Tech-tonic Shifts: Exploring the Impact of Technology on the Indian Economy

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Abstract:

The Indian economy has undergone a remarkable transformation in recent years owing to rapid technological advancement. The purpose of this research paper is to investigate the impact of technology on the Indian economy in depth, examining the multifaceted consequences of technological advancements in various sectors and their implications for economic growth, employment, and societal development. The study looks at how technology can spur entrepreneurship and innovation in India. It draws attention to the expansion of fintech, e-commerce, and other technology-driven industries in India and the democratization of technology.

Furthermore, it explores how digital platforms and mobile apps empower people in remote locations and foster economic inclusivity in sectors like healthcare, agriculture, and education. The adoption of technology in India is a topic that is investigated in this study, along with any potential problems or

FILMS FROM NORTHEAST INDIA: A CULTURAL ECOLOGY PERSPECTIVE

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TO IQAC- (ARTICLES + PUBLICA-TIONS)

Films from Northeast India are fairly new areas of research that is gaining quick momentum, especially with films from this region being screened at various National and International Film Festivals and also bagging National and International awards. Nature and the indigenous life of the people from this region are intricately linked and this intimacy with nature is reflected in films. Films from this region can help in understanding the complex man-ecology relationship at a time when most environmental narratives are inclined towards portraying an anthropocentric, ecological apocalyptic vision of the world. This paper examines a culture and ecology that are both endangered and yet unexplored, that is new and yet very old, that is on the threshold of the liminality of body/mind, nature/culture, spirit/life, the same nature of which is reflected in films like Village Rockstars, Rong'kuchak (Echoes), III Smoking Barrels and The Pangti Story (documentary).

KEYWORDS: *Culture, environment, Northeast India, & films.*

While writing about his film *Rong'kuchak* (Echoes), Dominic Sangma, a director from Northeast India stated "I remember when I was a kid we would shout out to the forest and it would call us back. I asked my father the reason for it, he told me it was a voice of our forefathers that was responding to us."

Since archaic beginnings, humans have construed their life and living in relation and in (inter) dependence to the physical environment. The beginning of cognitive revolution gave birth to myths, legends, oral stories, folklores, gods and religion, rituals and beliefs. Nature and culture are not binary opposites of each other per se, but are products of human-nature interaction and evolution. Sergio Manghi in "Forward in Wider Perspective."*Mind and Nature: A Necessary Unity* writes that the human mind is placed "in the very heart of natural history, in the self-generating grammar of living process and of their incessant, remarkable metamorphoses" Through times, from mythical stories and oral narratives, paintings and architecture, literature and films, the fundamental interconnectedness between nature and culture has been symbolically expressed.

Cultural ecology, as a study of the relationship shared between man and nature and adaptations to the ecological changes which in turn shapes any given culture at a particular period has found much relevance in the field of literature. A silent spectator and a silent victim, many eco critics today trace the representation, misrepresentation and non representation of nature in literary narrative process as integrally intertwined to anthropocentric and androcentric activities. This eco critical perusal of literary texts has shown the shared ecological experiences in the face of cultural variance. As Hubert Zapf in his book *Literature as Cultural Ecology: Sustainable Texts Environmental Culture* writes, "Literature as a medium of cultural ecology thus specifically focuses on the interactivity of mind and life which is staged in literary texts as a liminal phenomenon on the boundary between culture and nature, self and other, anthropocentric and biocentric dimensions of existence."

Literature, as an art form has and is undergoing immense evolutionary changes and films are the extended arms of literature where stories and narratives adapt aural-visual medium of representation. This has given a paradigm shift in the way of perceiving as also in the way of representing the human/culture, mind/body, spirit/life dual/liminal relationship. Cultural dialogues are universally different but the shared ecological experience is common and when presented in films, it becomes universal experience. Adrian Ivakhiv, an eco critic writes that films have the ability to form a new bond between humans and the physical environment by bringing before the audience a world beyond their immediate perception.

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Design of Imidazole-Based Drugs as Potential Inhibitors of SARS-Cov-2 of the Delta and Omicron Variant

An *in Silico* Approach

Peter Solo and **M. Arockia Doss**

Abstract 30 imidazole-based drugs were designed, prepared and optimized using Gaussian 09, and were screened for drug-likeness with SWISS-ADME server. Molecular docking was performed using MOE 09, where the designed drugs were docked with the spike glycoprotein of the Delta (B.1.617.2) and Omicron (B.1.1.529) variant of SARS CoV-2. Nafamostat and Hydroxychloroquine were used as standards in comparing the docking results. Among the designed drugs, those drugs which used Benzil and Hyroxy/methoxy-benzaldehyde as the starting compound exhibited good binding scores, and can be potential inhibitors of the Delta and Omicron variant of SARS CoV-2.

Keywords SARS-CoV-2 · Imidazole-based drug design · Molecular docking

1 Introduction

The outbreak of severe acute respiratory syndrome corona virus 2 (SARS CoV-2) continues to prevail. The detection of the new omicron variant (B.1.1.529) in south Africa has ignited fresh concern over the already contagious delta variant (B.1.617.2). On 26 November 2021, WHO has designated omicron as a variant of concern which has now spread across the entire globe [1]. Unlike the other variants, omicron has large number of mutation with 32 mutations in the spike glycoprotein [2] and 15 mutations in the receptor-binding domain (RDB) alone [3]. Computational studies have affirmed that the Omicron variant had a higher affinity for human angiotensin-converting enzyme 2 (ACE2) as compared to the delta variant due to the significant
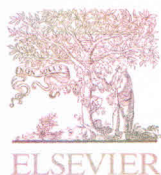
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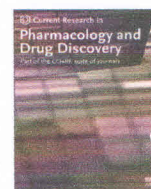Department of Chemistry, St. Joseph's College (Autonomous), Jakhama 797001, India

Potential inhibitors of SARS-CoV-2 (COVID 19) spike protein of the delta and delta plus variant: In silico studies of medicinal plants of North-East India

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ARTICLE INFO

ABSTRACT

Phytochemicals of 38 Medicinal plants of North-East India, with anti-viral, anti-oxidant or anti-bacterial properties were screened for properties of drug likeness. 231 phytochemicals were screened with LIPINSKI rule of five to obtain 131 candidates, which were further screened with SWISS-ADME, to obtain 50 phytochemicals. These phytochemicals were docked with the spike protein of the Delta variant (B.1.617.2) and Delta-Plus (AY.1) variant of SARS-CoV-2 using Autodock Vina and MOE 09. The target proteins were constructed by homology modeling using Swiss-Model. Hydroxychloroquine, taken as a standard in docking analysis, exhibited a binding energy of −6.5 kcal/mol and −6.1 kcal/mol with respect to the Delta variant and Delta-Plus variant respectively. Among the 50 docked results most flavones showed very good docking scores. 3,5,8-Trimethoxy-6,7,4,5-bis(methylenedioxy)flavone, a Poly-Methoxyflavone, produced a highest docking score of −8.7 kcal/mol with respect to both the spike protein targets. Poly-Methoxyflavones and Poly-Ethoxyflavones exhibited good binding affinity for the target spike protein of SARS-CoV-2, and can be potential anti-viral drug candidates against the existing Delta variant of the SARS-CoV-2.

1. Introduction

The current outbreak of severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) has now undergone multiple significant mutations since its detection in 2019 in Wuhan, China. The spread of the Delta variant, which originated in India (Callaway, 2021), has caused concern all over the world, with cases detected in over 96 countries (WHO, 2021). The Delta variant has been denoted by the World Health Organisation as a "variant of concern". At present, the variant possess great threats to many countries like, the United States, Africa, Brazil Australia and Europe. India is still fighting a resurgence of the delta variant which appeared in the early part of 2021.

The Delta variant (B.1.617.2) has reported to be 60% more transmissible than the already highly infectious Alpha variant (B.1.1.7) (Callaway, 2021), and is believed to spread faster than any other variants (Planas et al., 2021). The recent studies on the variant has ignited fresh attention into how SARS-CoV-2 is able to adapt and mutate with the existing environment (Salvatore et al., 2021). Another variant which is very similar to the Delta variant is the Delta plus variant (AY.1) which

was first detected in Europe and was declared as a "variant of concern" by the U.K. governmental agency Health England. The delta plus variant is a sub lineage of the delta variant, with a notable difference of possessing K417N mutation in the spike protein. Most significant mutations in these variants have been occurring in the RBD region of the spike protein (Shu and McCauley, 2017; Khateeb et al., 2021) and these mutations corresponds to the increased transmissibility (Zhang et al., 2020; Volz et al., 2021), increased immune evasiveness of the virus (Weisblum et al., 2020; Verma et al., 2021) and more flexibility to the spike protein to interact with the host receptors (Teruel et al., 2021).
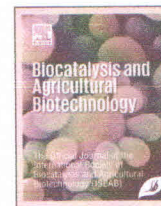
With decrease in vaccine efficacy due to mutations (Noh et al., 2021) and the absence of strong anti-viral drug candidate against SARS-CoV-2, the world is still battling to overcome the Pandemic. In this situation, one can look into nature for a cure and a solution. Most traditionally used medicinal plants have phyto-constituents that are anti-viral, anti-inflammatory, anti-oxidant and anti-microbial. These traditional plants can be investigated for potential anti-viral drug against SARS-CoV-2. A number of Insilco studies have been done with phytochemicals in pursuit of developing anti-viral drugs for SARS-CoV-2 (Pandey et al., 2020;

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Designing and docking studies of imidazole-based drugs as potential inhibitors of myeloperoxidase (MPO) mediated inflammation and oxidative stress

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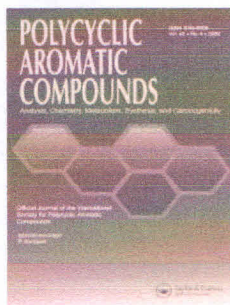
ARTICLE INFO

ABSTRACT

164 imidazole-based drugs were designed and their structures were optimized with DFT method. The drugs were screened for drug-likeness using SWISS-ADME server and molecular docking analysis were carried out with MOE 09. The designed drugs were docked with Human Myeloperoxidase (pdb ID: 1DNU), an active enzyme involved in the cause of inflammation and oxidative stress. The docking analysis identified ligands 154, 158 and 136 as the top three scoring ligand with a binding score of -7.1329 kcal/mol, -7.0021 kcal/mol and -6.9100 kcal/mol respectively. These scores are comparatively better than the selected reference drugs primaquine (-6.3856 kcal/mol) and salicylhydroxamic acid (-4.5722 kcal/mol). The imidazole ring in the drugs contributes to its binding energy through its interaction with the amino acid residue PHE (Phenylalanine) A:99, an important residue of the hydrophobic pocket in the target protein. The interactions of the top scoring ligands with the ARG C:239 and the Porphyrin rings suggest that the designed drugs can act as inhibitors of MPO in competing with H_2O_2 binding site.

