting *Ambroma augusta* (Sterculiaceae). Both of these plants have medicinal importance (Parmar *et al.* 1976; Al Muqurrahum & Ahmat 2015).

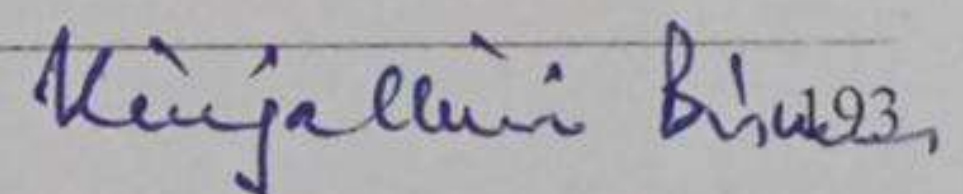
The genus *Abacarus* belongs to the tribe Anthocoptini (Eriophyidae: Phyllocoptinae). Within this tribe this genus is mainly characterized by a central dorsal ridge, shorter than the sub dorsal ridges and ending in a dorsal trough. At present, this genus contains 67 species worldwide and 10 species from India (Amrine *et al.* 2003 and Amrine, personal communication). A total of 14 species of *Abacarus* are described from different economically important host plants among which five species are on *Saccharum officinarum*, three on different species of *Bambusa* and one each on *Psidium guajava* and *Oryza sativa*; the remaining four species are known from economically important wild plants. However, no *Abacarus* species is known to infest *Pongamia glabra*, as well as from any other plants in the family Fabaceae.

On the other hand, *Diptilomiopus* belongs to the subfamily Diptilomiopinae (Diptilomiopidae) and is mainly characterized by the fusion of the genu and tibia on both legs and the absence of coxal setae *Ib*. At present, 107 species of *Diptilomiopus* are known worldwide (Craemer *et al.* 2017) including 58 species from India. Species of *Diptilomiopus* are mostly vagrants and are associated with many unrelated plants. A few species are found to feed on more than one plant species. Till now, six species of *Diptilomiopus* were described from different economically important host plants, each from *Artocarpus integrifolia*, *Citrus limonia*, *Gardenia jasminoides*, *Syzygium cumini*, *Psidium guajava* and *Tectona grandis*. Only one species, *Diptilomiopus ambromae* Wang *et al.* (2009) from China, is so far known to infest *Ambroma augusta* (L.) (Sterculiaceae).

Material and methods

Eriophyoid mites were collected and studied as described by Chakrabarti *et al.* (2017). The terminology and classification given by Lindquist (1996) and Amrine *et al.* (2003), respectively, are followed here. All measurements and drawings were made following Amrine & Manson (1996) and de Lillo *et al.* (2010) and are given in micrometres (µm). Measurements and means are rounded off to the nearest integer when required, and

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Celebrity and Media

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Kingalini Biswas

Social Media and The Changing Trends of Celebrity Concept and Culture

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Abstract :

Entertainment and Sports, were and are the two most used terms to describe the word "Celebrity", The term which can be said as a positive alternative synonymous for "Famous personality". But in the contemporary society, the term celebrity does not need any additional support of any such world for further description. To be straight forward, celebrity stands to famous personality, and the credit for the reduction is description pattern of celebrity's meaning mostly goes the social media, which has been supportive in bringing changes in the trends of celebrity culture. Though the meaning of celebrity has been confined as famous personality, but entertainment industry remains one of the important aspect of it. An industry that has gone into a hurricane of changes since its inception for each and every single aspect in order to match its steps with the day to day changing environment; be it social, personal or economic and the added spice to it is; the hurricane is still in motion and is in no mood to be stopped. On the other hand, Social Media or social networks are added flavor to the service industries. Including the stupefying flavor, the platform is being

Umapathi Bina