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FREE RADICAL SCAVENGING ACTIVITY OF *LEPIDIUM SATIVUM* SEED EXTRACT IN HFD/STZ INDUCED DIABETES.

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ABSTRACT

Oxidative stress is the major cause of diabetes and its associated complications. The present study aims to evaluate the antioxidative potential of *Lepidium sativum* seed extract (LSE) on streptozotocin induced diabetic mice.*Lepidium sativum* seeds have been used to treat a variety of human aliments like bronchial asthma, local and rheumatic pain and diabetes due to presence of large number of alkaloids like lepidin and semilepidine, so to study its free radical scavenging activity we have selected these seeds. Adult albino male mice (*Mus musculus* L.) were divided into three groups viz. i) control group ii) diabetic group iii) recovery group. Diabetes was induced in mice by feeding with high fat diet (two weeks) followed by intraperitoneal injection of streptozotocin (STZ) (40 mg/kg body weight). The diabetic mice were administered orally with LSE (200 mg/kg body weight) for 28 days. After the completion of treatment ,liver and pancreas were removed and used for the estimation of oxidative stress parameters namely superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPx). The results showed that the level of all three antioxidative enzymes i.e. SOD, CAT and GPx were reduced in diabetic group as compared to control group but after the treatment of LSE ,significant rise in antioxidative enzymes in recovery group was observed. These finding suggests that LSE had increased the antioxidant enzymes by scavenging free radicals which significantly manage diabetes and its associated complications.

KEYWORDS: ***Lepidium sativum* seed extract (LSE), oxidative stress, antioxidative enzymes, Diabetes**

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Research

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THE ROYAL SOCIETY PUBLISHING

Synergistic effect of natural chickpea leaf exudates acids in heterocyclization: a greener protocol for benzopyran synthesis

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Without using any toxic or hazardous reagent, ligand, acid, transition metal catalyst, additives/promoters and organic solvent, green Knoevenagel condensation and tandem Knoevenagel–Michael reactions have been successfully carried out by using *chickpea leaf exudates* as a naturally sourced Bronsted acid type bio-catalyst. The reaction proceeds in neat *chickpea leaf exudates* at room temperature in aqueous conditions in very short reaction times, and therefore, it is an evergreen and environmentally sound alternative to the existing protocols for benzopyran synthesis. In comparison to the conventional methods, this synthetic pathway complies with several key requirements of green chemistry principles such as the utilization of biodegradable catalyst obtained from renewable feedstock, auxiliary aqueous conditions, along with waste prevention. The same protocol was also extended to the synthesis of 2*H*-xanthene-1,8-diones by condensation of aromatic aldehydes with dimedone achieving excellent yields. Thus, the reported protocol offers an attractive option because of its ecological safety, environmental acceptance, sustainability, low-cost straightforward work-up procedure and with excellent values of green chemistry metrics as compared with other reported methods.

1. Introduction

While considering the increasing environmental pollution and its intensive impact on living systems, developing chemical processes using more environmentally acceptable chemicals, catalysts, solvents, atom-efficient methods and energy-efficient

jpht

Journal of Postharvest Technology
2018, **06**(4): 75-81
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RESEARCH ARTICLE

Texture profile analysis of Sonaka and Thompson seedless raisins

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ABSTRACT

Texture Profile Analysis (TPA) is a well developed and reliable method for measuring firmness of fruits and dehydrated products. In the present investigation, an attempt has been made to study texture profile of raisins of Sonaka and Thompson seedless treated with $MgCO_3$, $K2CO_3$, $CaCO_3$ and Sulphur and coated with Zein protein. Results indicated that hardness of raisins of both varieties was increased due to Zein protein coating and sulphur treatment. The adhesiveness of sulphur treated and Zein coated raisins was reduced in Thompson seedless variety. The raisins of Sonaka and Thompson seedless variety had the least cohesiveness under sulphur, Zein protein coating indicated that both treatments improved durability of and deformation of raisins during post harvest storage. From these results it is concluded that application of sulphur and Zein protein coating on raisins of Sonaka and Thompson seedless is beneficial for maintenance of overall texture of raisins during storage and transport.

Keywords: Raisins, Sonaka, Sulphur, Thompson seedless, TPA, Zein protein

Citation: Patil, V.A. and Naik,V.N. 2018. Texture profile analysis of sonaka and thompson seedless raisins. *Journal of Postharvest Technology*, **6**(4): 75-81.

INTRODUCTION

Grape (*Vitis vinifera* L.) belonging to family Vitaceae is a commercially important fruit crop of India. Grapes are eaten as raw or they can be used for making wine, raisins, jam, and jelly, which are very nutritious and rich source of minerals like potassium, phosphorus, calcium, magnesium and other micronutrients and different vitamins. The dried grapes, commonly known as raisins, have a great importance in economy of the country and considered as one of the nutritious most popular dry fruits in the world. Raisins are dried fruits of certain varieties of grapevines with a high content of sugar and solid flash (Khair and Shah, 2005). The important raisin grape varieties are Thompson seedless and their selections like Tas-A-Ganesh, Sonaka and Manikchaman. The increased production of table grapes has a great potential to produce raisins with minimum losses of fresh fruits (Telis et al., 2004).

Texture profile analyses (TPA) is a well developed and reliable method for measuring firmness of fruits and dehydrated products (Harker et al., 2006) and has been utilized for measuring the physical properties of plant tissue (Bourne, 2002 and Roudot, 2006) mostly from wide range of food and vegetables (Chang et al., 2012, Kulamarva et al., 2009 and Cardoso et al., 2009). TPA provides sensory signals to consumers (Civille, 2011) and thus it stands as one of the measures in the food chain used to estimate the quality of different cultivars at technological ripeness and during storage (Paoletti et al., 1993 and Johnston et al., 2000).

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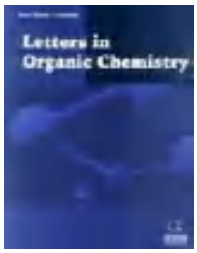

Natural Bio-surfactant for Pseudomulticomponent Synthesis of 2-Aryl-1-aryl Methyl-1H-benzimidazoles

Authors: Morbale, Smita T.; Shinde, Sachin K.; Damate, Shashikant A.; Deshmukh, Madhukar B.; Patil, Suresh S.
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Abstract | References | Citations | Supplementary Data

Green chemistry emphasizes the development of environmentally benign chemical processes and technologies. Pseudo-multicomponent synthesis of 2-aryl-1-arylmethyl-1H-benzimidazoles using o-phenylenediamine and aromatic aldehydes is carried out by Bronsted acid type bio-surfactant as a catalyst. The green features of this method include the use of biodegradable catalyst obtained from renewable resource i.e. Citrus Limonium extract as bio-surfactant type Bronsted acid, which provides a micellar media for effective cyclocondensation. The critical micellar concentration (cmc) of biosurfactant was determined by conductivity method and visualized by light microscopy measurement. Identity of all pure compounds was ascertained on the basis of FT-IR, 1H NMR and 13C NMR spectroscopic techniques.

Keywords: Aromatic aldehydes; Bronsted acid; Citrus limonium; benzimidazole; bio-surfactant; biodegradable catalyst

Document Type: Research Article

Publication date: 1 January, 2018

More about this publication?

Suresh Patil

Synergetic effects of naturally sourced metal oxides in organic synthesis: a greener approach for the synthesis of pyrano[2,3-c]pyrazoles and pyrazolyl-4*H*-chromenes

Authors Sachin K Shinde, Megha U Patil, Shashikant A Damate, Suresh S Patil

Publication date 2018/3

Journal Research on Chemical Intermediates

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Description Abstract

A clean and more economic protocol for the synthesis of pyrano[2,3-c]pyrazoles and pyrazolyl-4*H*-chromenes has been carried out using bael fruit ash (BFA) as a non-conventional natural catalyst in aqueous condition at ambient temperature. The catalyst was obtained from renewable resources by simple thermal treatment to dry rind of *Aegle marmelos* (Bael) fruit and formation of its active phase was confirmed by AAS, DSC-TGA, XRD, FT-IR, and SEM techniques. The BFA catalyst was found to be a green, highly active, easily biodegradable, and recyclable without loss of activity after the fifth run. The methodology provides an alternative platform to the conventional catalyzed process.

Graphical Abstract

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Studies on cyanobacteria: *Spirulina* isolated from Satara district, Maharashtra

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Abstract: **The aim of this work is to study occurrence of genus *Spirulina* and biochemical composition of *Spirulina subsalsa* isolated from various localities of Satara district, Maharashtra. Four species of *Spirulina* were recorded from the study area viz., *Spirulina subsalsa* Oersted ex Gomont, *Spirulina meneghiniana* Zanardini ex Gomont, *Spirulina major* Kutzing ex Gomont and *Spirulina gigantea* Schmidle. Out of these *Spirulina subsalsa* was cultured in conical flasks under lab conditions. Algal biomass was harvested at its exponential phase. Fresh as well as dried biomass was subjected to biochemical analysis. The metabolites considered for biochemical analysis were pigments viz., chlorophyll a, carotenoids and Phycobiliproteins; carbohydrate, protein, lipids, Nitrate reductase (NR) activity, Total flavonoid content (TFC),Total Phenolic content (TPC),Total antioxidant capacity (TAC) and Vitamin C. It showed significant amount of chlorophyll- a i.e. 6.510(mg/ml) with 3.800 (mg/ml) carotenoid content. Total phycobiliproteins recorded was 5.60 (mg/ml) with 0.800 (mg/ml) Phycoerythin, 1.800 (mg/ml) Phycocyanin and 3.00(mg/ml) allophycocyanin respectively. It showed 8.00 % (dry wt.) Carbohydrates, 49.00 % (dry wt.) proteins and 25.00% (dry wt.) lipids which makes it superfood. In addition Total flavonoid content (TFC) recorded was 3.970 (mg./g equivalent of Rutin);Total Phenolic content (TPC) 0.305(mg./g GAE),Total antioxidant capacity (TAC) 0.525(mg./g AAE), and Vitamin C 0.452(mg./g). *Spirulina subsalsa* have been found with promising biochemical characterization which may be exploited further in future.**

Keywords: **Biochemical analysis, Cyanobacteria, Satara, *Spirulina subsalsa.***

1. INTRODUCTION

Blue green algae which are now famously called as “Cyanobacteria” are diverse group of Gram negative organism which have originated 3.5 billion years ago. Since then they are serving us by means of their photosynthetic activity, nitrogen fixing ability and by producing number of valuable biomolecules. *Spirulina* is filamentous edible blue green micro alga belonging to family Oscillatoriaceae. It has typical spiral filamentous thallus with typcal blue green colour. It has received much attention all over the world as potential source of food because of nutritional value of its biomass [14]. *Spirulina* is with high protein and fiber content and therefore used as food source [2], [3]. In addition to the high contents of proteins, it is rich in vitamins, polyunsaturated fatty acids and phycocyanin, β carotene and chlorophyll pigments that have been used as food and drink, cosmetic and pharmaceutical colorants [7], [11], [36]. Diversity in its biological and chemical properties have promoted this genus as food for future [5], [6], [20], [29].