1. Introduction

Inflammation and oxidative stress are related to the activity of MPO enzyme which catalyzes the production of potent antimicrobial oxidant hypochlorous acid from H_2O_2 and halides (particularly Cl^-) (Dhiman et al., 2009; Hampton et al., 1998; Krawisz et al., 1984; Lazarevic-Pasti et al., 2015). Electrochemical sensor has been devised for fast and simple detection of wound infection based on Myeloperoxidase activity as an indication for inflammation (Hajnsek et al., 2015). However, under pathological conditions, increased activation of MPO-H_2O_2 system can cause tissue damage of the host due to access amount of hypochlorous acid (Hawkins, 2020; Krasowska and Konat, 2004; Souza et al., 2011; Ulfig and Leichert, 2021). It is therefore necessary to modulate the production of HOCl by inhibiting the MPO enzyme. There are numerous studies being done to tackle the negative effect of the MPO enzyme activity by scavenging the reactive products of MPO activity (Shiba et al., 2008) or by directly inhibiting the target enzyme (Galijasevic et al., 2008; Kettle et al., 1995). Few compounds have been investigated for their property of inhibiting MPO enzyme, like, Hydroxamic acids (Davies and Edwards, 1989), Benzoic acid Hydrazides (Ator et al., 1987), Indoles (Hallingbäck et al., 2006), Tryptamines (Kettle and Candaeis, 2000), and natural products like flavonoids (Kawai et al., 2006; Momić et al., 2008) and resveratrol (Kohnen et al.,

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Synthesis, Single-Crystal XRD, Spectral and Computational Analysis of 2-(3,4-Dimethoxyphenyl)-1H-Phenanthro[9,10-d] Imidazole as Electron-Transport and NLO Material
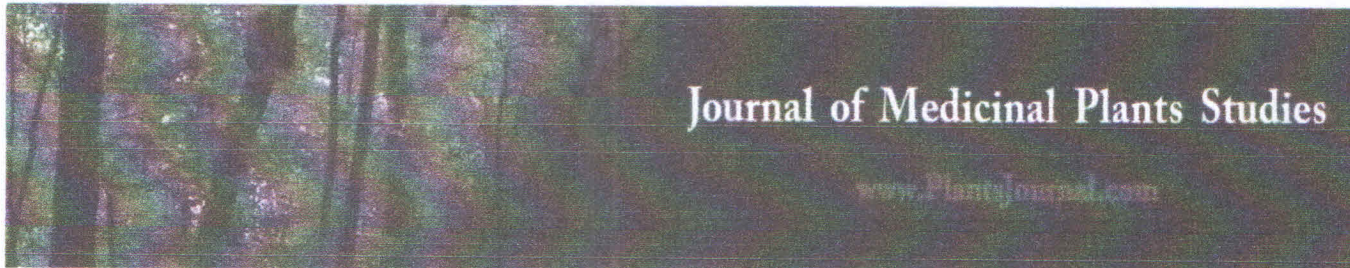
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Journal of Medicinal Plants Studies

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Phytochemical screening and antimicrobial activity of *Erigeron karvinskianus* DC

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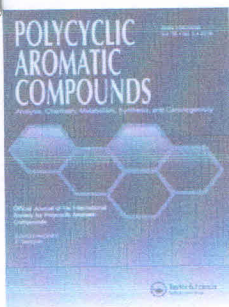
Abstract
Erigeron karvinskianus, a small herb, belonging to the family Asteraceae, was identified by the Botanical Survey of India, Shillong, Meghalaya. The plant parts such as stem, roots and leaves were dried, powdered and subjected to Soxhlet extraction with various solvents based on its polarity. Phytochemical screening of the methanolic and aqueous extract detected the presence of alkaloids, flavonoids, phenolic compounds and tannins. The extracts were subject to antimicrobial assay (DPPH) against four micro-organisms, *viz.*, *E. Coli*, *S. Sureus*, *A. Niger* and *C. Albicans*. The methanolic extracts of leaves exhibited significant antibacterial activity with zones of inhibition of 19.5mm (500 µg/µl) against *E. coli* (Gentamicin as positive control, 18.5 mm). The aqueous extract of the stem-roots showed effective antifungal activity with zones of inhibition measuring 10.5mm (500 µg/µl) against *A. niger* (Amphotericin B as positive control, 10.0 mm). The study proposes that *E. karvinskianus* can be considered as a potent plant-based antimicrobial agent.

Keywords: *Erigeron karvinskianus*, phytochemical screening, anti-microbial analysis

1. Introduction

Plant kingdoms are rich source of secondary metabolites, many of which have been used for medicinal purposes [1]. For centuries wild plants and animals have played a significant role in satisfying household subsistence needs, including nutrition, medical treatment, and energy supply, among others [2, 3]. These plant resources have been evaluated and maneuvered especially by indigenous tribal communities whose lifestyle is very closely interrelated with nature. This traditional knowledge system is derived from the web of interactions between humans, plants, animals, natural forces, and land forms [2, 4]. India houses 427 such tribal communities, of which more than 130 major tribal communities live in the North-East region [2, 5]. In Northeast India, the areas occupied by the Naga tribal community are considered as part of the Indo-Burma biodiversity hotspot region [6]. The state of Nagaland lies between 25°6´-27°4´N and 93°20´-95°15´E, and has an area of 16,527 sq km (R.R. Rao & N.S. Jamir, 1982). With its complex physiography, Nagaland is endowed with a rich and diverse natural flora and owes this richness to the region in which it falls- A junction of three different geoclimatic zones *viz.*, the Indian, the Himalayan and the oriental landmass. The rich floral diversity of the area is largely due to wide altitudinal variation, topographical features, soil characteristics and climatic factors which favored the luxurious growth of plants. The richness of the plant diversity is also evident from the use of varieties of wild edible plant species, fruits and medicinal plants by this hill tribal community [8]. Traditional system of healing practice is highly practiced in the state by using locally available herbs [9]. Many forest areas of the state Nagaland are still yet to be explored scientifically, believed to have a great potential of discovering new plant species [10]. *Erigeron karvinskianus DC* is a species of flowering plant in the family Asteraceae. *Erigeron karvinskianus* is a perennial herb up to 70 centimetres (28 inches) in height, spreading by means of underground rhizomes. It has hairless to hairy leaves reaching up to 10 centimetres long at the base of the branching stem, getting smaller higher up on the stem. The plant usually produces only one flower head per stem, each with 30–80 blue, purple, pink, or white ray florets surrounding numerous disc florets. This plant is found abundantly in Nagaland and can be considered as a weed. However, very little is known about neither the medicinal properties nor its phytochemical constituents.

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Imidazole-Based Alkaloids from Marine Sponges (*Leucetta and Clathrina*) as Potential Inhibitors Targeting SARS-CoV-2 Main Protease: An *In Silico* Approach

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Alpha Difference Operator on its Finite and Infinite Series for Positive Variable K

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Abstract:- In this paper, the author extend the theory on finite and infinite positive variable k of the generalized α-difference equation and also from real line $K(R)$ obtained the two solutions that is closed form solution and inverse form solutions of α-difference equation.

Keywords:- Generalized α-difference equation, Inverse solution, Closed form solution.

I. INTRODUCTION

The theory of difference equation is developed with the definition of the difference operator $\Delta_{(-1)}u(k) = u(k-1) - u(k)$, $k \in N$, where N is the set of natural numbers. Many authors suggested the possible study by redefining the operator as $\Delta_{-l}u(k) = u(k-l) - u(k)$, $k \in R$. The theory developed already with the difference operator Δ agrees when $\ell = -1$.

In 2011, M.MariaSusai Manuel, et.al, [6], have extended the definition of Δ_α to $\Delta_{\alpha(-l)}$ which is defined as $\Delta_{\alpha(-l)}v(k) = v(k-l) - \alpha v(k)$ for the real valued function $v(k)$, $k \in (0, \infty)$. In [7], the authors have used the generalized α-difference equation;

$$v(k-l) - \alpha v(k) = u(k), \ k \in [0, -\infty), \ 0 < l < k \qquad (1)$$

and obtained a summation solution of the above equation in the form

$$v(k) = \Delta_{\alpha(-\ell)}^{-1} u(k) - \alpha^{[\frac{k}{\ell}]} \Delta_{\alpha(-\ell)}^{-1} u(\check{\ell}(k)) = \sum_{r=1}^{[\frac{k}{\ell}]} \alpha^{r-1} u(k+r\ell) \qquad (2)$$

$\check{\ell}(k) = (k + [\frac{k}{\ell}]\ell)$ where, $[\frac{k}{\ell}]$ denotes the integer part of $\frac{k}{\ell}$.

II. PRELIMINARIES

In this section, the authorpresent some basic definition and some results on generalized α-difference operator and polynomial factorials, which will be useful for subsequent discussion.

- **Definition:** *The inverse of the generalized α-difference operator denoted by* $\Delta_{\alpha(-\ell)}^{-1}$ *on $u(k)$ is defined as, if $\Delta_{\alpha(-l)}v(k) = u(k)$ and $\check{\ }(k)$ is defined, then*

$$\Delta_{\alpha(-\ell)}^{-1} u(k) = v(k) - \alpha^{[\frac{k}{\ell}]} c_j \qquad (3)$$

where $c_j$is a constant for all $k \in R_{-}(j), j = (l\check{\ }(k))$.

III. FINITE SERIES

In this section, we present some significant results, and applications on finite sums of k^npowers of α using the inverse of $\Delta_{\alpha(-1)}$.

- **Lemma 3.1** *If $k > 0, 0 < l < k, \alpha > 1$,then*

$$\Delta_{\alpha(-\ell)}^{-1} u(k) - \frac{1}{\alpha^{[\frac{k}{\ell}]+1}} \Delta_{\alpha(-\ell)}^{-1} u(\tilde{\ell}(k)) = \sum_{r=0}^{[\frac{k}{\ell}]} \left(\frac{-1}{\alpha^{r+1}}\right) u(k - r\ell) \qquad (4)$$

Proof: By taking $\Delta_{\alpha(-\ell)}^{-1} u(k) = v(k)$,

we have $\Delta_{\alpha(-1)}v(k) = u(k)$, which gives

$$v(k) = \frac{-1}{\alpha}u(k) + \frac{1}{\alpha}v(k - \ell \qquad (5)$$

Alpha Difference Operator On Its Finite And Infinite Series For Negative Variable K

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Abstract: The paper extends the theory on finite and infinite nagative variable k of the generalized α- difference equation. The paper also investigates the complete and summation solutions of α-difference equation. Suitable examples are provided to illustrate the main results.

Keywords – **Generalized α-difference equation, Summation solution, Complete solution.**

I. Introduction

In 1984, Jerzy Popenda [3] introduced a particular type of difference operator Δ_α is defined on $u(k)$ as $\Delta_\alpha u(k) = u(k-1) - \alpha u(k)$. In 1989 Miller and Rose [8] introduced the discrete analogue of the Riemann-Liouville fractional derivative and proved some properties of the fractional difference operator. The general fractional h-difference Riemann-Liouville operator and its inverse $\Delta_h^{-\nu} f(t)$ were mentioned in [1, 2]. As application of $\Delta_h^{-\nu}$, by taking $\nu = m$ (Negative integer) and $h = \ell$, the sum of mth partial sums on n^{th} powers of arithmetic, arithmetic-geometric progressions and products of n consecutive terms of arithmetic progression have been derived using $\Delta_\ell^{-m} u(k)$ [9].

In 2011, M.Maria Susai Manuel, et.al, [5], have extended the definition of Δ_α to $\Delta_{\alpha(-\ell)}$ which is defined as $\Delta_{\alpha(-\ell)} v(k) = v(k-\ell) - \alpha v(k)$ for the real valued function $v(k)$, $\ell \in (0, \infty)$. In [6], the authors have used the generalized α-difference equation;

$$v(k - \ell) - \alpha v(k) = u(k), \quad k \in [0, -\infty), \ 0 < \ell < -k \tag{1}$$

and obtained a summation solution of the above equation in the form

$$v(k) = \Delta_{\alpha(-\ell)}^{-1} u(k) - \alpha^{\left[\frac{-k}{\ell}\right]} \Delta_{\alpha(-\ell)}^{-1} u(\check{\ell}(k)) = \sum_{r=1}^{\left[\frac{k}{\ell}\right]} \alpha^{r-1} u(k + r\ell) \tag{2}$$

$\check{\ell}(k) = (k + \left[\frac{-k}{\ell}\right]\ell)$ where, $\left[\frac{-k}{\ell}\right]$ denotes the integer part of $\frac{-k}{\ell}$.

The higher order generalized α −difference equation is defined as

$$\Delta_{\alpha_1(-\ell_1)}(\Delta_{\alpha_1(-\ell_2)}(\cdots \Delta_{\alpha_n(-\ell_n)}(v(k)) \cdots)) = u(k), \quad k \in [0, -\infty). \tag{3}$$

There are two types of solutions for the equation (3): one is summation form and another one is closed form. If we are able to find a closed form solution which is coinciding with the summation solution of the equation (3), then we can obtain a formula for finding the values of higher order alpha series of $u(k)$. Hence in this paper, we obtain higher order multi-alpha series to $u(k)$ with respect to ℓ by equating summation and closed form solutions of equation (3).

II. Preliminaries

Before stating and proving our results, we present some notations, basic definitions and preliminary results which will be useful for further subsequent discussions. The polynomial factorial $k_{-\ell}^{(n)} = \prod_{r=0}^{n-1} (k + r\ell)$ and $k_{(-1)}^{(n)} = \prod_{r=0}^{n-1} (k + r)$, Let $\ell_i < k$ be fixed, $k \in [0, -\infty)$.

Lemma 2.1 [7] *If $\Delta_{\alpha(-\ell)} v(k) = u(k)$, then $v(k) - \alpha^{\left[\frac{-k}{\ell}\right]} v(\check{\ell}(k))$ is also a solution of the equation (3) when $n = 1$, $\ell_1 = \ell$ and we can write $v(k) = \Delta_{\alpha(-\ell)}^{-1} u(k)$.*

Corollary 2.2 *If $2^{-\ell_i} \neq \alpha_i$ for $i = 1, 2, \cdots, n$, then*

$$\prod_{i=1}^n \Delta_{\alpha_i(-\ell_i)}^{-1} 2^k = \frac{2^k}{\prod_{i=1}^n (2^{-\ell_i} - \alpha_i)} \tag{4}$$

and hence

$$\Delta_{\alpha(-\ell)}^{-n} 2^k = \frac{2^k}{(2^{-\ell} - \alpha)^n}. \tag{5}$$

Finite and Infinite Generalized Back Ward q-Derivative Operator on its Application

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Abstract:- In this paper, the author define the generalized q-derivative oprator and obtain its relation with shift operator.Also, we present the discrete version of Leibtz theorem according to the generalized q-derivative operator.By defining its inverse,and using Stirling numbers of first kind, we establish formula for the sum of higher power of geometric progression in the field of first of Number Analysis.

Keywords:- *Generalized q-Derivative Operator, Polynomial Factorial, Geometric Progression.*

I. INTRODUCTION

The theory of q- derivative equation is based on the definition of the q- derivative operator is definied as

$$\nabla_q y_k = y_{kq} - y_k$$

where y_k is a sequence of positive integers. The definition of $\nabla_q y_k$ is simply the derivative between two successive operator on two variable and turns to be suitable for dealing with the Cauchy polynomials. Also,derivative a binomial identity which unifies the two identities of Rota and Godman, as well as the q-Vandermond identity.

With this background, in this paper, we develop the basic theory for the generalized q-derivative operator $\nabla_{q(\alpha)} y_k$ and obtain relation connecting $\nabla_q u(k)$, and $\nabla_{q(\alpha)} u(k)$ and,$\nabla_{q(\alpha)} u(k)$ and E^q and the basic properties of $\nabla_{q(\alpha)} u(k)$ and also obtain a formula for finding the sum of the higher powers of geometric progressions using generalized inverse q-derivative operator.

II. PRELIMINARY

In this section, the author defined the generalized q-derivative operator and obtaining the relation between the shift operator and generalized q-derivative operator and polynomials.

2.1. Definition Let u(k) be a real valued *fuction defined on* $[0, \infty)$, *Then the generalized q-derivative oprator is defined as*
$$\nabla_{q(\alpha)} u(k) = u(qk) - \alpha u(k) \tag{1}$$

2.2. Lemma *The Relation between generalized q-derivative operator and q-shift oprator is*
$$\nabla_{q(\alpha)} = (E^q - \alpha) \tag{2}$$

$$\nabla_{q_1,q_2(\alpha)} = \prod_{t=1}^{2} (E^{q_t} - \alpha) \tag{3}$$

$$\nabla_{q_1,q_2,q_3(\alpha)} = \prod_{t=1}^{3} (E^{q_t} - \alpha) \tag{4}$$

2.3. Lemma *If c_1 and c_2 are non-zero sclars and $u(k)$ and $v(k)$ are real valued fuction on $[0, \infty)$, then*
$$\nabla_{q(\alpha)}[c_1 u(k) + c_2 v(k)] = c_1 \nabla_{q(\alpha)} u(k) + c_2 \nabla_{q(\alpha)} v(k)$$

$$\nabla_{q_1,q_2(\alpha)}[c_1 u(k) + c_2 v(k)] = c_1 \nabla_{q_1,q_2(\alpha)} u(k) + c_2 \nabla_{q_1,q_2(\alpha)} v(k)$$

$$\nabla_{q_1,q_2,q_3(\alpha)}[c_1 u(k) + c_2 v(k)] = c_1 \nabla_{q_1,q_2,q_3(\alpha)} u(k) + c_2 \nabla_{q_1,q_2,q_3(\alpha)} v(k)$$

2.4.Theorem *[9]If k is a positive integer,then*
$$\prod_{i=1}^{n} \nabla_{q_i(\alpha_i)}^{-1} k^n = \frac{k^n}{\prod_{i=1}^{n}(q_i - \alpha_i)}, q_i \neq \alpha_i \tag{5}$$

Proof: From (1) and Definition 4.1, and proof shoud end with a square ☐

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Research Article

GC-MS Analysis and *In-silico* Docking Study of Active Antifungal Components of *Entada rheedei* Spreng. (Seeds)

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ARTICLE INFO

ABSTRACT

Entada rheedei Spreng., is a liana or a climber belonging to the family Fabaceae and is widely distributed in tropical and subtropical areas. The seeds of *E. rheedei* Spreng. has been found to contain important phytoconstituents such as phenolics, thioamides and saponins. In this study, we investigated the antifungal properties of *E. rheedei* Spreng. and imply *in-silico* methods to study its bioactive phytoconstituents. The aqueous extract of the seeds exhibited significant antifungal inhibitions against *Aspergillus flavus* and *A. fumigatus*. GC-MS analysis reveals the presence of 13 bioactive compounds that could be potent fungal inhibitors. Subsequently, *in-silico* Molecular docking analysis recognised benzoic acid, 2, 4-bis (trimethylsilyloxy)- trimethylsilyl ester as the active antifungal constituent of the aqueous extract with a docking score of -8.0570 and -9.4564 kcal/mol against *A. flavus* and *A. fumigatus* respectively. The *in-silico* studies were further backed by 100 ns molecular dDynamics simulation studies. This study can thus lead to the production of potent plant-based antifungal drugs.

INTRODUCTION

The phytomedicines are part of our culture and were followed as traditional or indigenous knowledge practices. However, modern medicines replaced them from our lifestyle. Though there are tremendous developments in the field of modern medicine, laterally there are many new challenges arising. Over time, the demand for the herbal-based formulation for curing these diseases is increasing. India being a country with rich bio resources has plenty of herbal formulations and many plants as well as tree parts were widely used for curing many diseases in different forms.[1] Plant kingdoms are rich sources of secondary metabolites, many of which have been used for medicinal purposes.[2] Nagaland, a north-eastern state of India is still yet to be explored scientifically. One such area is the district Tuensang of Nagaland inhibited by the indigenous Chang Naga tribe. Tuensang district shares an international border with the country Myanmar on the eastern sector and lies between 26°142 N latitude and 94°492 E longitudes.[3] Traditional use of plants still prevails in many areas of Tuensang district despite the continuous advancement of modern medicine.

Many villagers depend on local practitioners and used locally available medicinal plants as a substitute of modern medicine.[4] *Entada rheedei* Spreng. is one such plant commonly found in the Tuensang district of Nagaland which is believed to have valuable medicinal properties. *E. rheedei* Spreng., is a woody climber shrub of the Family Fabaceae inhabitant to most tropical countries including India.[5]

The presence of bioactive phytochemicals in this plant may account for its various medicinal properties and its extensive use in traditional medicine. Previous investigations have shown that several *Entada* species

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STATISTICAL RELATIVE UNIFORM CONVERGENCE OF DIFFERENCE DOUBLE SEQUENCE OF FUNCTIONS

Kshetrimayum Renubebeta Devi* and Binod Chandra Tripathy

In this article we introduce the notion of statistical relative uniform convergence of difference double sequence of functions. We have also introduced classes of statistical relative uniform convergence of difference double sequences of functions and study their algebraic and topological properties.

1. Introduction

A double sequence is a double infinite array of numbers by (x_{nk}). Some earlier works on double sequence spaces are found in Bromwich [2]. Pringsheim [19] introduced the notion of convergence of double sequences. Hardy [14] introduced the notion of regular convergence of double sequences. Later on the notion was studied from various aspects by Başarir and Sonalcan [1], Móricz [17], Móricz and Rhoades [18], Tripathy [26] and many others. The notion of statistical convergence was introduced by Fast [11] and Schoenberg [22] independently. Later on it was linked with summability theory and studied it from various aspects by Fridy [12], Gökhan et al. [13], Šalát [21], Şengül et al. [24], [25] and many others. The idea depends on the notion of asymptotic density of subsets of $\mathbb{N}$, the set of natural numbers.

THE PROBLEM OF ONE AND MANY: PLURALISM A WAY FORWARD FOR CULTURAL DIVERSITY IN NORTH EAST INDIA

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Abstract:

The problem of 'One and Many' has a perennial philosophical concern since the pre-Socrates era. The Ancient Greek philosophers spoke of the Arche as the 'fire,' 'water,' 'air,' and even as 'change.' The great philosopher Plato whom Whitehead remarked as the whole Western philosophy as the footnote of Plato, spoke of form or ideas as the reality and spoke of the 'Many' as the prototype or copies of the 'One' reality. Aristotle, student of Plato deviated from him and spoke of the reality of both matter and form, affirming the importance of 'One and Many' (Universality and Particularity). Thus, since the time of Ancient Greece thinkers and philosophers there has been a debate on the 'One and Many.' The shade and the muddle of the 'One and Many' are not restricted to speculative pure philosophy alone, but seen and experienced even in other fields and disciplines. The problem of 'One and Many' has haunted and muddled politics, religions, societies, economies etc., however, one scarcely stop to think and reflect what they mean. What is the meaning of being 'One'? And what is the measure of 'Manyness'?

Keywords : One and Many, multiculturalism, pluralism

Like any good concept, the 'One and Many' are capable of stretching in many directions. Their meanings have amplified from time to time depending on the time and situation with hermeneutics as its aid and play. The political meaning - from many states, one nation (Eck, 2004, p. 29), and one may speak of Indian diversity even in this term of, from many cultural backgrounds and races; one nation. Thus, to speak of the world, everyone is a player and each play his/her own diverse games in his/her set discipline, yet, not forgetting the goal of "One World, One Dream" (The motto of the Beijing Olympics, 2008). One may also assign this even to cultural

DISTINCTIVENESS AND INTER-CONNECTIVITY OF ETHNIC IDENTITY, TRIBE, AND CLAN MANIFESTATION IN NORTHEAST INDIA

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Abstract:

The Northeast India stands out for its uniqueness and richness in ethnic background, cultural vibrancy, tribal distinctiveness, clan manifestation, linguistic variance, and religious diversity. The region is regarded as one of the hotspots of ethnic assertiveness in retaining and protecting their distinctive identities having complex historical backgrounds over the centuries. The ethnic issue involved not just the natives within the Indian subcontinent but also a fight against illegal immigration.

The Northeastern states developed a keen feeling of nationality as an outcome of real kinship founded on clan affiliations rather than fictive kinship. While the dominant tribal group fostered clan activism among its members by acting as a functional kinship group and instilling a sense of camaraderie, the minority groups are also inspired to work together as a group of competent kinship units, oftentimes in contradictions to other clans, which eventually promotes the growth of kinship activism. The emergence of comparable informal institutions that permit people to transit across ethnic lines is underlined by the significance of the clan presence amongst many tribes. The aforementioned unparalleled but intriguing analysis elevates multiple questions concerning the region's ethnogenesis and assertion of rigorous ethnic identity.

Keywords: *Clan, Ethnic Identity, Ethnicity, Kinship, Northeast India, Tribe*
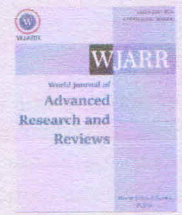
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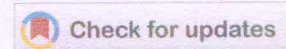
The future of work: AI, automation, and the changing dynamics of developed economies

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Abstract

Artificial intelligence (AI) and automation technologies are rapidly evolving, which will have far-reaching implications for the future of work and the dynamics of developed economies. This research aims to explore the potential impact of AI and automation on the labor market, employment patterns, and the overall socioeconomic landscape. The study uses a literature review and analysis of existing research, policy documents, and expert opinions to understand AI and automation's current state and future trajectory in developed economies. Key areas of investigation include the potential displacement of human labor, the emergence of new job opportunities, changes in skill requirements, and the implications for income inequality. The findings reveal that AI and automation have already disrupted various sectors of the economy, with routine and repetitive tasks being particularly susceptible to automation. The research highlights the potential for new types of jobs to emerge, requiring a combination of technical skills, creativity, and social intelligence. The study emphasizes the importance of lifelong learning and reskilling programs to prepare the workforce for the changing demands of the future job market. It also emphasizes the need for proactive policies and regulatory frameworks to address potential societal challenges arising from AI and automation. Additionally, it highlights the importance of collaboration between government, academia, and industry stakeholders to navigate the evolving work landscape.

Keywords: Artificial intelligence; Automation; changing dynamics; Developed economies; Digitalization; Future of work; Job displacement; Labor market; Machine learning; Productivity Reskilling; Robotics; Technological advancements; Unemployment; Workforce transformation

1. Introduction

Over the past six decades, values, social norms, and language have changed. The fear of the machine has, however, remained constant. The Nobel Prize-winning economist Herbert Simon predicted in 1956 that "Machines will be capable, within twenty years, of doing any work a man can do," and that, consequently, many jobs outside of the traditional blue-collar work in the manufacturing sweatshops would become obsolete as a result of new technologies. Artificial intelligence (AI) and automation technologies have advanced at an unprecedented rate, causing significant changes in many aspects of our lives. These developments, in particular, have sparked widespread debate and concern about the future of work. Understanding the impact of AI and automation on labor market dynamics is critical as developed economies strive to navigate the complex landscape shaped by AI and automation. The introduction of AI and automation technologies has undoubtedly transformed industries worldwide. Automation has already begun to replace human labor in routine, repetitive tasks, resulting in increased productivity, efficiency, and cost-effectiveness. The rapid adoption of AI-powered technologies, combined with their expanding capabilities, is poised to disrupt traditional job markets and reshape the very nature of work.