There is great interest of scientists all over the world in culturing microalgae and cyanobacteria even though it is estimated that very few algal species have been studied for their physiology and their potential as producers of biocompounds [34]. But cultivation and processing of *Spirulina* is a difficult task. In this present research an attempt has been made to cultivate and biochemical analysis of *Spirulina subsalsa*. Cyanobacteria are very sensitive to fluctuations in environmental conditions such as light, salinity, temperature and nutrient limitation in natural habitats [40]. Growth and cellular composition of *Spirulina* is affected by cultural conditions.

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Original Article Open Access

Biodiversity of unicellular cyanobacteria from some rice field soils of Satara District (MS)

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ABSTRACT

Blue Green Algae which are also called as cyanobacteria are one of the most important nitrogen fixing photoautotrophs present on the earth since 3.5 billion years. They are known to be found in almost all photic habitats including water bodies, glaciers as well as all terrestrial ecosystems. Paddy fields represent one such habitat. Because of their autotrophic and diazotrophic nature they flourish in rice fields and known to sustain the fertility of this ecosystem. They vary in their morphology. Some of them are unicellular while some are multicellular filamentous. An attempt has been made to document unicellular cyanobacteria from rice fields of Satara district in Maharashtra State. As many as 18 species of unicellular cyanobacteria were recorded from the study area. Order Chroococcales has been reported by nine of genera and 18 species. The genera *Aphanocapsa, Aphanothece* and *Gloeocapsa* were frequently reported.

Keywords: Biodiversity, Chroococcales, Cyanobacteria, Rice fields, Unicellular.

INTRODUCTION

The Blue Green Algae are unicellular or filamentous that sometimes form structures recognizable with naked eye, but usually requires a microscope for identification, they differ from other groups in this flora in that they are prokaryotes.

Their cell contents are not differentiated in to membrane bound structures such as the nucleus, chloroplast, and mitochondria. The popular name for the group Blue Green Algae comes from the color of the cells seen under the microscope. The pigments in their cells like chlorophyll-a, phycocyanin, phycoerythrin express their colour (Kondo and Yasuda 2003). This is because many species have a sheath around individual cells or the whole filament and this sheath is often golden or dark brown, though sometimes a shade of red. The capacity of several cyanobacteria to fix the atmospheric nitrogen is a significant biological process of economic importance (Anand 1989). These

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Characterization and Gas Sensing Properties of Spin Coated WO_3 Thin Films

Sambhaji S. Shendage, Vithoba L. Patil, Sharadrao A. Vanalakar, Sarita P. Patil, Jalindar L. Bhosale, Jin. H. Kim and Pramod. S. Patil

From the journal Zeitschrift für Physikalische Chemie
https://doi.org/10.1515/zpch-2018-1293

Abstract

The WO_3 thin films have been synthesized on to the glass substrates by a simple and easy spin coating method at different deposition cycles and their sensor responses towards various concentrations of NO_2 gas were investigated. The WO_3 films were spin coated at a spinning rate of 2500–3000 rpm for 5, 10 and 15 deposition cycles, respectively. Then the films were annealed at 400 °C for 1 h in a furnace. The structural, morphological, optical and electrical properties of WO_3 films were studied by different characterization techniques such as X-ray diffraction (XRD), Scanning Electron Microscopy (SEM), FT-RAMAN Spectroscopy and electrical resistivity measurements by laboratory made two probe method respectively. It reveals a spherical grain – like morphology with a pure monoclinic phase of WO_3. The FT-RAMAN spectra also confirm the pure monoclinic phase of WO_3. The WO_3-10 film sensor exhibits maximum gas sensitivity 21.93 and 102.4% to 5 and 100 ppm NO_2 at 200 °C, respectively. The WO_3-10 thin film sensors is highly sensitive and selective to NO_2 over other gases.

Keywords: NO2 gas sensor; sensitivity; spin coating; WO3 nanograins

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Actions

Tools

A new species of genus *Bonnaya* (Linderniaceae) from the Western Ghats of India.

Author(s) : Shimpale Vinod ; Sardesai Vinayak ; Sathe Sanjay

Author Affiliation : Department of Botany, The New College, Kolhapur, Maharashtra, 416 012, India.

Journal article : Phytotaxa 2019 Vol.399 No.4 pp.291-295

2 0 0 0

Abstract : *Bonnaya malvidii* (Linderniaceae), a new species from the Western Ghats of India is described and illustrated. The species is similar to *Bonnayasanpabloensis* but differs in its petaloid staminodes and glabrous corolla.

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Bonnaya sanpabloensis (Linderniaceae): An addition to the flora of India

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Abstract: *Bonnaya sanpabloensis* (Linderniaceae) previously reported from South China, Thailand and Philippines, is newly reported for the flora of India from Maharashtra. The species is distinct from other species of the genus in having flowers in terminal racemes, pedicels almost vertical in fruiting and densely pilose staminodes.

Keywords: *Bonnaya sanpabloensis*, India, Linderniaceae, Maharashtra, New Record.

Introduction

The genus *Bonnaya* Link & Otto was segregated from *Lindernia* All. by Fischer *et al.* (2013) on the basis of molecular and morphological evidences. The presence of a single pair of staminodes, narrow lanceolate entire or denticulate leaves, pinnate venation with clearly visible lateral veins and narrow linear capsules are the characteristic features of this genus (Bentham, 1846, 1876; Hooker, 1884; Fischer *et al.,* 2013). During a taxonomic revision of the family Linderniaceae for the state of Maharashtra, the authors collected some interesting specimens of genus *Bonnaya* from the forest areas of two different districts. Laboratory studies showed a few character differences by which these specimens are distinct from all the hitherto described species from India. Therefore, the authors have approached Prof. Jenn-Che Wang, National Taiwan Normal University, Taiwan for his expert opinion and, the specimens were identified as *Bonnaya sanpabloensis* Y.S. Liang & J.C. Wang, a recently described species from South China, Thailand and Philippines (Liang & Wang, 2014). This species was previously been confused with *B. antipoda* because of its similarities in morphological characters, but differs from *B. antipoda* by having 8–16 pairs of teeth on the leaf margins, a racemose inflorescence, densely pilose staminodes and fruiting pedicels held almost vertically. As the species is added for the first time to the flora of India, a detailed description, photo plate and notes on its distribution are presented here.

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Published Online: 30.06.2019

Bonnaya sanpabloensis Y.S. Liang & J.C. Wang, Australian Systematic Botany 27: 192. 2014. *Type*: PHILIPPINES, **Luzon**, Laguna Province, San Pablo City, 23.11.2007, *Y.S. Liang* 1534 (holo PNH; iso TAIF, TNM, TNU) **Fig. 1**

Annual, erect to ascending (sometimes creeping) herbs, 25–30 cm long (rarely upto 1 m); rooting at lower nodes. Stems branched, usually quadrangular, glabrous, green to brown; internodes 2–4 cm long. Leaves sessile or subsessile, oblong-obovate to elliptic, 2–4 × 0.5–1 cm, obtuse or rarely acute at apex, acute at base, margins serrate with 7–15 pairs of teeths, glabrous on both surfaces, pinnately veined, secondary veins 9–11 pairs. Racemes lax, glabrous. Flowers 8–15 on each peduncle, with a subtending bract; bracts linear-lanceolate, 2–4 mm long in flowers, 6–8 mm in fruiting; pedicels ascending in flowers, almost vertical in fruits, 3–20 mm long in flowers,10–20 mm long in fruits. Calyx deeply 5–lobed; lobes linear-lanceolate, acute to acuminate, glabrous, appressed in fruiting, 3–5 × *c.* 1 mm in flower, 4–6 mm long in fruiting. Corolla bi-lipped, 9–12 mm long, abaxially sparsely glandular, blue to purple, upper 2-lobed, 4–5 × 2–3 mm, lower 3-lobed, 3–4 × 3.2–4 mm, middle lobe elongated, with a white mark at the base. Stamens 2; filaments 1.3–2.2 mm long, pale blue to pale purple; anther 1.2–1.6 mm long. Staminodes 2, clavate, 5–6 mm long, lower half white and pilose, upper half glabrous and yellow. Ovary cylindrical, *c.* 2 mm long, *c.* 0.8 mm wide; style 5–6 mm long;

मानवनिर्मित हरितगृह वायू आणि जागतिक तापमानवाढ व परिणाम

श्री. आदिनाथ मुकुंदराव नागरगोजे
संशोधक विद्यार्थी भूगोल विभाग,
डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद

श्री. संतोष सिताराम सोळंगे
संशोधक विद्यार्थी, भूशास्त्र संकुल,
स्वा. रा. ती. मराठवाडा विद्यापीठ, नांदेड

गोषवारा :—

औद्योगिक क्रांतीनंतर आजतागायत बहुसंख्य देशांचा झपाट्याने विकास झालेला दिसून येतो. परंतु, या विकासाबरोबरच हवामानामध्ये अनेक नवनवीन समस्या निर्माण झालेल्या आहेत. त्यापैकीच जागतिक तापमानवाढ ही एक होय. जागतिक तापमानवाढ ही समस्या म्हणजे हरितगृह वायूंचा परिणाम होय. कार्बन—डाय—ऑक्साईड, मिथेन, नायट्रस ऑक्साईड, फ्लोराईड ही हरितगृह वायू आहेत. परंतु मानवाच्या विविध क्रियांमध्ये या वायूमध्ये मोठ्या प्रमाणात वाढ झालेली आहे. त्याचा परिणाम म्हणजे क्लोरोफ्लुरो कार्बन, हायड्रोफ्लुरो कार्बन, सल्फर हेक्साफ्लुराईड या सारखी अनैसर्गिक हरितगृह वायूंची निर्मिती झाल्यामुळे पृथ्वीचे तापमान आणखीनच वाढली आहे. यामुळे तापमान वाढ ही जागतिक समस्या निर्माण झालेली आहे. पृथ्वीचे तापमान भविष्यात जर पटकन वाढत गेल्यास अनेक भयंकर समस्या निर्माण होतील आणि त्याचा अंतिम परिणाम या ठिकाणच्या भूभागावर, समुद्रपाण्यावर व त्याकडेवरील मानव व जीवसृष्टीवर होईल म्हणून योग्य ती दखल घेणे आत्यंत गरजेचे आहे. त्यासाठी हरितगृह वायूचे उत्सर्जन व निर्मिती थांबवून त्यांचे प्रमाण कमी करणे अत्यंत आवश्यक आहे.