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Review Article

Types of mushrooms and their bioactive constituents used in the treatment of cancer: A review

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Article Info	Abstract
	Mushrooms have been a culinary and folk medicine since ancient times. Recently overwhelming interest in pharmaceutical potential of mushrooms have been witnessed. One of the main reasons being the properties of mushroom such as immunomodulatory, anti-oxidant, anti-diabetic, anti-tumor, anti-cancer, anti-allergic, nephroprotective, and anti-microbial gents. The anti-cancer compounds present in medicinal mushrooms leads to apoptosis, and eventually inhibiting cancer cells proliferation. The review undertaken explores the types of medicinal mushrooms and active compounds where, clinical trials undertaken shows a good prospect in cancer treating properties such as anti-tumour potential and biological role. Study on the mechanism of compounds such as polysaccharides need to be carried out at an extensive level, additional clinical studies and further research should look at the preventive benefits of medicinal mushrooms in lowering the incidence of cancer by incorporating them into a healthy diet

Introduction

Originally used as food because of their distinct flavour, mushrooms were subsequently discovered to have medicinal benefits (Lucas, 1957). Since time memorial, mushrooms as a primary source of nutrients, full of vitamins, minerals such as selenium, ergothioneine, copper, potassium, beta-glucan, and antioxidants that promote and protect good health. Mycotherapy /Myotherapy is the practice of treating various illnesses and disorders by using extracts or chemicals from medicinal mushrooms which possess anti-carcinogens, chemicals extracted from mushrooms. Therefore, it is vital to grasp the underlying mechanisms of action of the anti-cancer chemicals, understanding the molecular pathways where underlying cancer formation and progression occurs as well as the molecular targets of mushroom-derived bioactive chemicals is crucial for improving the therapeutic success rates against cancer (Saroja, 2019). It is known that certain edible mushrooms are excellent providers of anti-cancer agents against many malignancies (Lucas, 1957). By reducing the negative effects of cancer treatment, such as nausea, bone marrow suppression, anaemia, and decreased resistance, mushrooms are known to support chemotherapy and radiation therapy. Genera *Phellinus, Pleurotus, Agaricus, Ganoderma, Clitocybe, Antrodia, Trametes, Cordyceps, Xerocomus, Schizophyllum, Flammulina, Suillus, Inonotus, Inocybe, Funlia, Lactarius, Albatrellus, Russula,* and *Fomes* are

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Traditional knowledge of medicinal plants used by Kigwema village of Kohima district, Nagaland (India)

Dr. Thejasenuo Julia Kirha and Atekho Kere

Abstract
Kigwema village belongs to one of the Southern Angami villages, under Kohima District with an abundance of plants possessing medicinal properties. This village holds vast traditional knowledge of medicinal plants used to treat and relieve certain diseases. Information gathered on these medicinal plants has been carried out during a field study conducted in Kigwema village.

Keywords: Folk medicine, traditional knowledge, medicinal plant, Kigwema, Nagaland, India

1. Introduction

In the North-eastern part of India, lies the state of Nagaland with an area of 16,579 km2, and Kohima as its state capital (Figure.1). It is a mountainous region with agriculture as its main economic activity which includes rice, corn, potatoes, and sugarcane [1]. Nagaland has about 15 major tribes surrounded by hilltops and valleys with each tribe possessing traditional knowledge of medicinal plants. The applications of this traditional knowledge on medicinal plants are handed down to generations through folk tales and obtaining this valuable information is of utmost importance.

2. Study area and tribals

Nagaland located in the north East India [2] extends between latitude 25°6'-27°4'N and Longitude 93°20'-95°15' E and has a total area of 16579 km2 with an average rainfall of 250 cm. [3]. The present study area, Kigwema Village situated south of Kohima have been conducted to document the abundance of plants which possessed medicinal properties. The people of this village belong to the Angami tribe and agriculture is one of its main economic incomes. The documentation of medicinal plants belonging to this area has been undertaken to assess the use of these plants through plant identification, retain traditional knowledge so as to benefit society, and work further to establish the authenticity and effectiveness of the plants mentioned.

3. Methodology

Data collection on traditional knowledge of medicinal plants was conducted from informants such as locals inhabiting the village, medicine men, village elders. The collected plants were identified using literature and herbarium deposited.

4. Results and Discussion

The plants collected are arranged in alphabetical order according to their scientific names, family followed by local names used by Kigwema villagers and the plant parts used for treatment have been mentioned below in table 1. Pictures of some plants are provided which were available at the time of the research (figure. 2).

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Alpha Difference Operator on its Finite and Infinite Series for Positive Variable K

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Abstract:- In this paper, the author extend the theory on finite and infinite positive variable k of the generalized α-difference equation and also from real line $K(R)$ obtained the two solutions that is closed form solution and inverse form solutions of α-difference equation.

Keywords:- *Generalized α-difference equation, Inverse solution, Closed form solution.*

I. INTRODUCTION

The theory of difference equation is developed with the definition of the difference operator $\Delta_{(-1)}u(k) = u(k-1) - u(k)$, $k \in N$, where N is the set of natural numbers. Many authors suggested the possible study by redefining the operator as $\Delta_{-l}u(k) = u(k-l) - u(k)$, $k \in R$. The theory developed already with the difference operator Δ agrees when $\grave{} = -1$.

In 2011, M.MariaSusai Manuel, et.al, [6], have extended the definition of Δ_α to $\Delta_{\alpha(-1)}$ which is defined as $\Delta_{\alpha(-l)}v(k) = v(k-l) - \alpha v(k)$ for the real valued function $v(k)$, $k \in (0, \infty)$. In [7], the authors have used the generalized α-difference equation;

$$v(k-l) - \alpha v(k) = u(k), \ k \in [0, -\infty), \ 0 < l < k \qquad (1)$$

and obtained a summation solution of the above equation in the form

$$v(k) = \Delta_{\alpha(-\ell)}^{-1}u(k) - \alpha^{[\frac{k}{\ell}]}\Delta_{\alpha(-\ell)}^{-1}u(\check{\ell}(k)) = \sum_{r=1}^{[\frac{k}{\ell}]} \alpha^{r-1}u(k+r\ell) \qquad (2)$$

$\check{\ell}(k) = (k + [\frac{k}{\ell}]\ell)$ where, $[\frac{k}{\ell}]$ denotes the integer part of $\frac{k}{\ell}$.

II. PRELIMINARIES

In this section, the authorpresent some basic definition and some results on generalized α-difference operator and polynomial factorials, which will be useful for subsequent discussion.

- **Definition:** *The inverse of the generalized α–difference operator denoted by* $\Delta_{\alpha(-\ell)}^{-1}$ *on $u(k)$ is defined as, if* $\Delta_{\alpha(-)}v(k) = u(k)$ *and $\check{}(k)$ is defined, then*

$$\Delta_{\alpha(-\ell)}^{-1}u(k) = v(k) - \alpha^{[\frac{k}{\ell}]}c_j, \qquad (3)$$

where $c_j$is a constant for all $k \in R_{-}(j), j = (l^{\check{}}(k))$.

III. FINITE SERIES

In this section, we present some significant results, and applications on finite sums of k^npowers of α using the inverse of $\Delta_{\alpha(-1)}$.

- **Lemma 3.1** *If $k > 0, 0 < l < k, \alpha > 1$,then*

$$\Delta_{\alpha(-\ell)}^{-1}u(k) - \frac{1}{\alpha^{[\frac{k}{\ell}]+1}}\Delta_{\alpha(-\ell)}^{-1}u(\tilde{\ell}(k)) = \sum_{r=0}^{[\frac{k}{\ell}]}(\frac{-1}{\alpha^{r+1}})u(k-r\ell) \qquad (4)$$

Proof: By taking $\Delta_{\alpha(-\ell)}^{-1}u(k) = v(k)$,

we have $\Delta_{\alpha(-1)}v(k) = u(k)$, which gives

$$v(k) = \frac{-1}{\alpha}u(k) + \frac{1}{\alpha}v(k-\ell) \qquad (5)$$

Traditional Knowledge of Medicinal Plants used by Jakhama Village of Kohima District, Nagaland (India)

Thejasenuo Julia Kirha[1], Vizoshuto Thao[2]

[1] Assistant Professor, Department of Botany, St. Joseph's College (A), Jakhama, Kohima.
[2] Student, Department of Botany, St. Joseph's College (A), Jakhama, Kohima.

**ABSTRACT:** Jakhama, One of the Southern Angami villages, under Kohima District, Nagaland, INDIA, has a plethora of medicinal plants surrounded by hilltops and slopes. It holds vast traditional knowledge of medicinal plants used to cure and relief certain ailments and diseases. Information gathered regarding the traditional uses of these medicinal plants have been carried out during field study conducted in Jakhama village.

I. INTRODUCTION

Nagaland comprised of about 15 major tribes, each of which is abundantly bestowed with traditional knowledge of medicinal plants. The present study undertaken to document medicinal plants used by the villagers so as to benefit the general population, involve younger generations so that valuable information is not lost.

Fig.1. Location of study area, Jakhama, Nagaland.
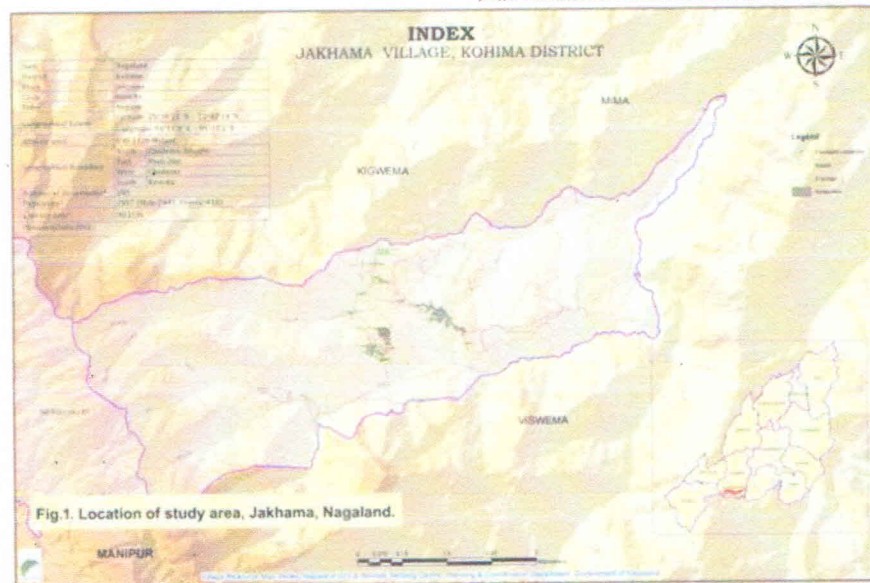
II. STUDY AREA AND TRIBALS

Nagaland situated in the north East India[1] extends between latitude 25°6'-27°4'N and Longitude 93°20'-95°15' E and has a total area of 16579 km2 with an average rainfall of 250 cm2. The present study area, Jakhama Village is situated South of Kohima, the capital city of Nagaland. The people of these area belong to the Angami community. Jakhama village centers around agriculture and most of its area surrounded by herbs, trees and shrubs. The medicinal properties that these plants possessed and used by the villagers has been handed down from generations which naturally forms part of their daily lives and therefore this paper strive to document traditional knowledge of this area so that valuable information's are not lost.

Finite and Infinite Generalized Back Ward q-Derivative Operator on its Application

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Abstract:- In this paper, the author define the generalized q-derivative oprator and obtain its relation with shift operator.Also, we present the discrete version of Leibtz theorem according to the generalized q-derivative operator.By defining its inverse,and using Stirling numbers of first kind, we establish formula for the sum of higher power of geometric progression in the field of first of Number Analysis.

Keywords:- *Generalized q-Derivative Operator, Polynomial Factorial, Geometric Progression.*

I. INTRODUCTION

The theory of q- derivative equation is based on the definition of the q- derivative operator is definied as

$$\nabla_q y_k = y_{kq} - y_k$$

where y_k is a sequence of positive integers. The definition of $\nabla_q y_k$ is simply the derivative between two successive operator on two variable and turns to be suitable for dealing with the Cauchy polynomials. Also,derivative a binomial identity which unifies the two identities of Rota and Godman, as well as the q-Vandermond identity.