१.१. प्रस्तावना :—

पृथ्वीवरील हवामानात सातत्याने बदल घडून येत आहे. लाखो वर्षांपूर्वीचे पृथ्वीवरचे हवामान आणि आजचे हवामान यामध्ये खूप बदल झालेला आहे. म्हणजे, लाखो वर्षांपूर्वी हवामानात जे बदल घडून आले, ते वातावरणातील विविध वायूंच्या प्रमाणात झालेल्या बदलामुळे व त्यासारख्या इतर नैसर्गिक कारणांमुळे घडून आले. वर्तमान काळातील बदलांसाठी मानवाच्या विविध कृती कारणीभूत ठरलेल्या आहेत. आणि ह्या कृती भविष्यकालातील हवामान बदलांसाठी देखिल कारणीभूत ठरु शकतील. त्यासाठी वेळीच दखल घेणे गरजेचे आहे. मानवाच्या प्रत्यक्ष किंवा अप्रत्यक्षरित्या नैसर्गिक प्रवाहांमध्ये जे बदल घडून येत आहेत ते कमीजास्त महत्त्वपूर्ण बदल घडवून आणत आहेत. मानवामुळे जे बदल घडवून आणले जातात ते हरितगृह परिणामांचाच एक भाग आहेत. हरितगृह परिणाम म्हणजेच पृथ्वीच्या भूपृष्ठालगतच्या वातावरणाची पृथ्वीकडून उत्सर्जित केलेली किरणे किंवा उष्णता धारण करण्याच्या क्षमतेत झालेली वाढ होय. यामुळे पृथ्वीच्या वातावरणाच्या खालच्या थरात तापमान झपाट्याने वाढत आहे. त्यामुळे जागतिक तापमान वाढ यासारखी भयानक मानवनिर्मित समस्या निर्माण झालेली आहे.

१.२. अभ्यासाचे महत्त्व :—

औद्योगिक क्रांतीनंतर आजतागायत बहुसंख्य देशांचा झपाट्याने विकास झालेला दिसून येतो परंतु या विकासाबरोबरच हवामानामध्ये अनेक नवनवीन समस्या निर्माण झालेल्या आहेत. त्यापैकीच जागतिक तापमान वाढ' ही एक होय. औद्योगिक क्रांतीनंतर औद्योगिकीकरण, नागरीकरण, जागतिकीकरण, पृथ्वीच्या तापमानात वाढ झाली आणि हे सारी कारणेच पुढे जागतिक तापमान वाढ झाली. जागतिक तापमान वाढीचे परिणाम जाणणे आहे. आणि ही तापमान वाढ रोखीसाठी पुढे या भविष्यात याचे परिणाम कमी होतील याचा अभ्यास करणे महत्त्वाचे आहे. म्हणून हा संशोधनविषय निवडणे महत्त्वपूर्ण ठरते.

ई-कचऱ्याचा मानवी आरोग्य व पर्यावरणावरील परिणाम

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सारांश

सध्या पर्यावरण संवर्धनासाठी सर्व पातळीवर अनेक उपाययोजना आखल्या जात आहेत. परंतु दिवसेंदिवस पर्यावरणाचे संतुलन बिघडण्यासाठी इतर घटकांप्रमाणेच ई-कचरा देखील तेवढ्याच प्रमाणात कारणीभूत ठरत आहे. आपण आपल्या घरातील टाकाऊ वस्तू, कचरा नेहमीच घराबाहेर फेकून देतो. सोसायटीच्या आवारात, सार्वजनिक रस्त्यांवर अथवा कुठेही कचरा टाकलेला असतो. या कचऱ्यात ई-कचराही असतो. पण त्याबद्दल आपल्याला कोणी प्रश्न विचारत नाही किंवा चर्चा करत नाही. सर्वात मोठी चिंतेची बाब म्हणजे देशामध्ये निर्माण होणारा हजारो टन ई-कचरा पारंपारिक भंगारवालेच खरेदी करतात. त्यामुळे पुणे-मुंबईसह देशातील प्रमुख शहरातील ई-कचऱ्याची समस्या आरोग्याच्या दृष्टीने गंभीर बनत चालली आहे. तसेच देशामध्ये मान्यताप्राप्त [illegible] परंतु प्रक्रियेविना पडून राहणाऱ्या 10 टक्के ई-कचऱ्याची विल्हेवाट कशी लावायची याबाबत सामान्य नागरिकांपासून शासकीय प्रशासनापर्यंत सर्वत्र गोंधळाची स्थिती आहे. त्यामुळे ***ई-कचरा ही एक गंभीर पर्यावरणीय समस्या निर्माण झालेली असून याचा खूप मोठा परिणाम पर्यावरणावर आणि सजीवांच्या आरोग्यावर होऊन बसत आहे. या कचऱ्याचे प्रमाण दिवसेंदिवस वाढत असून*** *पर्यावरण रक्षणासाठी आता ई-कचऱ्याचे व्यवस्थापन करून विल्हेवाट लावणे आवश्यक असून याबाबत समाजामध्ये जनजागृती होण्याची आवश्यकता आहे. तसेच शासन पातळीवर ई-कचऱ्याचे पुनर्वापर करणे [illegible] आहे.*

प्रस्तावना:

ई-कचरा म्हणजे फेकून दिलेली किंवा खराब झालेली इलेक्ट्रिकल व इलेक्ट्रॉनिक उपकरणे होय. जागतिक इलेक्ट्रॉनिक व इलेक्ट्रिकल उपकरणांच्या वापरामध्ये मोठ्या प्रमाणात वाढ झालेली असल्याने ई-कचऱ्याचा प्रश्न गंभीर बनत चालला आहे. बिघडलेले किंवा खराब झालेले मोबाईल फोन, [illegible] टेलिव्हिजन संच आणि संगणक यांसारख्या ई-कचऱ्यामध्ये अनेक हानीकारक घटक असतात. हे हानीकारक घटक मानवी आरोग्य, वनस्पती किंवा प्राण्यांना हानी पोहोचवू शकतात. त्यामुळे मानवी आरोग्य आणि पर्यावरणाच्या समस्या निर्माण होत आहेत. भारतामधील इलेक्ट्रॉनिक उपकरणांना वाढणारी मागणी, नवीन ई-कचऱ्याची [illegible] भारतातील निर्माण होणाऱ्या ई-कचऱ्याचे प्रमाण खूपच जास्त आहे.

उद्दिष्टे:

१. भारतातील ई-कचऱ्याचे प्रकार व प्रमाणाचा अभ्यास करणे.
२. ई-कचऱ्याचा मानवी आरोग्य व पर्यावरणावरील परिणामांचा अभ्यास करणे.
३. भारतातील ई-कचरा व्यवस्थापन व व्यवस्थापनातील समस्यांचा अभ्यास करणे.

माहिती संकलन व संशोधन पध्दती:

प्रस्तुत शोध निबंध हा द्वितीयक तथ्य संकलनावर आधारित आहे. द्वितीयक माहिती संकलन करण्यासाठी विविध संदर्भ ग्रंथ, इंटरनेट, वृत्तपत्रे, मासिके इ. चा आधार घेण्यात आलेला आहे.

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Study of Honey as a Sweet Remedy against Fungal Supremacy

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Abstract: ***Different honey samples i.e. Dabur, Himalaya, Patanjali and Madhuban pure organic honey; available in local market examined to study their antifungal property against different fungal strains including Candida albicans, Candida tropicalis and Rhizopus oryzae with Agar well diffusion method. In the present study all honey samples showed inhibitory activity against Candida albicans, In case of Candida tropicalis Dabur and Madhuban honey showed antifungal property. Surprisingly all honey sample failed to resists growth of Rhizopus oryzae. Such difference in inhibitory action may be due to variation in antimicrobial components, source of honey or processing and packaging of honey. In case of Rhizopus oryzae there may need of further dilution of honey samples. Most importantly all honey samples are best as natural remedy against Candida albicans associated infections or diseases.***

Keywords: Honey, Candida albicans, Candida tropicalis, Rhizopus oryzae, Agar well diffusion method.

I. INTRODUCTION

Honey is a sweet food made by bees (including: Apis andreniformis, A. florea, A. dorsata, A. cerana, A. koschevnikovi, A. mellifera, A. nigrocincta) [1]. Honey exports from India grew 19% year-on-year in 2018-19 to $105 million. The U.S. is the largest importer of honey in the global market and also a top destination for Indian honey (https://economictimes.indiatimes.com/). Worldwide business with bee keeping and honey production including global giant manufactures mainly distributed in Brazil, India, Oceania, Europe and other developing countries. The Europe takes the market share of 39%, followed by North America with 31%. China's consumption market has a quicker growing speed of CAGR 16.4% (https://www.marketwatch.com/press-release/global-organic-honey-market-2019-to-2024-analysis-includes-key-developments-market-share-and-size-2019-05-21).

The Indian market have a lot of honey brands that sell honey, including key players at national as well as state level market including; Hitkari, Dabur, Beez, Apis Himalaya, Zandu pure honey, 24 Mantra honey, Patanjali and Madhuban pure organic honey etc. The raw honey proved most beneficial because of loads of nutrients and without added sweetness and preservative (https://www.grabon.in/indulge/health/best-pure-organic-honey-brands-india/). Honey is generally evaluated by a physicochemical analysis of its constituents which influence the storage quality, granulation, texture and flavour, nutritional and medicinal quality of honey. The International Honey Commission (IHC) has therefore proposed certain constituents as quality criteria for honey. These constituents include: moisture content, electrical conductivity, reducing sugars, sucrose content, minerals, free acidity etc. [2]. Besides the testing of these physicochemical parameter; no doubt they are concern with purity and durability of honey, the analysis of comparative medicinal properties of honey is also most important and fruitful. There are number of branded manufactures of honey standing with the promise of being pure, natural, affordable and health benefits aspects, and obviously they are leading at national and international levels. Beside this consumers getting confused regarding choosing honey for specific health benefits. As honey is prominent antimicrobial natural medicine, everyone should know about which honey is specific for particular antimicrobial activity as a basic home remedy.

According to the Ahamad and co-workers, 2017[3] fungal diseases exert burden on the healthcare of developing and underdeveloped regions. Antibiotics treatment failed against the fungal diseases, due to increased drug resistance to commercially available anti-fungal drugs. To overcome this there is a need to develop effective and cheap antimicrobials from natural sources. These facts led us to investigate antifungal activity of different honey samples against different fungal species. According to the World Health Organization (WHO) [4] statistics, about 80% of the people prefer natural product high potential and low toxicity [5]. Honey is one of the best natural products are mostly researched now a days [6]. According to Cruz and his co-workers (2019) [7] in ancient Egypt, beekeeping has been practiced for more than 4000 years, and honey has been used as a medicine in the treatment of wounds, ulcers, burns, abscesses, gastrointestinal diseases, inflammations, rigid joints, and even as a contraceptive method. Honey composed of complex supersaturated sugar with variable 181 substances [6]. Basically substances categorised in major compounds

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Ash of pomegranate peels (APP): A bio-waste heterogeneous catalyst for sustainable synthesis of α,α′-bis(substituted benzylidine)cycloalkanones and 2-arylidene-1-tetralones

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Research on Chemical Intermediates **46**, 3527–3543 (2020)

Abstract

α,α′-bis(substituted benzylidene)cycloalkanones were efficiently prepared from variously substituted aldehydes and cycloalkanones in water by using ash of pomegranate peels (APP) as a catalyst. The APP-catalyst was obtained from bio-waste by simple thermal treatment to dry peels of pomegranate fruit and formation of its active phase was confirmed by FT-IR, XRD, XRF, EDX, SEM, DSC-TGA and BET techniques. The analysis revealed that the present catalyst has basic sites which promote the synthesis of desired products. The main attractions of our protocol are utilization of highly abundant bio-

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Waste mussel shell as a highly efficient heterogeneous catalyst for the synthesis of polyfunctionalized 4*H*-pyrans in aqueous media

U. P. Patil, Rupesh C. Patil & Suresh S. Patil

Reaction Kinetics, Mechanisms and Catalysis **129**, 679–691 (2020)

Abstract

An economical and environmentally friendly heterogeneous base catalyst has been developed from a waste freshwater mussel shell and employed successfully for the synthesis of 4*H*-pyrans in an aqueous medium at ambient temperature. 2-arylidenemalononitrile, an intermediate of 4*H*-pyran reaction, was also prepared using the same catalyst. The catalyst was characterized by FT-IR, XRD, XRF, EDS, and SEM. Analytical tools such as XRF and EDS explored the presence of calcium oxide as a main component in the mussel shell, while the XRD pattern showed crystalline nature and SEM image displayed porous surface with

दुष्काळ - एक नैसर्गिक आपत्ती

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निसर्गापासून संपूर्ण सजीवसृष्टीचा उगम झाला आहे. आदिम कालखंडापासून या निसर्गात अनेक प्रकारचे बदल झालेले दिसून येतात. सुरुवातीच्या कालखंडात हे निसर्गातील बदल चमत्कार, दैवी प्रकोप अशा स्वरूपात मानले गेले. नंतर मानवाला अग्नि, हत्यारे यांचा शोध लागला. मानव शेती करू लागला, मानवाच्या या विकासाच्या टप्प्यात मानवाची निसर्गाकडे बघण्याची दृष्टी बदलत गेली. निसर्गातील घडामोडींची कारणमीमांसा होऊ लागली. या सर्व घडामोडीत कधी भूकंप, अवर्षण, जंगलातील वणवे, अनेक प्रकारची वादळे, भू-गर्भीय हालचाली, अवकाशातून पडणाऱ्या उल्का, भूस्खलन, हिमस्खलन, आकाशातील विजांचा कडकडाट, ढगांचा गडगडाट ..... अशा एक ना अनेक या निसर्गातील घडामोडी घडताना दिसतात. या सर्वांपैकी "दुष्काळ" या विषयावर खोल विचारमंथन मांडावयाचे असून आजच्या विज्ञान युगातील मानवाने दुष्काळ ही एक नैसर्गिक आपत्ती म्हणून कसा स्विकार केला आहे तसेच दुष्काळ विषयक कारणे, दीर्घकालीन उपाययोजना यांचा सविस्तर विचार या शोधनिबंधाच्या अनुषंगाने करावयाचा आहे.

संशोधन विषयाची उद्दिष्टे -

१) दुष्काळ ही संकल्पना दुष्काळाच्या विविध व्याख्यांच्या अनुषंगाने स्पष्ट करणे.
२) दुष्काळ ही संकल्पना स्पष्ट करताना दुष्काळाचे बहुविध स्वरूप अभ्यासणे.
३) दुष्काळाचा इतिहास अभ्यासणे.
४) दुष्काळविषयक विविध कारणांचा ऊहापोह करणे.
५) दुष्काळविषयक समस्यांवर दीर्घकालीन उपाययोजना कोणत्या यांचा ऊहापोह करणे.
६) दुष्काळविषयक चित्रणातून जीवनजाणिवा स्पष्ट करणे व जीवन जाणिव समृध्द करण्यासाठी या अभ्यास विषयाचा विचार होणे आवश्यक वाटते.

संशोधन विषयाची व्याप्ती -

दुष्काळ ही एक नैसर्गिक आपत्ती आहे. इतर अनेक नैसर्गिक आपत्तींपैकी दुष्काळाचे अभ्यास विषयाच्या अनुषंगाने वेगळेपण लक्षात घेणे महत्वाचे वाटते. निसर्गात ही प्रक्रिया पुन्हा पुन्हा घडताना दिसून येते. निसर्गाचा असमतोलपणा या दुष्काळामुळे साधला जातो. दुष्काळामुळे अनेकदा सजीवसृष्टीवर संकट आले असून अवर्षणामुळे काही ठिकाणी झाल्याची उदाहरणे सापडतात. सृष्टीच्या उत्पत्तीपासून ते आजपर्यंत या अवर्षणाची तीव्रता कमी-अधिक स्वरूपात जाणवली आहे. या जीवनजाणिवा रेखाटताना या विषयाची सखोलता लक्षात येत राहते. "दुष्काळ-एक नैसर्गिक आपत्ती" याचा विचार करताना हा अभ्यासविषय म्हणजे स्वतंत्र संशोधनाचा भाग असल्याचे जाणवते. या अनुषंगाने या विषयाचा अभ्यास राष्ट्रीय व आंतरराष्ट्रीय स्तरावर होणे महत्वाचे वाटते.

दुष्काळ - व्याख्या व संकल्पना

दुष्काळ म्हणजे अपुरी अनावृष्टी तसेच अतिवृष्टी म्हणजे सुध्दा दुष्काळच होय. "एखाद्या गोष्टीची कमतरता असणे" अशी अर्थच्छटा दुष्काळ या शब्दामध्ये सामावलेली आहे. जसे की ज्ञानाचा दुष्काळ, नियोजनाचा दुष्काळ, सुविधांचा दुष्काळ इ. अनेक वास्तविक "दुष्काळ" या शब्दाला विविध अर्थच्छटा असल्यातरी दुष्काळ म्हणजे पावसाचा अभाव किंवा कोरडा दुष्काळ असाच अर्थ घेतला जातो. कारण कोरडया दुष्काळाच्या झळा अधिक तीव्र असतात.

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[BBSA-DBN][HSO_4]: a novel –SO_3H functionalized Bronsted acidic ionic liquid for easy access of quinoxalines

Megha U. Patil, Sachinkumar K. Shinde, Sandip P. Patil & Suresh S. Patil

Research on Chemical Intermediates **46**, 4923–4938 (2020)

Abstract

A novel –SO_3H difunctionalized Bronsted acidic ionic liquid (BAIL) 1, 5-bis (butanesulphonic acid)-diazobicyclo [4,3,0] non-5-enium hydrogen sulphate [BBSA-DBN][HSO_4] is introduced for efficient synthesis of quinoxalines via condensation of substituted 1,2-diketones and various aromatic 1,2-diamines. It could serve as a dual functional catalyst for these reactions. This method has the advantages of mild reaction conditions, high yields, short reaction times, easy work-up, non-chromatographic separations and being environmentally friendly. This protocol provides an effective and environmentally friendly alternative methodology for production of quinoxalines and

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Research Article

IMPACT OF HUMAN CAUSES FOR RIVER POLLUTION OF INDIA WITH SPECIAL REFERENCE TO PANCHAGANGA RIVER NEAR ICHALKARANJI MAHARASHTRA

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Received: 10th Dec., 2020 **Revised:** 16th Dec. 2020 **Accepted:** 24th Dec. 2020

Abstract: River Panchaganga is one of the important sources of water supply to agriculture and urban area. The urban and industrial load of the city has increased many folds making the river unfit for every purpose. Physico-chemical and biological aspects of water pollution of Pancha ganga river were analyzed seasonally with respect to physico-chemical parameters from July 2017 to May 2018. The sampling sites were Ichalkaranji Bridge, Shiradwad, and Abdul Lat, near Pancha ganga river in Ichalkaranji. The paper highlights the alarming condition of Eutrofiering of river in various seasons with respects to the parameters and if immediate action is not taken for restoration of the river it will have deadly effect on not only the human habitat surrounding the river but also on the flora, fauna and agricultural land, hence report is to be submitted to WHO, UNESCO-IHE, IWWA, SIDA, University Grant Commission of India, etc. for restoration help.
Keywords: Eutrophication; Human Impact; Panchganga river; Pollution.

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INTRODUCTION

The Panchganga river flows through the borders of Kolhapur. It starts from Prayag Sangam (Village: Chikhli, Taluka: Karveer, Dist.- Kolhapur). The Panchganga is formed, by four streams, the Kasari, the Kumbhi, the Tulsi and the Bhogawati. Local tradition believes in an underground stream Saraswati which together with the other four streams make the Panchganga. The Prayag Sangam confluence marks the beginning of the Panchganga river proper which after receiving the waters of the four tributaries continues in a larger pattern with the flow of waters received from the rivers. From North of Kolhapur, it has a wide alluvial plain. After developing this plain the river resumes its course eastwards. Most of the rivers and their tributaries are being used as site for disposal of domestic and industrial waste in India which impairs their water quality. With rapid growth of the Ichalkaranji city both in urban and industrial areas, the pollution load from sugar and textile industries in the river has increased. The discharge of the effluents and industrial waste by the nearby industries has led to pollution of the Panchganga river which has turned the water green, mainly near Ichalkaranji where there are many textile processing houses which had discharged their effluents without proper treatment. *Eichhornia crassipes* has grown on the river nearby Ichalkaranji. Not much efforts were taken by the local government bodies to control the growth of it, in monsoon the water level rises and it is washed out and seen nowhere until November, in December it starts to grow again and by April the river is covered by it. Many researches have been carried out in order

Research on Chemical Intermediates
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One-pot multicomponent synthesis of *N*-sulfonyl amidines using magnetic separable nanoparticles-decorated *N*-heterocyclic carbene complex with copper

Arvind Pawar[1] · Shivanand Gajare[2] · Audumbar Patil[2] · Rajanikant Kurane[2] · Gajanan Rashinkar[2] · Suresh Patil[1]

Received: 8 November 2020 / Accepted: 29 March 2021

Abstract

Magnetic separable nanoparticles-decorated *N*-heterocyclic carbene complex with copper (MNP[1-Methyl benzimidazole]NHC@Cu) has been prepared by covalent grafting of ionic liquid like 1-methyl benzimidazole unit on the surface of chloro-functionalized Fe_3O_4 magnetic nanoparticles (MNPs) followed by metallation with copper(I) iodide. MNP[1-Methyl benzimidazole]NHC@Cu complex has been characterized by different techniques including Fourier transform infrared (FT-IR) spectroscopy, thermogravimetric analysis (TGA), energy-dispersive X-ray (EDX) analysis, X-ray diffraction (XRD), transmission electron microscopy (TEM) and vibrating sample magnetometer (VSM). MNP[1-Methyl benzimidazole]NHC@Cu complex was successfully implemented as heterogeneous catalyst in one-pot multicomponent synthesis of *N*-sulfonyl amidines from phenylacetylene, tosyl azide and amines at room temperature. Complex could be recycled six times without significant loss in the yield of product.