With this background, in this paper, we develop the basic theory for the generalized q-derivative operator $\nabla_{q(\alpha)} y_k$ and obtain relation connecting $\nabla_q u(k)$, and $\nabla_{q(\alpha)} u(k)$ and,$\nabla_{q(\alpha)} u(k)$ and E^q and the basic properties of $\nabla_{q(\alpha)} u(k)$ and also obtain a formula for finding the sum of the higher powers of geometric progressions using generalized inverse q-derivative operator.

II. PRELIMINARY

In this section, the author defined the generalized q-derivative operator and obtaining the relation between the shift operator and generalized q-derivative operator and polynomials.

2.1. Definition Let u(k) be a real valued *fuction defined on* $[0, \infty)$, *Then the generalized q-derivative oprator is defined as*
$$\nabla_{q(\alpha)} u(k) = u(qk) - \alpha u(k) \qquad (1)$$

2.2. Lemma *The Relation between generalized q-derivative operator and q-shift oprator is*
$$\nabla_{q(\alpha)} = (E^q - \alpha) \qquad (2)$$

$$\nabla_{q_1,q_2(\alpha)} = \prod_{t=1}^{2} (E^{q_t} - \alpha) \qquad (3)$$

$$\nabla_{q_1,q_2,q_3(\alpha)} = \prod_{t=1}^{3} (E^{q_t} - \alpha) \qquad (4)$$

2.3. Lemma *If c_1 and c_2 are non-zero sclars and $u(k)$ and $v(k)$ are real valued fuction on $[0, \infty)$, then*
$$\nabla_{q(\alpha)}[c_1 u(k) + c_2 v(k)] = c_1 \nabla_{q(\alpha)} u(k) + c_2 \nabla_{q(\alpha)} v(k)$$

$$\nabla_{q_1,q_2(\alpha)}[c_1 u(k) + c_2 v(k)] = c_1 \nabla_{q_1,q_2(\alpha)} u(k) + c_2 \nabla_{q_1,q_2(\alpha)} v(k)$$

$$\nabla_{q_1,q_2,q_3(\alpha)}[c_1 u(k) + c_2 v(k)] = c_1 \nabla_{q_1,q_2,q_3(\alpha)} u(k) + c_2 \nabla_{q_1,q_2,q_3(\alpha)} v(k)$$

2.4.Theorem *[9]If k is a positive integer,then*
$$\prod_{i=1}^{n} \nabla_{q_i(\alpha_i)}^{-1} k^n = \frac{k^n}{\prod_{i=1}^{n} (q_i - \alpha_i)}, q_i \neq \alpha_i \qquad (5)$$

Proof: From (1) and Definition 4.1, and proof shoud end with a square ▨

Village Polity of the Sumi Naga: Change and Continuity

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Abstract

The Sumi Naga is one of the major tribes of Nagaland. One of the important features of the Sumi is the institution of chieftainship. Every Sumi village has a chief whose post is hereditary. In the traditional times the Sumi chiefs were autocratic controlling the social, economic and political life of his subjects. However, with the coming of Christianity, modern education and adaptation of modern ways of life, and most importantly the introduction of democratic form of governance; the powers, functions and privileges of the chiefs have undergone changes. Nevertheless, the customary practice of hereditary chieftainship still continues. This paper attempts to analyze the Sumi chieftainship its changes, continuity and the chieftainship as an integral part of Sumi identity.

Keywords: Chieftainship, customary, hereditary, institution, Sumi Naga, village polity.

Introduction

Every society has its own system of political organization in order to regulate the behaviour of its members. It is through this institution certain norms are laid for the members to follow. Like any other society the Sumi Naga tribe have their own system of governance. The Sumi Naga is one of the major tribes found in Nagaland. Zunheboto district is the original home of the Sumis. However in recent times they occupy a larger part of Niuland district. Besides Zunheboto and Niuland districts some Sumi villages are found in other districts of Nagaland like Wokha, Mokokchung, Kiphire and Phek. Thus because of their highly migratory nature the Sumi have spread out in many directions. They are one of the most scattered and adventurous tribes of Nagaland. The Sumi Naga has its own distinctive characteristics. The Sumi polity is based and centred on hereditary Chieftainship. Accordingly, a basic characteristic of Sumi society is that every village has a hereditary chief. Davis (1821) remarked that the most distinctive nature which differentiates the Sumi Naga from other Naga tribe is the practise of hereditary chieftainship at the village level.

The study covers Sumi Naga society including two (2) districts namely; Niuland and Zunheboto. The study is based on both primary and secondary sources. Personal interviews were conducted on purposive sampling with elderly and significant people irrespective of gender of the Sumi community who have sufficient knowledge on the Sumi polity and traditions. The study attempts to analyze how Sumi chieftainship has undergone many changes yet still continues to be an integral part of Sumi identity.

18. Traditional Political Institution and Democratic System of *Yimkhiung* Nagas

S. Obed Yimchunger

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Abstract

Yimkhiung[1] Naga, previously called as Yimchunger, is one of the Naga Tribe of Nagaland. They are found in three districts of Nagaland namely, Kiphire, Tuensang[2] and Dimapur. On the whole, the administrative and institutional structure of each Naga tribe differs significantly. Yimkhiung Naga tribe is organized around tribal constitutions based on their historic indigenous customs and practices. This article focuses on tribal administrative operations rather than legislative or judicial functions for the reason that the vast majority of functions are administrative in nature. The tribes maintain their inherent sovereignty over their lands and activities because of their original political/territorial status, incidents of preexisting sovereignty are retained.[3]
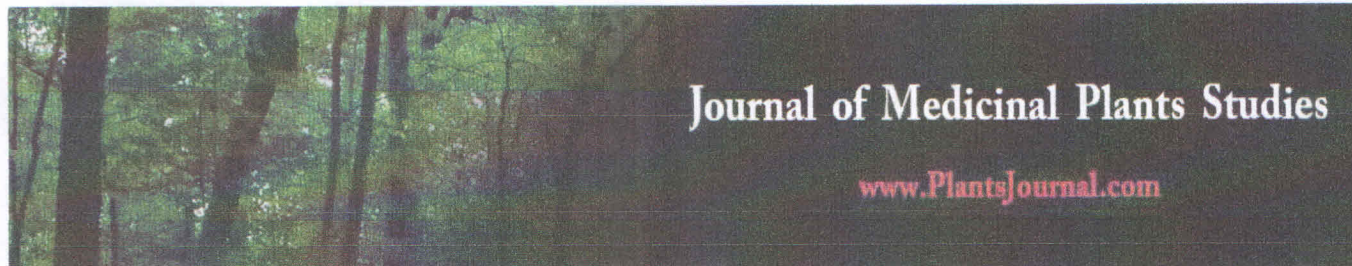
Key words: Political and democratic system, Political Institutions, Yimkhiung Nagas, the village, Decision-making, Gaon Bura, Dobashis, Governance

Introduction

Political democracy is influenced not just by economic and social factors, but also by the design of political institutions (March, J. & Olsen, J. P. 1989: 17). The institutions define and protect values, norms, interests, identities, and beliefs (p.17). Since the time immemorial Yimkhiung Nagas had practiced a system of governance that which is created, enforced, and applied laws for the welfare of Yimkhiung Naga tribe. This system was slowly diluted due to the invasion of British rule and the expansion of British Government in the inhabited areas of Nagas. This has differentiated the political institutions of Yimkhiung Nagas before and after British rule.

Traditional Political Institutions

Traditional political institutions can be described broadly as institutions whose legitimacy is based in part on their association with customary modes of governing a community. These institutions are political in the sense that they make regulations on village affairs to protect village community and ensure right to live which is the tradition and custom of the Yimkhiung Nagas. Traditional governance involves the selection of chiefs and elders, or procedures for decision-making, dispute settlement, land allocation, or inheritance. In the traditional political

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Phytochemical screening and antimicrobial activity of *Erigeron karvinskianus* DC

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Abstract
Erigeron karvinskianus, a small herb, belonging to the family Asteraceae, was identified by the Botanical Survey of India, Shillong, Meghalaya. The plant parts such as stem, roots and leaves were dried, powdered and subjected to Soxhlet extraction with various solvents based on its polarity. Phytochemical screening of the methanolic and aqueous extract detected the presence of alkaloids, flavonoids, phenolic compounds and tannins. The extracts were subject to antimicrobial assay (DPPH) against four microorganisms, *viz.*, *E. Coli*, *S. Sureus*, *A. Niger* and *C. Albicans*. The methanolic extracts of leaves exhibited significant antibacterial activity with zones of inhibition of 19.5mm (500 µg/µl) against *E. coli* (Gentamicin as positive control, 18.5 mm). The aqueous extract of the stem-roots showed effective antifungal activity with zones of inhibition measuring 10.5mm (500 µg/µl) against *A. niger* (Amphotericin B as positive control, 10.0 mm). The study proposes that *E. karvinskianus* can be considered as a potent plant-based antimicrobial agent.

Keywords: *Erigeron karvinskianus*, phytochemical screening, anti-microbial analysis
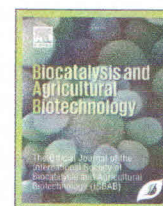
1. Introduction

Plant kingdoms are rich source of secondary metabolites, many of which have been used for medicinal purposes [1]. For centuries wild plants and animals have played a significant role in satisfying household subsistence needs, including nutrition, medical treatment, and energy supply, among others [2, 3]. These plant resources have been evaluated and maneuvered especially by indigenous tribal communities whose lifestyle is very closely interrelated with nature. This traditional knowledge system is derived from the web of interactions between humans, plants, animals, natural forces, and land forms [2, 4]. India houses 427 such tribal communities, of which more than 130 major tribal communities live in the North-East region [2, 5]. In Northeast India, the areas occupied by the Naga tribal community are considered as part of the Indo-Burma biodiversity hotspot region [6]. The state of Nagaland lies between 25°6′-27°4′N and 93°20′-95°15′E, and has an area of 16,527 sq km (R.R. Rao & N.S. Jamir, 1982). With its complex physiography, Nagaland is endowed with a rich and diverse natural flora and owes this richness to the region in which it falls- A junction of three different geoclimatic zones *viz.*, the Indian, the Himalayan and the oriental landmass. The rich floral diversity of the area is largely due to wide altitudinal variation, topographical features, soil characteristics and climatic factors which favored the luxurious growth of plants. The richness of the plant diversity is also evident from the use of varieties of wild edible plant species, fruits and medicinal plants by this hill tribal community [8]. Traditional system of healing practice is highly practiced in the state by using locally available herbs [9]. Many forest areas of the state Nagaland are still yet to be explored scientifically, believed to have a great potential of discovering new plant species [10]. *Erigeron karvinskianus DC* is a species of flowering plant in the family Asteraceae. *Erigeron karvinskianus* is a perennial herb up to 70 centimetres (28 inches) in height, spreading by means of underground rhizomes. It has hairless to hairy leaves reaching up to 10 centimetres long at the base of the branching stem, getting smaller higher up on the stem. The plant usually produces only one flower head per stem, each with 30–80 blue, purple, pink, or white ray florets surrounding numerous disc florets. This plant is found abundantly in Nagaland and can be considered as a weed. However, very little is known about neither the medicinal properties nor its phytochemical constituents.

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Designing and docking studies of imidazole-based drugs as potential inhibitors of myeloperoxidase (MPO) mediated inflammation and oxidative stress

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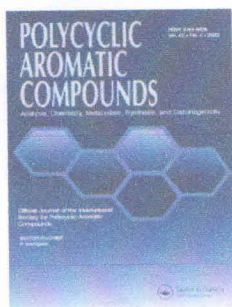
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ABSTRACT

164 imidazole-based drugs were designed and their structures were optimized with DFT method. The drugs were screened for drug-likeness using SWISS-ADME server and molecular docking analysis were carried out with MOE 09. The designed drugs were docked with Human Myeloperoxidase (pdb ID: 1DNU), an active enzyme involved in the cause of inflammation and oxidative stress. The docking analysis identified ligands 154, 158 and 136 as the top three scoring ligand with a binding score of −7.1329 kcal/mol, −7.0021 kcal/mol and −6.9100 kcal/mol respectively. These scores are comparatively better than the selected reference drugs primaquine (−6.3856 kcal/mol) and salicylhydroxamic acid (−4.5722 kcal/mol). The imidazole ring in the drugs contributes to its binding energy through its interaction with the amino acid residue PHE (Phenylalanine) A:99, an important residue of the hydrophobic pocket in the target protein. The interactions of the top scoring ligands with the ARG C:239 and the Porphyrin rings suggest that the designed drugs can act as inhibitors of MPO in competing with H_2O_2 binding site.