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Life- style and Buying Behaviour of Rural Women 'A Psychographic Approach with Activities, Interest and Opinion (AIO)' (A case Study)

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Research Guide
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Abstract: The concept of lifestyle and buying behaviour a psychographic approach with AIO explains different dimension of psychographic factors. The lifestyle dimensions are activities, opinion and interest. Activity can be one, how one spends her money, it represents the behavioural option of lifestyle. The activities include purchased goods and studying activities. Interest denotes a person's priorities, preferences and degree of excitement. Interests are good predictors of the activities. These opinions indicate how one feels about a wide variety of events and they formed when people evaluate the importance of things. This research paper focuses on AIO parameters and mindset of rural women customers.

Keywords: lifestyle, buying behaviour, psychographic parameters AIO, rural women consumer and rural market.

I. INTRODUCTION

The concept of consumer behaviour is as old as introduction of the subject Economics. It is known as basic principles of this subject. Afterwards it became at the center in the study of Business Economics and recently in marketing wings. Consumer behaviour is being studied throughout the world by Academicians, researchers, experts and policy makers. Understand the concept of lifestyle and buying behaviour and psychographic approach. In short in this research paper psychographic and demographic factors are considered together for reasonable rational and logical study of the consumer behaviour. Without it, understanding of life style concept is not complete.. The AIO explains different dimension of psychographic factors along with demographic factors as age, education, occupation of the women respondents.

In the context of the chapter research methodology, the lifestyle dimensions are activities, opinion and interest. Activity can be one, how one spends her money. It represents the behavioural option of lifestyle, because the ranges of human activities are limitless. Such human activities include purchased goods and studying activities. Interest denotes a person's priorities, preferences and degree of excitement. Interests are good predictors of the activities. These opinions indicate how one feels about a wide variety of events and they formed when people evaluate the importance of things.

Catalysis Letters
https://doi.org/10.1007/s10562-021-03772-9

Supported NHC-Benzimi@Cu Complex as a Magnetically Separable and Reusable Catalyst for the Multicomponent and Click Synthesis of 1,4-Disubstituted 1,2,3-Triazoles via Huisgen 1,3-Dipolar Cycloaddition

Arvind Pawar[1,3] · Shivanand Gajare[2] · Ashutosh Jagdale[1] · Sandip Patil[1] · Wilson Chandane[2] · Gajanan Rashinkar[2] · Suresh Patil[1]

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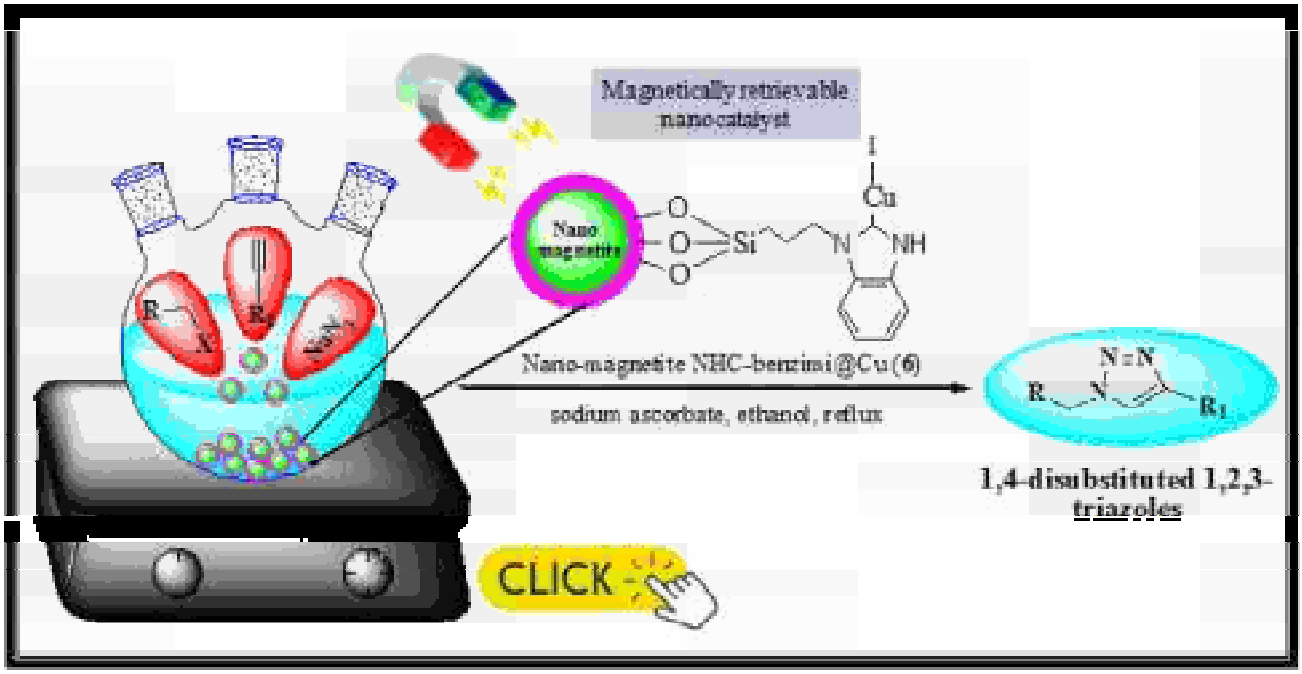
Abstract

In this paper, we report a novel magnetically separable silica coated copper nano-magnetite NHC-benzimi@Cu complex as heterogeneous catalyst for the multicomponent click reaction via Huisgen 1,3-dipolar cycloaddition reaction of alkyl or aryl halide, sodium azide and terminal alkyne, which affords various1,4-disubstituted 1,2,3-triazoles. The multistep prepared nano catalyst has been characterized by various spectroscopic methods such as FT-IR, TGA, EDX, XRD, TEM and VSM. The heterogeneous nano catalyst structures coated on the copper surface are responsible for the excellent catalyst performances in the reaction. The reusability of the catalyst makes the present protocol more fascinating from an environmental and economic point of view.

Graphic Abstract



Keywords Magnetically retrievable nanocatalyst · Click reaction · Copper iodide · 1,2,3-triazoles · Reusability

Extended author information available on the last page of the article

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Sulfated tin oxide (SO_4^{-2}/SnO_2): an efficient heterogeneous solid superacid catalyst for the facile synthesis of 2,3-dihydroquinazolin-4(1*H*)-ones

Wilson Chandane, Shivanand Gajare, Raju Kagne, Mahesh Kukade, Arvind Pawar, Gajanan Rashinkar & Bhaskar Tamhankar

Research on Chemical Intermediates **48**, 1439–1456 (2022)

Abstract

A novel methodology for the facile synthesis of 2,3-dihydroquinazolin-4(1*H*)-ones by using sulfated tin oxide (SO_4^{-2}/SnO_2) as a heterogeneous solid superacid catalyst is reported. SO_4^{-2}/SnO_2 has been characterized by various spectroscopic techniques. The surface area of mesoporous SO_4^{-2}/SnO_2 was found to be 32.015 $m^2\ g^{-1}$ with a pore diameter of 7.10 nm and pore volume of 0.056838 $cm^3\ g^{-1}$ by using BET analysis. The crystallite size of 6.58 nm with the loading of 1.21 mmol g^{-1} sulfate groups was analyzed by XRD

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OPTIMIZATION OF NATURAL DYE EXTRACTION FROM COCONUT HUSK

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KEYWORDS

Dye yield

RSM

Box-Behnken approach

Fibrous husk

ABSTRACT

Coconut is used throughout worldwide in various rituals, festivals and in food. A huge amount of unused parts of coconut such as fibrous husk and shells are thrashed every day. The present study illustrates the sustainable use of fibrous husk as a source of natural dye. Hence, in order to improve the dye yield, various dye extracting factors were optimized with the help of statistical software. The RSM based Box Behnken approach for optimization was found effective which increases dye yield up to 37%. The analysis of the model implies that the model fits well for all the four factors and found to be significant. All the factors M: L ratio, temperature, Time and pH were found influential in the dye extracting process. The system also helps to improve the yield for desired pH to obtain multiple hues. The optimized parameters to improve dye yield were M:L ratio of 1:130, temperature 80°C, time 250 minutes, pH 9.3.

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A STUDY OF SUSTAINABLE ECOTOURISM FOR WOMEN'S EMPOWERMENT IN INDIA

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Abstract
India is the developing countries in the world. This country made new development policy and practices toward economic growth. Traditional India society showing that unequal power relation and limitation in between man and women. India policy focused on such an ecotourism new industry could be tools for fostering economic growth, conservation of natural resources with women empowerment. It is a necessary development because a traditional mass tourism has neglected the issues of ecological sustainable development through women empowerment. However, ecotourism can reduce negative impact of the mass tourism and thus contributed in the conservation for sustainable development. This tourism could be developed the positive impact of employment opportunity, income growth and education for host communities. This paper mainly aims to understand the concept of ecotourism interlink with conservation of natural development. To examine the ecotourism policy and practices for women empowerment in India. This paper applied eco-feminist theoretical framework of Vandana Shiva for understanding women empowerment through ecotourism development. This related data collected from secondary sources like newspapers, books, magazines and internet. This paper concludes that the ecotourism development policies have developed to instate promoted expectation sustainable conservation of natural resources and helping women economic development as a promising.
Keywords*: women empowerment ecotourism, natural resource, conservation, policies, mass tourism*

Introduction

Tourism is the main path of development which has contributed to the national income growth in many countries. Tourism industry development has constructed socio-economic mobilization of people, but several studies focused on critical assessments of traditional mass tourism made self destruction and its contributed in the environmental destruction. Several tourist development has increased major issues quality of life and upgrading environmental problems like ecological balance, declining air quality, biodiversity loss and water policy. Therefore, International conservation of nature in 1992 has focused on the issue of ecotourism development protect. Its carefully grow and sustainable development manner. This paper mainly aims to understand the concept of ecotourism interlink with conservation of natural development.

REVISITING THE PANI PANCHYAT MOVEMENT: A STUDY OF AN ENVIRONMENT MOVEMENT IN MAHARASHTRA

Dr. SANJAY KAMBLE
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Abstract
This paper focused on a contribution of Pani Panchyat in the context of equitable distribution of minor irrigation. This study, based on field material collected from the Purandartaluka Pune district. It examines the revisiting the Pani Panchyat as environment movement, its replication on a wider scale. Its analysis of the local people struggle of farmers within the theoretical framework of new social movement, also with delineating the movement's ideology trends, leadership structure and present status. It addresses such questions how effects on drought eradication and equal water distribution in way irrigation and explain and effective function. This paper explores present status the process and underlying dynamics of Pani Panchyat in Purandartaluka.
Keywords: *water resources, equitable, Pani Panchyat, new social movement environmental movement*

Introduction

Several scholars writing in the collective and voluntary groups are working in the environmental movement, it greater attention on natural resource based on alternative sustainability equity in the present context. The center for science and environment report (1984) showing that the natural resources are degradation of the environment in countries. In this context, we see the human consequences of such degradation and shortage of natural resource based upon the equitable, alternative and sustainable development issues take by new environmental movements.

This new environmental movement's contribution on the manifestation of the consequences of environmental crisis related to the social conflicts. This conflicts between competing groups of resource access of rich farmers and landless Labors caste, tribes and genders in social structure. This conflict related to spread this issue handled by the environmental movement in this country (Baviskar A 1995) this localized movement worked on voluntary based in way conservation of natural resource with alternative sustainable development in the society.