1. Introduction

Inflammation and oxidative stress are related to the activity of MPO enzyme which catalyzes the production of potent antimicrobial oxidant hypochlorous acid from H_2O_2 and halides (particularly Cl^-) (Dhiman et al., 2009; Hampton et al., 1998; Krawisz et al., 1984; Lazarevic-Pasti et al., 2015). Electrochemical sensor has been devised for fast and simple detection of wound infection based on Myeloperoxidase activity as an indication for inflammation (Hajnsek et al., 2015). However, under pathological conditions, increased activation of MPO-H_2O_2 system can cause tissue damage of the host due to access amount of hypochlorous acid (Hawkins, 2020; Krasowska and Konat, 2004; Souza et al., 2011; Ulfig and Leichert, 2021). It is therefore necessary to modulate the production of HOCl by inhibiting the MPO enzyme. There are numerous studies being done to tackle the negative effect of the MPO enzyme activity by scavenging the reactive products of MPO activity (Shiba et al., 2008) or by directly inhibiting the target enzyme (Galijasevic et al., 2008; Kettle et al., 1995). Few compounds have been investigated for their property of inhibiting MPO enzyme, like, Hydroxamic acids (Davies and Edwards, 1989), Benzoic acid Hydrazides (Ator et al., 1987), Indoles (Hallingbäck et al., 2006), Tryptamines (Kettle and Candaeis, 2000), and natural products like flavonoids (Kawai et al., 2006; Momić et al., 2008) and resveratrol (Kohnen et al.,

Synthesis, Single-Crystal XRD, Spectral and Computational Analysis of 2-(3,4-Dimethoxyphenyl)-1H-Phenanthro[9,10-d] Imidazole as Electron-Transport and NLO Material

Peter Solo & M. Arockia doss

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THE EFFECTS OF PARENTING STYLES ON ACADEMIC ACHIEVEMENT AND SCHOOL ADJUSTMENT AMONG HIGH SCHOOL STUDENTS IN NAGALAND, INDIA: THE MEDIATING EFFECTS OF ATTACHMENT DIMENSIONS, ACADEMIC SELF-EFFICACY, AND EMOTIONAL REGULATION

Pezalhoukho George[1]
Santhosh Ayathupady Mohanan[2]

Abstract: The present study attempted to examine the mediating effects of adolescent attachment, emotional regulation, and academic self-efficacy between parenting styles, academic achievement, and school adjustment among high school students in Nagaland, India. Furthermore, it investigated whether direct and indirect structural relationships' structure varies according to their parents' genders. The participants of this study were high school students from Nagaland, India. The questionnaire consisted of the following scales: Parenting Authority Scale, Adolescent Attachment Questionnaire, Academic Self-Efficacy Scale, Difficulties in Emotion Regulation Scale, College Adjustment Test, and GPA. To meet the Study's objectives, three studies were designed and conducted via SEM and AMOS with the purpose to investigate the direct and indirect effects of parenting styles on academic achievement and school adjustment among high school students in Nagaland, India: the mediating effects of attachment dimensions, a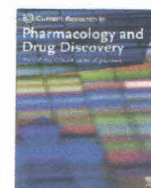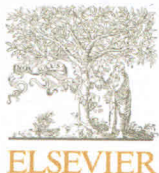cademic self-efficacy, and emotional regulation. The results revealed that authoritarian parenting styles directly correlated with academic achievement and that authoritarian and permissive parenting styles indirectly affected school adjustment mediated by adolescent attachment and emotional regulation. The pattern of structural relationships hypothesized for the proposed model parenting styles results found it operates differently for fathers and mothers. There were neither direct nor indirect correlations between the predictor and the outcome in the parenting style case in this sample group. But in the mother's case, the authoritarian parenting style had a direct significant correlation with academic achievement and a significant correlation between school adjustment and lack

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Potential inhibitors of SARS-CoV-2 (COVID 19) spike protein of the delta and delta plus variant: In silico studies of medicinal plants of North-East India

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ARTICLE INFO

ABSTRACT

Phytochemicals of 38 Medicinal plants of North-East India, with anti-viral, anti-oxidant or anti-bacterial properties were screened for properties of drug likeness. 231 phytochemicals were screened with LIPINSKI rule of five to obtain 131 candidates, which were further screened with SWISS-ADME, to obtain 50 phytochemicals. These phytochemicals were docked with the spike protein of the Delta variant (B.1.617.2) and Delta-Plus (AY.1) variant of SARS-CoV-2 using Autodock Vina and MOE 09. The target proteins were constructed by homology modeling using Swiss-Model. Hydroxychloroquine, taken as a standard in docking analysis, exhibited a binding energy of −6.5 kcal/mol and −6.1 kcal/mol with respect to the Delta variant and Delta-Plus variant respectively. Among the 50 docked results most flavones showed very good docking scores. 3,5,8-Trimethoxy-6,7,4,5-bis(methylene-dioxy)flavone, a Poly-Methoxyflavone, produced a highest docking score of −8.7 kcal/mol with respect to both the spike protein targets. Poly-Methoxyflavones and Poly-Ethoxyflavones exhibited good binding affinity for the target spike protein of SARS-CoV-2, and can be potential anti-viral drug candidates against the existing Delta variant of the SARS-CoV-2.

1. Introduction

The current outbreak of severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) has now undergone multiple significant mutations since its detection in 2019 in Wuhan, China. The spread of the Delta variant, which originated in India (Callaway, 2021), has caused concern all over the world, with cases detected in over 96 countries (WHO, 2021). The Delta variant has been denoted by the World Health Organisation as a "variant of concern". At present, the variant possess great threats to many countries like, the United States, Africa, Brazil Australia and Europe. India is still fighting a resurgence of the delta variant which appeared in the early part of 2021.

The Delta variant (B.1.617.2) has reported to be 60% more transmissible than the already highly infectious Alpha variant (B.1.1.7) (Callaway, 2021), and is believed to spread faster than any other variants (Planas et al., 2021). The recent studies on the variant has ignited fresh attention into how SARS-CoV-2 is able to adapt and mutate with the existing environment (Salvatore et al., 2021). Another variant which is very similar to the Delta variant is the Delta plus variant (AY.1) which

was first detected in Europe and was declared as a "variant of concern" by the U.K. governmental agency Health England. The delta plus variant is a sub lineage of the delta variant, with a notable difference of possessing K417N mutation in the spike protein. Most significant mutations in these variants have been occurring in the RBD region of the spike protein (Shu and McCauley, 2017; Khateeb et al., 2021) and these mutations corresponds to the increased transmissibility (Zhang et al., 2020; Volz et al., 2021), increased immune evasiveness of the virus (Weisblum et al., 2020; Verma et al., 2021) and more flexibility to the spike protein to interact with the host receptors (Teruel et al., 2021).

With decrease in vaccine efficacy due to mutations (Noh et al., 2021) and the absence of strong anti-viral drug candidate against SARS-CoV-2, the world is still battling to overcome the Pandemic. In this situation, one can look into nature for a cure and a solution. Most traditionally used medicinal plants have phyto-constituents that are anti-viral, anti-inflammatory, anti-oxidant and anti-microbial. These traditional plants can be investigated for potential anti-viral drug against SARS-CoV-2. A number of Insilco studies have been done with phytochemicals in pursuit of developing anti-viral drugs for SARS-CoV-2 (Pandey et al., 2020;

FILMS FROM NORTHEAST INDIA: A CULTURAL ECOLOGY PERSPECTIVE

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TO IQAC- (ARTICLES + PUBLICATIONS)

Films from Northeast India are fairly new areas of research that is gaining quick momentum, especially with films from this region being screened at various National and International Film Festivals and also bagging National and International awards. Nature and the indigenous life of the people from this region are intricately linked and this intimacy with nature is reflected in films. Films from this region can help in understanding the complex man-ecology relationship at a time when most environmental narratives are inclined towards portraying an anthropocentric, ecological apocalyptic vision of the world. This paper examines a culture and ecology that are both endangered and yet unexplored, that is new and yet very old, that is on the threshold of the liminality of body/mind, nature/culture, spirit/life, the same nature of which is reflected in films like Village Rockstars, Rong'kuchak (Echoes), III Smoking Barrels and The Pangti Story (documentary).

KEYWORDS: *Culture, environment, Northeast India, & films.*

While writing about his film *Rong'kuchak* (Echoes), Dominic Sangma, a director from Northeast India stated "I remember when I was a kid we would shout out to the forest and it would call us back. I asked my father the reason for it, he told me it was a voice of our forefathers that was responding to us."

Since archaic beginnings, humans have construed their life and living in relation and in (inter) dependence to the physical environment. The beginning of cognitive revolution gave birth to myths, legends, oral stories, folklores, gods and religion, rituals and beliefs. Nature and culture are not binary opposites of each other per se, but are products of human-nature interaction and evolution. Sergio Manghi in "Forward in Wider Perspective. *"Mind and Nature: A Necessary Unity* writes that the human mind is placed "in the very heart of natural history, in the self-generating grammar of living process and of their incessant, remarkable metamorphoses" Through times, from mythical stories and oral narratives, paintings and architecture, literature and films, the fundamental interconnectedness between nature and culture has been symbolically expressed.

Cultural ecology, as a study of the relationship shared between man and nature and adaptations to the ecological changes which in turn shapes any given culture at a particular period has found much relevance in the field of literature. A silent spectator and a silent victim, many eco critics today trace the representation, misrepresentation and non representation of nature in literary narrative process as integrally intertwined to anthropocentric and androcentric activities. This eco critical perusal of literary texts has shown the shared ecological experiences in the face of cultural variance. As Hubert Zapf in his book *Literature as Cultural Ecology: Sustainable Texts Environmental Culture* writes, "Literature as a medium of cultural ecology thus specifically focuses on the interactivity of mind and life which is staged in literary texts as a liminal phenomenon on the boundary between culture and nature, self and other, anthropocentric and biocentric dimensions of existence."

Literature, as an art form has and is undergoing immense evolutionary changes and films are the extended arms of literature where stories and narratives adapt aural-visual medium of representation. This has given a paradigm shift in the way of perceiving as also in the way of representing the human/culture, mind/body, spirit/life dual/liminal relationship. Cultural dialogues are universally different but the shared ecological experience is common and when presented in films, it becomes universal experience. Adrian Ivakhiv, an eco critic writes that films have the ability to form a new bond between humans and the physical environment by bringing before the audience a world beyond their immediate perception.

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AXONE: THE NAGA IDENTITY FROM ORAL NARRATIVE TO THE BIG SCREEN

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The Nagas have unique cultural identity and traditional practices which had been transmitted orally since time immemorial. After the advent of the British to the region in 1832 and the subsequent spread of education thereafter, oral narratives began to be gradually preserved in print. Of late, there has been a steady shift in the dynamics of Naga narrative from print to screen. The film Axone by Nicholas Kharkongor though not a film about the Nagas per se has highlighted the issues of identity faced by North Easterns in mainland India and how 'axone'(a Sumi Naga term for fermented soyabean) gives the North Easterns in Delhi a sense of shared identity. The present paper studies the shift of Naga identity from oral narrative to the big screen.

KEYWORDS: *Oral narratives, Naga identity, Axone, films.*

Ruth Finnegan in *Oral Tradition and the Verbal Arts* mentions the word 'oral' as 'uttered in spoken words; transacted by word of mouth; spoken, verbal.' This is frequently the primary meaning in much apparently technical terminology: 'oral tradition', 'oral literature', 'oral narrative', 'oral testimony' and so on. It is often contrasted with written. (p 5). Until the advent of the British in 1832, the Nagas who reside in North Eastern region of India were a pre-literate society. Writing was unknown to them and hence did not have a collective script of their own.

However, according to Sangtam Naga folklore, they once had a written script on a scroll which was kept hidden above the hearth. But the scroll was devoured by a dog and that was how the script was lost. Almost all Naga tribes share similar tales regarding the lost of their script. The Nagas are undoubtedly an oral society since there is no documentation that has been preserved by them as such. They relied only on oral sources for the dissemination of knowledge to the younger generations.

Oral narration had been the medium of keeping records where men and their memories were considered as sole knowledge keepers. The Nagas rely heavily on their folklore to trace their history, culture, identity etc. The old and fading generation transmits everything that has been preserved through memory to the next generation by means of oral narration/ narratives. Memory serves as the only means to preserve the histories and hence the elders strove to make conscious efforts to convey it to the succeeding generation/ progenies.

In order to facilitate the tradition of learning and to keep up the cultural heritage and identity, *Morungs* were established which was prevalent in all the Naga tribes. These *Morungs* were guard house as well as dormitory for the young boys and girls. They acted as institutions whereby youngsters learnt various cultural practices like songs, dances, customs, tales and beliefs. They also acquired life skills and were taught to be responsible citizens.

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(ARTICLES & PUBLICATIONS)

Indigenous oral knowledge of wild medicinal plants from the Peren district of Nagaland, India in the Indo Burma hot-spot

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ARTICLE INFO

ABSTRACT

The paper report the oral traditional knowledge of wild medicinal plants usage by the indigenous ethnic tribal community from the Peren district of Nagaland, India in the Indo-Burma Hotspot. The pioneer study was based on the semi-structured interview of locals ($N = 240$) in the 12 villages of the Peren District during 2014 - 2018. In total, 179 ethnomedicinal plants from 140 genera and 72 families were documented and identified. The medicinal plants were used for the treatment of 96 different ailments grouped into 18 categories. The medicinal plants also showed high versatile nature with 85 species reported to treat five / eleven different ailments, respectively. The ethnobotanical information obtained from the field documentation will contribute in the development of potential drugs in the future from the diverse wild medicinal plants of the region and contribute towards the preservation of the oral tradition that is disappearing.

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1. Introduction

India recognizes 700 distinct tribes as per the notified Schedule under Article 342 of the Constitution [1] with 104.2 million individuals, which represent 8.6% of the population [2]. Of the total, the North East India region of the Indo-Burma hot-spot is home to 145 native ethnic groups constituting 12% of the total tribal population of the country [3]. Moreover, the different ethnic groups of the region have their own distinct culture, tradition and ethos and their associated knowledge with the different diverse life forms of the region.

Nagaland (25°6'-27°4' N and 93°20'-95°15' E), a floristically diverse state (2431 species belonging to 963 genera and 186 families under angiosperms with 73 endemic) in the northeast India region of Indo Burma hotspot is inhabited by the Naga group with a population of 1,978,502 individuals [2,4,5]. The state is home to 16 major ethnic groups, viz. Angami, Ao, Chakhesang, Chang, Kachari, Khiamniungan, Konyak, Kuki, Lotha, Phom, Pochury, Rengma, Sangtam, Sumi, Yimchunger and Zeliang [6]. Among them, the Zeliang ethnic group is concentrated in the Peren district, with the major population still fully or partially dependent on the forest resources for their sustenance and livelihood. Even today, the locals rely majorly on the traditional healing practices using medicinal plants, as the primary health care facility provided is not sufficient. The district has one District Government Hospital, one Community Health Center, four Primary Health Center and four Subsidiary Health Center. Moreover, transportation and communication are still underdeveloped in the major sections of the region (with 86 recognized and 21 un-recognized villages) located in the mountainous terrain of the Eastern Himalaya [6]. Further, degradation of forest, slash and burn cultivation and an increased urban area have completely wiped out the habitat of medicinal plants, thereby endangering their survival [7] and the practices associated with the ethnic groups. Adding the problem is the inadequate systematic research on the prospect of the medicinal plants and the lack of proper documentation that has left the valuable properties of the plants unexplored. According to World Health Organization (WHO), 65–80% of the world's population depend on herbal medications for the primary health care problems, with the bulk share in the developing nations [8]. So far, 1350 plant species are reported by the native ethnic groups of north east India with their use in traditional healing practices [9].

Today, ethnobotanical research can act as one of the favored and reliable route to drug discovery and play a critical task in the biodiversity conservation [10–15]. It showed the urgent need of extensive ethnobotanical survey to understand the utilization of raw materials in a judicious way and at the same time prepare an inventory for it, given the fact that indigenous people of a given geographical area are associated with nature and rely on plants as a primary source of remedy for various physical ailments [11]. Till date, limited preliminary ethnomedicinal data are documented from the major ethnic Naga groups of the Nagaland region of Indo Burma hot spot [12,13,16–19]. However, a major section of the rich oral traditional knowledge remains untouched and un-reported from the Zeliang ethnic group of the Peren district. Therefore, the study

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SOCIAL FACTORS INFLUENCING NAGA STUDENTS' POLITICAL PARTICIPATION

Mhonthung Yanthan

This article investigates the explanatory and predictive power of certain social factors such as family, peer group, church, mass media, and higher education shaping political participation among college and university students in Nagaland. The data was collected from 300 students studying at Nagaland University. The information collected from primary and secondary sources are quantitatively analysed through statistical tables and qualitatively through Likert scale. The findings show that the correlations among variables were positive and significant, and that social-political factors can significantly explain and predict political participation.

Introduction

Political participation is invariably influenced and determined to a great extent by the socio-political and cultural environment of a given society. Political socialization shapes and transmits a nation's political culture.[1] Political socialization is effected through a variety of agents like family, peer groups, educational institutions, secondary groups, the mass media and government and party agencies.[2] The attitudes and behaviour of an individual are profoundly influenced by one's reference groups. These groups have been classified into three categories by Bone and Ranney; Categories Groups (e.g., sex, age, education etc.); Secondary Groups (e.g., occupation, socio-economic status, caste, social class, ethnic group etc.); and Primary Groups (e.g., family, peer group and neighbourhood).[3]

This article investigates how different factors such as family, peer group, church, mass media, and higher education influences and shape political participation among college and university students in Nagaland.

Gender and Interest in Politics

Research shows that an individual's psychological engagement (e.g., interest, feelings of efficacy) can be an important predictor of political participation.[4] Interest in politics is generally seen as an important pre-condition for any political activity.[5] Between the 1960s and 1990s, an observed growth in political interest in Western democracies appeared to be associated with a change from materialist to post-materialist orientations.[6] Many research studies report women as less interested than men in politics.[7] Although some of the earlier studies indicate a narrowing gender gap in interest in some countries,[8] more recent research shows that considerable gender differences still exist in many countries.[9] Gender differences in levels of political interest have traditionally been attributed to gendered socialisation processes, which promotes an unadventurous political role for women. However, there is evidence that findings of the existence and extent of gender differences may depend on contextual factors[10] or the wording and format of the survey question.[11]

With regard to gender and interest in politics in the context of Nagaland, the following hypotheses were tested to understand the correlation between gender and their interest in politics;

H_0: There is no relationship between Gender and Interest in Politics

H_a: There exists a relationship between Gender and Interest in Politics

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IMPACT OF EDUCATION ON INCOME : A CASE STUDY OF KOHIMA AND MON DISTRICTS OF NAGALAND

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ABSTRACT

The relationship between education and income is vital. Education is often referred to as an investment in **human capital**. People invest in human capital for similar reasons. People invest in financial assets, including making money. In general, those with more education earn higher incomes (see the table). The higher income that results from a college degree is sometimes referred to as the "college wage premium." Research shows that this premium has grown over time. Besides, in general, the more skills people have, the more employable they are.

One of the major objectives of education is the people's economic independence though it is not the sole objective. In this study, an attempt is made to find the impact of education on income with particular reference to the people from two districts of Nagaland, namely, Kohima and Mon. This study is based on the primary data collected from 300 respondents covering 12 villages of Kohima and Mon districts of Nagaland. In this study, it was found that there is a high degree of a positive correlation between the years of education and income of the people.

Keywords: Education, Income, Nagaland

INTRODUCTION

Etymologically, the word education is derived from Latin words Educare, which means to nourish, bring up, train or mold, lead-out, lead forth or draw out. In this sense, education helps to bring out the inherent talents of the people. According to Compton's Encyclopaedia, "Education is the process through which man endeavors to pass along to his children his hard-won wisdom and his aspirations for a better world" (Mitchell et al., 1980, p.74). According to the New Standard Encyclopaedia, "education is the process by which people's abilities and talents are developed. Education, in this broad sense, is also everything that is learned and acquired in a lifetime: habits, knowledge, skills, interests, attitudes, and personality" (Downey et al., 1988, p. E-35).

Education can be defined and analyzed in its broader sense and narrow sense. In its wider sense, education is a lifelong process that starts when a child is conceived in the mother's womb and continues till death. The total of life experiences one achieves throughout one's life contributes to the formation of human behavior, and in this sense, it is a part of education. In its

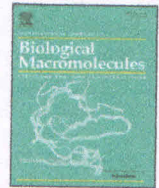# ZCPG, a cysteine protease from *Zingiber montanum* rhizome exhibits enhanced anti-inflammatory and acetylcholinesterase inhibition potential

Kizukala Jamir [a,*], Rik Ganguly [b], Kottapalli Seshagirirao [a]

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ARTICLE INFO

ABSTRACT

A 48 kDa *Zingiber montanum* cysteine protease glycoprotein (ZCPG) purified previously was studied for anti-inflammatory and acetylcholinesterase inhibitory activity. The lipoxygenase inhibition by ZCPG was linear, with an IC50 value of 2.25 μM. MTT, LDH, and cell cycle analysis in THP-1 derived macrophages corroborate no significant cytotoxicity at a lower concentration. ZCPG inhibited the production of nitric oxide, reactive oxygen species, and pro-inflammatory cytokines such as interleukin-1β (IL-1β) and tumor necrosis factor α (TNF-α) in lipopolysaccharide-stimulated THP-1 macrophages. In contrast, an increase in the production of interleukin-10, an anti-inflammatory cytokine, was observed. A reverse-transcription polymerase chain reaction study further confirmed that ZCPG inhibited the expression of IL-1β, inducible nitric oxide synthase, and TNF-α by suppressing their mRNA transcription and expression in LPS stimulated THP-1 macrophages. Furthermore, the nature of acetylcholinesterase (AChE) inhibition by ZCPG is dose-dependent, competitive, and reversible. The AChE inhibitory activity was stable in a broad range of temperatures and pH. In vitro data were further validated by molecular interaction studies with a detailed inspection of the ZCPG probable binding modes in the active sites of AChE that provides the lead to deliver the structural determinants necessary for the activity towards AChE.

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1. Introduction

Alzheimer's disease is the chronic progressive neurodegenerative disorder that leads to selective deterioration of cholinergic neurons in the basal forebrain. It is also the most common cause of dementia in the aged population. The incidence of AD has risen at an alarming rate and is presently a worldwide health problem. According to the World Alzheimer Report 2019, Alzheimer's Disease International highlighted that there are currently around 50 million people living with dementia, which will increase to 152 million by 2050 [1]. Pathogenicity of AD is complex and includes genetic and environmental factors. The pathological alterations in the brain of AD patients are manifested by the development of senile plaques and neurofibrillary tangles (NFTs) [2]. Senile or amyloid plaques composed of amyloid β peptides derived from the irregular cleavage of amyloid precursor protein (APP) while NFTs are formed by the aberrant hyperphosphorylation of tau (τ) proteins which otherwise stabilizes the microtubules in the neuronal cells [2].

AD is also accompanied by cholinergic dysfunction in the central nervous system [3]. There are several clinical strategies available to treat AD; however, the cholinergic hypothesis is the most successful, where a drug acts through counteracting the acetylcholine (ACh) deficit by increasing its level in the brain. ACh is an organic molecule formed in cholinergic neurons and released as a neurotransmitter at nerve endings. Acetylcholinesterase (AChE) is a membrane-bound enzyme found in the synaptic junctions. It is primarily responsible for the termination of the nerve impulse transmission at the cholinergic synapses through catalyzing the hydrolysis of the neurotransmitter ACh and also known to accelerates the aggregation of amyloid β peptides [3,4]. The loss of ACh leads to memory and learning impairment of AD patients. Hence, the use of AChE inhibitors (AChEIs) plays an indispensable role by augmenting cholinergic neurotransmission in the brain and increasing the availability of ACh in synaptic cleft [5]. Physostigmine, rivastigmine, tacrine, donepezil, and galantamine are the presently available AChE inhibitors to treat mild to moderate AD. However, their use is narrow due to factors such as short half-life, non-selectivity, limited efficacy, and side effects like gastrointestinal disorders and hepatotoxicity. AChE inhibitors like alkylpyridium polymers and dehydroevodiamine, despite their effectiveness, have bioavailability problems with possible side effects [6].
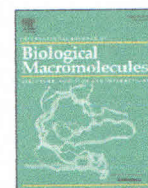
Studies have shown that the senile plaques appear to induce an inflammatory process where the reactive oxygen species are released, suggesting the pathogenicity of AD is apparently due to oxidative

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Education and Employment Interface: An Assessment from Kohima District of Nagaland

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Abstract :- Education and employment are closely inter-related to each other. In this study, an attempt is made to see the impact of education on the employment of the people in Kohima district of Nagaland. With the help of primary data, collected from 150 respondents covering six villages and by employing descriptive statistics, the present paper explored that there is a high degree of positive correlation between the level of education and employment of the people. As expected, the study also explored that the people with higher educational qualification were mostly found to be engaged in service sector, especially government jobs. On the other hand, the people with less education were mostly engaged in primary sector.