The privies study of the environmental movement like *Chipko* or *Narmada Bachao Andolan* have been well documented in environmental study. However the new social movement of environmental have unexplored or explained as claiming on natural resources such as an equitable water distribution with the sustainable

REVIEW ON WATER ACCESS OF CASTE AND GENDER IN INDIA

Dr. SANJAY SHAMRAO KAMBLE
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Abstract
The present research paper is consistent with the historical loss of equality in the location of caste and gender based water access in India, which is showing existing previous studies and research review of relevant literature. This paper's main aim has to understand social relations of water in the location of caste and gender as cultural and social structures in policy and institutionalization process in this previous study It is articulated through the understanding conceptual, theoretical and methodological procedure., how its reflection and representation of the social relations of water and equal distribution of water as rights to all people. It also refers to several research books and published prior research reports, which has made significant contributions to issues and debates concerning the present research. This review outlines the literature, mostly by following thematic and empirical content, much more research has been carried out on caste and gender based social relation of water and relevant literature on water access. This current issue is how much is described and studied by Indian and foreign scholars. This undertaken previous literature also how it can be shown that the conditions of caste, gender and marginalized commodities in view of social relations of water access.
Keywords: *social relations, water, caste, gender, marginalization*

Introduction

The present research paper is consistent with the historical loss of equality in the location of caste and gender based water access in India, which is showing existing previous studies and research review of relevant literature. This paper's main aim is to understand the social relations of water in the location of caste and gender as cultural and social structures in policy and institutionalization process in this previous study. It is articulated through the understanding of conceptual, theoretical and methodological procedure. The present debate and discourse deals with the review of relevant literature outlining the current issue and debate related to research on locations of caste and gender relations with regard to equal rights in India, Deepa Joshi (2009) argued that caste and gender based created disparities and arrangement in institutional and policy implementation level they reproduced and managed from institution to state to new liberal institutional arrangement in India.

We see the previous research work on caste and gender in water access in India. It shows the multiplication factor determining water equality in different

ROLE OF THE COMMUNITY RADIO IN EDUCATIONAL DEVELOPMENT OF TRIBAL COMMUNITY IN INDIA DURING COVID 19 PANDEMIC

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Dist. Sangli

Abstract

The present research consistent has focused on the role of community radio in the improvement of tribal community educational status in India during Covid- 19. Which are showing the role of community radio using educational tools for participatory community social development with the right to education of marginalized community in the present context. The community radio contributed in the development of socioeconomic, political, agricultural, occupational mobility among tribal community development. The paper main aims have to understand community radio for tribal education development. To examine the role of community development in the preservation of traditional culture, knowledge, and fundamental education through local language, new agricultural, technical and occupational knowledge, higher education in tribal communities. Discuss the concept Community radio is based on constructing an approach which provides knowledge built up collectivities participatory methods in both content production and management of the radio station in the tribal area. In this study to examine the operational conceptual framework of community radio and the theory of the network society in the role of community radio in tribal educational development. This research employed qualitative research methodology to interpretive analysis through the case study method as stories of participatory communication contribution of community radio needs to more utilize full potential as a medium of tribal education in India in the new information age.

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$NiZnFe_2O_4$: An eco-compatible and magnetically separable catalyst for multicomponent synthesis of 2-amino-4*H*-chromenes

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Research Article

Keywords: 2-amino-4H-chromene, magnetically separable Nickel-Zinc ferrite, Knoevenagel condensation, Multi-component reaction

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Potential of IRNSS/NavIC L5 signals for ionospheric studies

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Abstract

Indian Space Research Organization (ISRO) has developed an indigenous system named Indian Regional Navigation Satellite System (IRNSS) or NavIC (Navigation with Indian Constellation), that consists of 7 satellites and transmits navigation signal in L and S bands. ISRO, for validation of the system, has installed many IGS (IRNSS/GPS/SBAS) receivers scattered over the Indian region. Using preliminary data from two geographically widely separated stations over India, this paper presents the results on studies on parameters of IRNSS signal quality and discusses how these parameters may be used to study the ionospheric behavior over the Indian region. The results show the importance and advantages of using IRNSS data for such studies.

Keywords: IRNSS/NviIC; GNSS; Navigation; Carrier to noise ratio; TEC

1. Introduction

The Indian Regional Navigation Satellite System or IRNSS with an operational name NAVIC (NAVigation with Indian Constellation) is an independent regional satellite based navigation system that is developed by Indian Space Research Organization (ISRO), India. This system is used to provide accurate real-time positioning and timing services over the primary service area consisting of India and the region extending to 1500 km around India. It comprises a constellation of 3 satellites in Geostationary orbit (GEO: IRNSS/NavIC 1C, 1F and 1G) and 4 satellites in Geosynchronous orbit (GSO: IRNSS/NavIC 1A, 1B, 1D and 1E). The three GEOs are located at 32.5°E, 83°E and 131.5°E and the four GSOs have their longitude crossings 55°E and 111.75°E (Rethika et al. 2015). The secondary service area extends over a region from Latitude 30° South to 50° degree North and Longitude 30° East to 130° East. This system will provide two types of services-standard positioning service (SPS) that will be open for civilian use, and a restricted service (an encrypted one) for authorized users. The NavIC SPS service is transmitted on L5 (1164.45–1188.45 MHz) and S (2483.5–2500 MHz) bands (Ganeshan et al., 2015). The system can provide an absolute position accuracy of better than 10 m throughout the Indian landmass and better than 20 m in the Indian Ocean as well as a region extending approximately

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Pollution Index and Air Ion Variation in Different Vegetation area at the Rural Station Bhilawadi ($16^0 59^{'}$N, $74^0 28^{'}$E)

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Abstract: All are surrounded by air ions which shows the good and bad impact on us. These airborne particles have charge and conductivity. These are positive and negative air ions. The negative air ions have a positive effect on human health. We feel happy, relaxed, and breath easily due to them. But positive air ions are responsible for discomfort, headache, high blood pressure, nervousness in human life. The air ion concentrations in Grape, Sugarcane, Chickpea, and Onion vegetation in rural area Bhilawadi (16059'20" N, 74028'2" E) is measured with the help of a Gerdien condenser-based air ion counter developed and designed at A.C.S. College, Palus. Temperature, humidity, transpiration, radon exhalation, wind speed is responsible for variation in air ions. Onion, sugarcane, grapes, and chickpea have a higher concentration of negative air ions than positive air ions. Ionization by cosmic rays and gamma radiation is almost constant in daily cycles. Air ion concentration near the ground varies mostly with the exhalation of 222Rn and its progenies. Due to ionization, photosynthesis, transpiration, and radon exhalation process of vegetations ion concentration are different. The pollution index and air ion assessment coefficient show good air quality of sugarcane and onion as a natural air ionizer.
keywords: Air ions, exhalation radon, Ionization, transpiration, aerosol.

Introduction

Air ions are classified as small, medium, and large air ions depending upon their size and mobility. Radioactive material, cosmic rays, ultraviolet rays, hydrolysis of water molecules, plant tips discharge, the photovoltaic effect of green plants, volcanic eruptions, lightning, thunderstorms, snow and storms, corona discharge, radiation are sources of air ions [1]. The production of cosmic rays and other elements is nearly constant. Mainly uranium, thorium decay series have radioisotopes producing gamma rays of sufficient energy [2]and produces positive or negative air ions. Out of this negative air, ions have a positive effect on human and animal health. And they are said to be air vitamins. It is a significant important source of energy. Human beings feel happy, relaxed, and can breathe easy which results in good work productivity and mood and peaceful sleep [3].

Headache, insomnia, fatigue, nervousness, joint aches, high blood pressure, discomforts due to the higher number of positive air ions [4]. Radon is the main source of radiation on the ground surface

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IMPACT OF HUMAN CAUSES FOR RIVER POLLUTION OF INDIA WITH SPECIAL REFERENCE TO PANCHAGANGA RIVER NEAR ICHALKARANJI MAHARASHTRA

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Abstract: River Panchaganga is one of the important sources of water supply to agriculture and urban area. The urban and industrial load of the city has increased many folds making the river unfit for every purpose. Physico-chemical and biological aspects of water pollution of Pancha ganga river were analyzed seasonally with respect to physico-chemical parameters from July 2017 to May 2018. The sampling sites were Ichalkaranji Bridge, Shiradwad, and Abdul Lat, near Pancha ganga river in Ichalkaranji. The paper highlights the alarming condition of Eutrofiering of river in various seasons with respects to the parameters and if immediate action is not taken for restoration of the river it will have deadly effect on not only the human habitat surrounding the river but also on the flora, fauna and agricultural land, hence report is to be submitted to WHO, UNESCO-IHE, IWWA, SIDA, University Grant Commission of India, etc. for restoration help.
Keywords: Eutrophication; Human Impact; Panchganga river; Pollution.

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INTRODUCTION

The Panchganga river flows through the borders of Kolhapur. It starts from Prayag Sangam (Village: Chikhli, Taluka: Karveer, Dist.- Kolhapur). The Panchganga is formed, by four streams, the Kasari, the Kumbhi, the Tulsi and the Bhogawati. Local tradition believes in an underground stream Saraswati which together with the other four streams make the Panchganga. The Prayag Sangam confluence marks the beginning of the Panchganga river proper which after receiving the waters of the four tributaries continues in a larger pattern with the flow of waters received from the rivers. From North of Kolhapur, it has a wide alluvial plain. After developing this plain the river resumes its course eastwards. Most of the rivers and their tributaries are being used as site for disposal of domestic and industrial waste in India which impairs their water quality. With rapid growth of the Ichalkaranji city both in urban and industrial areas, the pollution load from sugar and textile industries in the river has increased. The discharge of the effluents and industrial waste by the nearby industries has led to pollution of the Panchganga river which has turned the water green, mainly near Ichalkaranji where there are many textile processing houses which had discharged their effluents without proper treatment. *Eichhornia crassipes* has grown on the river nearby Ichalkaranji. Not much efforts were taken by the local government bodies to control the growth of it, in monsoon the water level rises and it is washed out and seen nowhere until November, in December it starts to grow again and by April the river is covered by it. Many researches have been carried out in order

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Potential of IRNSS/NavIC L5 signals for ionospheric studies

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[BBSA-DBN][HSO_4]: a novel –SO_3H functionalized Bronsted acidic ionic liquid for easy access of quinoxalines

Megha U. Patil, Sachinkumar K. Shinde, Sandip P. Patil & Suresh S. Patil

Research on Chemical Intermediates **46**, 4923–4938 (2020)

Abstract

A novel –SO_3H difunctionalized Bronsted acidic ionic liquid (BAIL) 1, 5-bis (butanesulphonic acid)-diazobicyclo [4,3,0] non-5-enium hydrogen sulphate [BBSA-DBN][HSO_4] is introduced for efficient synthesis of quinoxalines via condensation of substituted 1,2-diketones and various aromatic 1,2-diamines. It could serve as a dual functional catalyst for these reactions. This method has the advantages of mild reaction conditions, high yields, short reaction times, easy work-up, non-chromatographic separations and being environmentally friendly. This protocol provides an effective and environmentally friendly alternative methodology for production of quinoxalines and

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One-pot multicomponent synthesis of *N*-sulfonyl amidines using magnetic separable nanoparticles-decorated *N*-heterocyclic carbene complex with copper

Arvind Pawar[1] · Shivanand Gajare[2] · Audumbar Patil[2] · Rajanikant Kurane[2] · Gajanan Rashinkar[2] · Suresh Patil[1]

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Abstract

Magnetic separable nanoparticles-decorated *N*-heterocyclic carbene complex with copper (MNP[1-Methyl benzimidazole]NHC@Cu) has been prepared by covalent grafting of ionic liquid like 1-methyl benzimidazole unit on the surface of chloro-functionalized Fe_3O_4 magnetic nanoparticles (MNPs) followed by metallation with copper(I) iodide. MNP[1-Methyl benzimidazole]NHC@Cu complex has been characterized by different techniques including Fourier transform infrared (FT-IR) spectroscopy, thermogravimetric analysis (TGA), energy-dispersive X-ray (EDX) analysis, X-ray diffraction (XRD), transmission electron microscopy (TEM) and vibrating sample magnetometer (VSM). MNP[1-Methyl benzimidazole]NHC@Cu complex was successfully implemented as heterogeneous catalyst in one-pot multicomponent synthesis of *N*-sulfonyl amidines from phenylacetylene, tosyl azide and amines at room temperature. Complex could be recycled six times without significant loss in the yield of product.