Key words :- Education, Employment, Nagaland,

Introduction :- Education is the process through which human personality develops. Education can be defined or analyzed in its wider sense and narrow sense. In its wider sense, education is a lifelong process which starts from the childhood and continues till the death. The sum total of life experiences one achieves throughout his life contribute to the formation of the human behaviour, and in this sense, it is a part of education. In a narrow sense of the term, education is confined in the schools and universities (Bhatia & Narang, 1968). According to Myrdal (1982), education implies imparting knowledge and skill that facilitate to increase output and change in attitude towards the life and work. In this study education is taken in the narrow sense that is the education received from the schools and colleges. Employability means the ability to gain new employment and the capacity to retain the employment by having the necessary skill to perform the task successfully.

Review of Literature :- Bolino (1968) pointed out that the education is not merely to create the ability to reproduce the skills but it can create the potential for finding new goods, new technologies, and new instruments of social policy and no other kind of capital formation has all these features. Graham, (1982) said Many of the natural resources are finite and the most valuable resource is the people. Education of the people has a vital role to play in the renaissance of America. Getting educated is the surest and swiftest road out of ignorance.

George and Sunaina (2005) found in their study that the overemphasis on general education led to the scarcity of manual labour in spite of large scale unemployment. However, the improvement in education and the increase in migration have contributed to a great extent to reduce the intensity of the problem of high rate of unemployment in Kerala. In addition to it the education sector is the biggest employer in the state. Breton (2012) observed that the education has direct and indirect effects on national output. The direct effect of education is that it increases the national income and the indirect effect of the education is that it increases the productivity of the (factors of production) physical capital and labour.

Objective of the study :- The objective of the study is to find the impact of education on the employment of the people in the studied area. In other words the study aims to find out the degree of correlation between the level of education and the employment. So far no comprehensive study has been made on the growth of education and its contribution to employment in Nagaland. This study is an attempt to empirically analyse the growth of education and its contribution employment in Nagaland with special reference to Kohima district.

CHALLENGES FACED BY THE EMERGING NAGA WOMEN ENTREPRENEURS

Loreni Yanthan, Assistant Professor, St.Joseph's College (Autonomous), Jakhama, Kohima, Nagaland

ABSTRACT:

The governments as well as the society have been neglecting the fundamental nature of women entrepreneurship. Nevertheless, the paramount small vendor women entrepreneurs are one of the most important contributors in the growth of the economy of Nagaland. Readymade garments, second hand clothes, beauty parlour, retail stores, flower shops, small vendors like selling vegetables and Paan shops, these are mostly done by a woman entrepreneur. Yet, women entrepreneur in Nagaland are not so much recognized and honoured. A Naga woman, besides her everyday busy agenda of managing domestic chores has a time to fit into a world of trade. The study was confined to the small women entrepreneurs of kohima town in Nagaland. The result of the study shows that different age group of women entrepreneurs having different kinds of problems and challenges and different categories as married, single parent have different issues in their work places.

Key words: women entrepreneurs, joy as an entrepreneur, challenges and problems faced by emerging women entrepreneurs

INTRODUCTION:

An entrepreneur is someone who originates to categorize or systematize and run an enterprise or venture out with risk involvement. In the sense, a person may take up self-employment under various programs launched by the government or NGO's and who in addition to being employed himself and also employ others at least one person in his enterprise can be called as an entrepreneur. Therefore, entrepreneur can be understood well again by calling those people who can take the risk of taking up a business. Women entrepreneurs may be defined as the women or group of women, who initiate, organize and operate a business enterprise. They are also a person who takes the challenges of becoming more economically independent. The term 'women empowerment' through entrepreneurship has come to occupy an important position globally over the years. The purpose of writing on "challenges faced by the emerging Naga women entrepreneurs" is to give prominence to the contribution of women entrepreneurs in Nagaland.

OBJECTIVES

1. To study women entrepreneurs of Nagaland, their interest on becoming an entrepreneur.
2. To study the challenges women entrepreneurs encounter and the strategies they deploy.
3. To study the joy of women as an entrepreneur.

RESEARCH METHODOLOGY

The present study surveyed only the women entrepreneurs in Kohima town. Kohima is the capital of Nagaland with multi religious multi -linguistic, multi -ethnic, and multi-cultural. This diversity makes it more attractive for the research study. Primary data was collected from 60 women entrepreneurs in different business from unorganised sectors using a mixed-method that included face to face interviews, and questionnaire. The study is exploratory in nature and seeks to identify the problems and challenges faced by Naga women entrepreneurs in different areas of business like flower selling, readymade garments, second hand clothes, small vegetable vendors, paan or grocery shops etc. Further the study also aims at finding out the organizational support for women entrepreneurs so that women employees are able to give their best and are able to reach their full potential.

RELEVENACE OF THE STUDY

A Naga woman has enjoyed a social position, with a fundamental role in a family as well as in community affairs. However, being a patriarchal society, men are more preferred and honoured. The tradition itself encourages a Naga woman to be obedient, humble and expects her to play a role of a mother and a wife. As a result even though there are many educated women in Nagaland we don't find women participation in Decision makings. Even though a woman enters into business world or holds government job, there are several problems faced by her. The problems are needed to be studied upon, because there are many issues faced by a woman who has not been brought to light.

Impact of Covid 19 on Women Entrepreneurs Through E-Commerce in Nagaland: Opportunities and Challenges

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Abstract
Many women across the globe are born with entrepreneurial skills and they are observed in different fields of business. The entrepreneur qualities are innovative, patience, hardworking, and management, where you will find all these qualities in women entrepreneurs in small, micro and giant business. E-commerce has given an immense opportunity to various entrepreneurs to reach out more to different areas and regions, national or international. Women entrepreneurs have been fuelling the growth of e-commerce, and their burdens have been reduced in a tremendous way in becoming a better entrepreneur where they gain maximum profits by growing in their business from their own comforts of home. The capability to do business online in India has pushed hundreds of small women entrepreneurs like local entrepreneurs who sell handmade jewellery, handicrafts, local handmade pickles, agro based products, wood work, stone work, pottery and basketry from organizations like MAVIM (Mahila Arthik Vikas Mahamandal) and made in Nagaland e-commerce created by Youth Net for Naga young entrepreneurs in Nagaland. The paradigm shift of offline business to online business seems to be very promising as the number of online sellers and buyers increases. This is clearly evident during this pandemic Covid 19. Many giant businesses are now looking for a partnership with local Governments in order to encourage women entrepreneur's to help them sell online with maximum profits. One such example could be Amazon Company partnering with Nagaland Government and NSDC (National Skill Development Corporation) in order to support women for

Tourism amidst Armed Conflicts in Nagaland

Mhonthung Yanthan*

Abstract

Nagaland has a long history of conflict and a reputation of armed struggle which continues to remain till today.However, Tourism is sensitive to conflict and responsive to peace. Nevertheless, it has the capacity to cope with unpeaceful situations caused by arm edconflict and its induced adverse factors. This paper tries to analyze the effects of armed conflicts and tourism development in Nagaland and explores the areas applied by tourism sector to revive and sustain itself.

In the aftermath of the ceasefire agreement signed between GoI and the various Naga National groups, basing on the historical political transformation of the state and some constructive efforts made by the Nagaland tourism actors towards peace building, this paper argues that violent conflict is not always destructive but can also be a constructive social force for tourism if its actors are "realistic" and not "apocalyptic". The paper will also attempt to add some new knowledge on the complicated relationship between tourism, conflict and peace.

Keywords: Nagaland, Economy, National movement. tourism.

Introduction:

Naga national movement for an independent sovereign nation started before India got its independence in 15th August 1947 and this struggle for Independence continues till today. This has adversely affected the growth and development of tourism in the state of Nagaland.

The concept of tourism in Nagaland is a very recent phenomenon. After the creation of the state of Nagaland in 1964, the progress in the field of tourism was comparatively and relatively slow. Despite the development of various forms of tourism, it has been concentrated in only a few District headquarters like Kohima and Dimapur. Therefore, tourism in Nagaland remains at an infant stage partly because tourism was put in a subordinate status prior to 1981 when it was a part of the Department of Information and Public Relations. But since 1981, after it was upgraded to a full-fledged department, the Department has undertaken various activities of tourism development in the state. Nevertheless, insurgency and many unforeseen turbulent socio-political situations in Nagaland for over six decades continue to adversely affect any effort of the department resulting in negligible tourism development in the state.

A ceasefire agreement signed by Government of India (GOI) with NSCN (IM) in 1997 and* with NSCN (K) in 2001, coincide with the state government's decision to organise a mega tourism promotion event - The Hornbill Festival in 2000, which later became an annual event, spurred the growth in the arrival of both domestic and international tourists.

After the 1997 ceasefire agreement, when Indo-Naga peace talk started with India giving due recognition to the Naga political movement, the situation in Nagaland also saw another dawn of peace, which, enabled the Government of Nagaland to realise the importance of tourism development as a support to cultural and socio-economic development in the state. It was only in 2000, that the Tourism activities have been made eligible for all benefits and subsidies to the different tourism sectors. Under the State Industrial Policy of Nagaland, Tourism was accorded the status of 'Priority Sector'. Since then, the Department of Tourism has started developing tourist facilities/amenities at various places. However, the funds for various infrastructure developments highly depends on the enthusiasm and inputs from the central government. In other words, the state government's outlook towards tourism development

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Impact of Food Security in India: A Study

By Zevisanuo Khate and Loreni Yanthan*

The Global Food Security Index (GFSI) core issues are affordability, availability and quality, and safety of food-security in 113 countries around the world. People are considered to be food secured whilst they have the above three core issues and adequate access at all times to, safe, nutritious food to maintain a healthy and active life. "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life" declared by world food security at 1996, World Food Summit.

Government of India enacted the National Food security Act in July 2013 which will provide highly subsidized foodgrains to 67% of the population but India is still lacking behind when it comes to proving food to all the lower section of the society. So, accomplishing food security seems to be the biggest confront in India, where more than 1/3 of the population is estimated to be absolutely poor. Food security is a multidimensional conception. It goes further of availability, production, and demand for food. Thus there has been a significant outline of shift in the perception of food security from the basic macro level availability and stability to micro level household insecurity, and from a mere assessment progression to an indicator of malnutrition.

Objectives

1. To understand the idea of Public Distribution system.

2. To study the population growth rate and the production of food grains in India.

3. To examine the effectiveness of NFSA on households.

Methodology

The study is purely based on the secondary data, collected from different sources like, Department of Food & Public Distribution Ministry of Consumer Affairs, the Consumption and Expenditure Survey conducted by National Sample Survey Organization (NSSO) along with the annual report on public distribution system 2018-2019, Reserve Bank of India, government bulletins, journals and articles.

Review of Literature

Suryanarayana (2008) reviewed the current public policy focusing on food process. The writing was much appraised on the PDS function from the Below Poverty Line context. The study also recommended that the policy should not only stress on universalization of the PDS but should also focus on the revision of the food security norm making BPL friendly PDS and function efficiently. **Ray** (2011) mentioned that for a very long time period India has been facing the problem of food insecurity. The researcher emphasized that the most important medium through which government ensures food security is through Public Distribution System (PDS). But it has not been triumphant at achieving food security at the desired rank. The paper tried to analyze the food security condition of the country during the last few decades and the working of the PDS with some macro measures, it also tried to identify the food insecure population of the country, assessed the effectiveness of PDS and create ways to solve such discrepancies.

Tiwari (2013) assessed food security as solution for malnutrition. The author talks about the implications of food security bill such as subsidy burden, inflationary pressures, public distribution system and leakages, food security legislation on public finances. The author argued that nutrition security should satisfy the physical and

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"The purse of the poor has holes":
The Proverbs of the Sangtam Nagas

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Nagaland University:Meriem campus, Kohima, Nagaland.

Abstract:

Proverbs are usually short and precise, comprising a single sentence which can be easily slid into a conversation and can convey a message on what is right and what is not to be done instead of a lengthy explanation. They are wise sayings that give advice or instructions about life. For a discerning ear, these proverbs can be a source of much knowledge and wisdom since they have come about as a result of many generations of experience. This paper attempts to translate the proverbs (choyohyu) of the Sangtam Nagas as well as record to help in transmitting the knowledge to the younger generation about their rich culture.

Keywords: *Sangtam, Proverbs, adages, fanciful thoughts*

The Sangtams are one of the sixteen major tribes of Nagaland and they inhabit the eastern part of Nagaland. They are located in two districts- Kiphire and Tuensang. There are six clans amongst the Sangtams- Dhongrü, Jingrü, Langtidhongrü/Langkidhongrü, Mungzarü, Anarü/Yingphidhongrü and Rudhidhongrü clans. The common dialect of the Sangtams is known as Sangtamyü.

The Sangtam dialect like most of the rest of the Naga tribal dialects is still in its infancy when it comes to written records as a means of passing down knowledge from one generation to the next and as such most of the times it is possible only via oral communication like folktales, folksongs and proverbs and adages. These are not mere products of fanciful thoughts but rather there are knowledge and