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$NiZnFe_2O_4$: An eco-compatible and magnetically separable catalyst for multicomponent synthesis of 2-amino-4*H*-chromenes

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Research Article

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Detection of Macronutrients (NPK) using LED Based Spectroscopy Method

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Abstract—**The soil is a dominant medium to grow the plants in which the soil nutrients especially macronutrients play a major role to improve the fertility and hence growth of seeds and crops. The traditional geochemical analytical methods to explore macronutrients used in agricultural laboratories give accurate results, but it is more time consuming, so the need for different chemicals and highly skilled workers are required at prior. Instead, the modern methods are beneficial to explore major macronutrients i.e. Nitrogen, Phosphorus and Potassium (Kalium – Latin name) with the help of electronic sensors that give accurate results without the need of chemicals and highly skilled staff. Hence, the farmer himself can explore the macronutrients NPK concentration and deficiencies and then use proper fertilizers to improve the soil fertility with the reference of an ideal ratio for NPK i.e. 4:2:1. This paper reviews the different modern electronic analytical methods to determine NPK concentrations without going into the agriculture laboratory. LED based spectroscopy focused in this research paper is an emerging technology without destruction of target soil matters or particles. It's timely, reliable and less expensive compared to the other methods explained.**

Index Terms— **Macronutrients, NPK, LED Spectroscopy, Soil**

I. Introduction

Many farming communities such as Indians are still using mundane ways of farming with an increase in demand for food. The customized sensor based analysis may provide precise data quickly rather than the traditional method, which is generalized and not to the targeted area or not to the specific area [1], [2]. That is, quickly and accurately soil data can be analyzed by the precise agriculture practice through electronic systems rather than traditional geochemical analysis. Also, the manual method of measuring the soil nutrients is less accurate because of the time difference of soil samples collected at the field and measured in a laboratory that is not real time. The smarter agriculture practice can be made by the measurement of major macronutrients such as Nitrogen (N), Phosphorous (P) and Potassium (K) through electronic sensors. Also, the unsystematic use of fertilizers may lead to groundwater pollution, hence nutrient management, balanced plant nutrition of crops is necessary [3]. This research work will focus the exploration of major macronutrients – Nitrogen (N), Phosphorous (P) and Potassium (K) by the method of LED spectroscopy. Precision Agriculture (PA) and soil testing are essential to determine nutrients availability in soil before applying any fertilizers nowadays. The conventional soil testing in the laboratory is a time consuming method and requires more cost, highly skilled operators and can't be real time. Since, spectroscopy is an emerging technology which is rapid, simple and can be used in agriculture to explore major macronutrients content.

II. Other Different Macronutrients Exploration Methods

Soil is the most important medium for plant growth. The nutrients in soil improvise the fertility and hence the growth of seeds and crops. In agriculture as well as electronics, several researches have been undertaken to improvise the practice in the agricultural field, but due to increase in population, a major disadvantage requires new methods which will grow the crop plantation management methods in dominant ways without expense [4]. Table 1 illustrates various sensors used in agriculture such as electrical, electromagnetic, optical, radiometric, mechanical, acoustic, pneumatic and electrochemical for PA. Meanwhile electric and electromagnetic sensors are widely used today, but other types may be suitable to improve the soil relevant information in future very soon. The food yield globally is based on the presence of nutrients. The Phosphorus (P) is an important nutrient due to its low recovery and finite availability. To obtain the good and healthy growth of a crop, the average sum of macronutrients N+P+K=2 (N=0.5, P=1.0, K=0.5). However, The NPK Ratio of 4:2:1 is considered as an ideal and accepted as a macronutrients level of the soil [5], [6], [7].

Table 1 Sensors Used for Precision Agriculture Practice

Sr. No.	Sensor Type	Measurement Principle
1	Electrical / Electromagnetic	Resistivity, conductivity, capacitance, inductance
2	Optical and Radiometric	Level of energy absorbed / reflected from target
3	Mechanical	Resulting force from object
4	Acoustic	Sound produced / reflected from object

5	Pneumatic	Ability to inject air into object
6	Electrochemical	Ion-selective membrane that produce voltage output by chemical reaction

Following techniques are being used to explore the major soil macronutrients that is NPK by the method of –

Sensing ferromagnetic properties, 1997

In this technique, detection is carried out by the observations of granular soil particles relationally together by sensing the ferromagnetic property of welsh soil granular by Secondary Ferromagnetic Mineral (SFM) method with dependent premature mechanism to explain the observed link between soil magnetism and climate by lowering the temperature below 20 Kelvin. Hence, the effect of depressing values of low field susceptibility in percentage is noticed [8].

By portable Raman sensor, 2004

The portable Raman sensor for soil nutrient detection was provided to obtain a significant phosphorus absorption band in soils and thus determines the phosphorus concentration with the use of bulky components – Laser source, Spectrometer, Computer and File storage. In Raman Spectroscopy emission technique, the spectral peaks that are frequency shifted from the incident optical energy by the scattering are processed to know Algal Bloom because of phosphorus present in the soil sample. Algal Bloom is nothing but pollution because of excess phosphorus nutrients [9].

By image spectral measurement, 2011

The macronutrients N, P and K can be analyzed by the ground method spectrum data in the laboratory by exploration on spectral measurements, interior diameters and surface treatment of soil roughness and Signal to Noise Ratio (SNR) / Spectra, these compared with standard spectrum. But there was no image data in this method. The second is multispectral remote sensing allows capture of hyper spectral images, not possible in the first method, but poor resolution of images prone to difficulties in extraction of soil information and spectral reflectance relation, so the method is not suitable for quantitative estimation of nutrients in soil. Also a lot of statistical data logging is required [10].

By Wireless Sensor Network (WSN) and cloud monitoring, 2014

Real time monitoring of macronutrients NPK by the use of Wireless Sensor Network (WSN) and android phone facilitates the user to view soil fertility at the convenience of his phone through mobile application. Overall system helps farmers to get real time information. The data from sensors is sent to the Cloud. These values are stored in cloud databases [11], [12].

By electrical conductivity measurement, 2014

The soil salinity is an important issue, sustaining the productivity and irrigation of agriculture around the world. The salinity analysis gives rise to determination of nutrients present in soil by the use of conductivity sensors. The co-relationship between Electrical Conductivity (EC) and amount of fertilizers required shows that EC is directly related to nutrients concentration but inverted with depth of soil. The overuse of fertilizers can lead to more soil salinity (Salts), hence conductivity is more [13].

By optical fiber sensor, 2015

Detection of soil NPK nutrients using fiber optic sensor includes multimode plastic fiber optic sensor. Aqueous solution of the soil under test is illuminated by different light colors. Light gets reflected from solution depending upon its absorbent coefficient of soil. Reflected light is received by another optical fiber which then converts into electrical signals. Then using signal conditioning and microcontroller (MCU), different components of NPK are determined. In this method, NPK deficiencies can be analyzed in terms of ratio based on the principle of absorption of light [14], [15].

By UV-visible spectroscopy, 2016

The spectrum analysis can be carried out by characterization of nutrients using Deuterium Halogen Light (DHL) source and Ocean Optic Spectrometer (OOS) to measure the absorbance of macronutrients at 450 nm for N, 750 nm for P and 500 nm for K, in which Deuterium covers UV and Halogen covers visible light spectrum [16].

By multispectral hyperspectral cameras, 2017

Ranging and imaging techniques in precision agriculture includes the state of art in optical visible and near visible spectrum sensors and techniques to estimate phenotyping variables from intensity, spectral and volumetric experiments. Hence, these techniques were distributed for plant structural characterization, plant detection and plant physiology assessment that delivers the future innovating sensor methodologies to provide proper fertilizers and pesticides [17].

By electrochemical sensors with ion selective transistors, 2017

A system consists of an ion selective membrane and a transducer, which transforms chemical reaction into detectable electrical signals. Two types of sensors – Ion Selective Electrode (ISE) in which the voltage of the second electrode is compared or measured with the reference (first) electrode. Ion Selective Field Effect Transistor (ISFET) chemically modulates the threshold voltage and is measured with the related concentration of a targeted ion. But due to ion selective membrane, measurement of one target ion by electrochemical measurement is possible. However, electrochemical sensors may be integrated onto chips to provide a feasible approach of multi target simultaneous detection of nutrients in soil [18].

People's Democratic Movements: A Case Study of Community Radio in South Asia

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Abstract:

The present research has focused on the role of community radio in the improvement independent people's democratic movement that being globalization context. These movements have located in South Asia. The paper mainly focused on the socio economic cultural and political context for understanding evolution and emergence of community radio. The present research study is formulated the policy and progarmme of community radio in South Asia. The media contributed in making the empowerment of marginalized community status. The community radio contributed in the development of socioeconomic, political, agricultural, occupational mobility among marginalized community development. The main aim Of the paper is to understand community radio for marginalized community development, to understand the conceptual framework of community radio and peoples movement engagement with marginalized community, to explain the status of Community radio in South Asia, to examine the contribution of Community radio on marginalized groups in South Asia, to discuss the concept Community radio which is based on constructing an approach that provides knowledge built up collectivities participatory methods in both content production and management of the radio station in the South Asia. the present study examine the operational conceptual framework of community radio and the theory of the network society in the role of community radio for marginalized development. The present research employed qualitative research methodology to interpret analysis through the case study method as micro stories of participatory communication contribution of community radio needs to more utilize full potential as a medium of marginalized. The present paper is mainly focused on contributions of community radio which has contributed in marginalized community inclusive developments as people democratic movement in contemporary context. The study concludes that the role of community radio more utilized in the development of tools for development of marginalized community in South Asia.

(Keywords: People's Movements, community radio, networking society, community participation, right to education, marginalization.)

Introduction

The present research consistent has focused on the role of community radio in the improvement of independent people's democratic movement that being globalization context. These movements have located in South Asia. The paper mainly focused on the socio-economic cultural and political context for understanding evolution and emergence of community radio. The present study formulated the policy and progarmme of community radio in South Asia. These media contribute to empower marginalized community status. The community radio contributed in the development of socioeconomic, political, agricultural, occupational mobility among marginalized community development.

The present study is important to understand the current status of community radio in the South Asia. It provides information regarding hoe the community radio which has transacted in this country. Community radio is useful to encourage to up-liftmen of South Asia status. It throws light on community participation, discussion and activities that may be helpful in promoting community radio, it has also discussed of inclusive and alternative development policy level.

The conceptual framework of Community Radio and peoples movements

This media has been working in different sectors of human development. Community radio has medium of wider spectrum and scope in the field of community development and distance education. A recent Rockefeller foundation report asserts that community radio is "one of the best ways to reach excluded or marginalized communities targeted and give them a voice that matters most in development communication. (Dagron, 2001) This media work more dynamic medium as per the other media. It is in wider reach, accessibility, effective cost, immediate as a tool for community development. The nature of community radio is like small radio station, low power transmitter used,

work on the frequency modulation band and tower light in maximum 30 meters, etc. On the other hand,The special community radio is the basic communication medium to reach the marginalized community at the grassroots level. It is an active and effective relation that has brought some social welfare development, development in education, women empowerment, health, natural resource conservation and agriculture in the revolutionary changes in South Asia. The facilities are provided at local level to identify and priorities need. It is liberating platform as a collective participation and alternative development model.

Peoples' movements have been a view as possible way in which people participate or empowerment of marginalized may be achieved (Niloshree Bhatacharya and Vinod K Jairtah.2012). Peoples movements are symbolized people's power (Mirza Asad, 2021) the peoples movement as community radio role play in political sate, political parties support groups and transnational networking with marginalized communities. Peoples' participation in consider to be beneficial so called development involving people local government and discussion making such as it empowerment marginal community. It entitles a critical consciousness and awareness of the people regarding the structural oppression.

Theoretical framework

In the present research paper sociologist used theoretical framework for Manual Castel's Network society to explain the contribution of community radio for the tribal educational development. Castell's argued that "The definition in terms of a network society is a society where the key social structures and activities are organized around electronically processed information networks. So it's not just about networks or social networks, because social networks have been very old forms of social organization, it's about social networks, which process and manage information and are using micro-electronic based technologies" (Castells, 1996, 34). The theoretical framework is using the study of Community radio which is the most important contribution in South Asia. Once the community radio move in, they start creating network of their own voice on community radio by including their local people from their place of origin, to create a voice for the voiceless, contribution of community to spread out awareness and conscience among the marginalized community development. Due to educationally backward, poor living standards and lower income opportunity in the South Asia there people attracted to the call from the South Asia. In the present paper, network society theory used to determine overall appearance.

Review of literature

The researcher form various academic that grabbed the attention on development of community radio in various countries of South Asia which analyze the existing status of community radio policies and issues in this country. This review made by Kanchan K. Malik And Vinod Pavarala 2020 in his book on Community Radio in South Asia: Reclaiming Airwaves, They argued that state of community radio contributed a media movement in different part of South Asia beginning last two decades ago. They find out that to understand,evoluatation and functioning of community radio is in an increasingly globalized media context. The study stated that the various countries in South Asia have formulated policies that enabled the emergence in the third sector of broadcasting.

Preeti Rahunatha (2020) in his book Community Radio Policies in South Asia is focused on the state of community radio which has contributed a significant independent media movement that began about two decade ago in different parts of South Asia. He examined the critical media policy studies applied in principal and performances of policies and policy making for community radio in four countries of Sri Lanka, Nepal, India and Bangladesh concern South Asia.

Pavarala Vinod and Malik Kanchan (2007) in his book The Struggle for Community Radio in India, focused on the struggle for community in India. The development of community radio in state's reluctance to open up the airwaves, it focused on appropriate frameworks for policy-making, using the a comparative study of the policies related to community radio in India.

Udupa Sahaand McDowel (2017) in his edited book of Meia as Politics in South Asia focused on the friest overview of media development and its political ramification in the South Asia during these year of economic development.

Asttana Sanjay (2019) in his book India State run Media: Broadcasting, Power and Narrative examines the intertwined genealogies of sovereignty, public, religion, nation and spatiotemporal dynamics of broadcasting.

GREEN AND EFFICIENT SYNTHESIS OF TETRAHYDROBENZO[b]PYRAN DERIVATIVES USING NATURAL CATALYST

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Keywords: Tetrahydrobenzo[b] pyran, *Limonia acidissima* ash, natural catalyst

Abstract:

A short and simple synthesis of Tetrahydrobenzo[b]pyran derivatives was accomplished in good yields by the reaction of dimedone, malononitrile or *b*-naphthol and aldehydes by using *Limonia acidissima* ash as a natural efficient catalyst. The remarkable advantages offered by this method include green inexpensive catalyst, mild reaction conditions, fast reaction rate and good to excellent yield of products. Use of catalyst obtained from natural resources makes the method greener without formation of any hazardous waste materials.

The novel methodology maintains atom economy and an environmentally friendly approach.

Introduction:

The discovery of new synthetic methodologies to facilitate the preparation of organic compounds is necessary for the research activities in the field of modern organic, bioorganic and medicinal chemistry. For this, it is necessary to perform efficient chemical transformations, multicomponent condensations by catalytic processes avoiding use of excess of solvents and expensive purification techniques.

Tetrahydrobenzo(*b*)pyran derivatives are an important class of heterocyclic compound having important pharmaceutical and biological activities. These compounds are potential biodegradable agrochemicals[1], photoactive materials[2], cosmetics and pigments[3]. These derivatives can be used as potent antibacterial such as rhodomyrtone pigments, photoactive materials[4]. The derivatives of tetrahydrobenzo[*b*]pyran show biological properties as antioxidant[5], spasmolytic and anti-HIV[6], anticancer[7], diuretic[8] and anti-anaphylactic activities[9].

Various synthetic methods have been reported for the synthesis of tetrahydrobenzo[*b*]pyran derivatives using different catalysts such as $(NH_4)_2HPO_4$[10], K_3PO_4[11], Ru(II) complex[12], L-proline[13], phenylboronic acid[14] and cerium(III) chloride[15] 1,4–diazabicyclo [2,2,2] octain[16], silica nanoparticals[17], sulfonic acid functionalized silica[18], amino functionalized silica gel[19] and ionic liquids[20].

Various parts of *Limonia acidissima* are prescribed as medicine for the treatment of various ailments.[21] Fruits are refrigerant, stomachic, stimulant, astringent, diuretic, cardio tonic, good for asthma. Leaves extract has phytochemical and anti microbial activity[22]. *Limonia acidissima* is a moderate sized tree grown throughout India. It is an aromatic, slow growing plant grows all over India in dry and warm areas.

EXPERIMENTAL METHODS

Preparation of CLAS Catalyst:

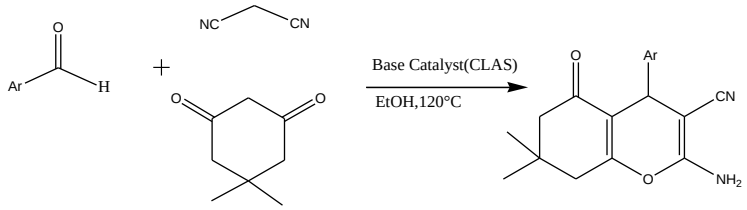
The fresh fruit of *limonia acidissimia* (wood apple) was cut into the pieces and the pills are separated from seeds and jelly. The pills were very hard, and were cut into small pieces and dried in oven at 90°C. These dried pieces are crushed in mortar. Then the crushed powder was taken in clean silica crucible, put in muffle furnace and calcined at 300°C for 2 hours till the crushed powder is converted into white ash. The white ash is called as 'CLAS ash' Calcined limonia Acidissimia Shell ash.

0.2 g white ash of CLAS was dissolved in 20ml distilled water, stirred, filtrated and the filtrate was used as a catalyst for the synthesis of tetrahydrobenzo(*b*)pyran derivatives. The pH of this filtrate is above 12.

Synthesis of tetrahydrobenzo(*b*)pyran derivatives:

All the components as well as solvents were purified by distillation and recrystallization technique. All the glasswares were washed to clean and dried suitably in vacuum oven for several minutes.

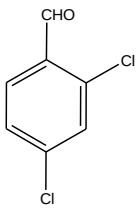
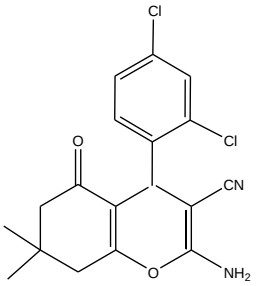
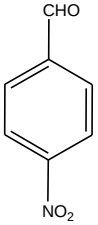
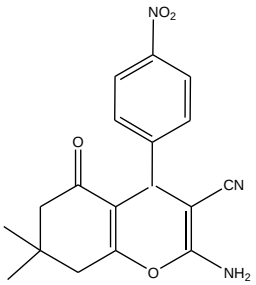
Part A:



A mixture of aromatic aldehyde (2mmol), malononitrile (2mmol) and dimedone (2mmol) was taken in a round bottom flask and 5 ml CLAS catalyst and 5 ml of ethanol were added to the reaction mixture. The reaction mixture was stirred at 120^0C in oil bath.

The progress of reaction was monitored by TLC technique. After completion of reaction, the reaction mixture was filtered. The separated product was recrystallized to get pure product. The products were confirmed by comparing their physical constants with literature. The results are summarized in Table 1.

Table 1:

Sr. No.	Aldehyde	Product	Time (hr)	Yield (%)
1a			3	54
2a			2	62

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Calotropis gigantea leaf derived ZnO nanoparticles: A green protocol for rapid synthesis of 2-amino-4H-chromene derivatives

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[b]Green Research Laboratory, SMDBS College, Miraj, Dist. Sangli (MS) India-416 410.

Abstract

A simple, clean and environmentally benign route for multi-component synthesis of 2-amino-4*H*-chromenes between aromatic aldehydes, malononitrile and α/β-naphthols was described using ZnO nanoparticles as a catalyst in water: ethanol (1:1) as a green solvent system at 80 ^{0}C. The ZnO catalyst was prepared in aqueous leaf extract of *Calotropis gigantea*plant and found to be green, inexpensive, non-toxic, and highly efficient solid heterogeneous base catalyst obtained by simple methods. The use of plant extracts avoids the usage of harmful and toxic reducing and stabilizing agents.

Key words

2-amino-4H-chromenes *Calotropis gigantea*, ZnO nanoparticle, heterogeneous base catalyst, green protocole.

Introduction

In nanotechnology, a particle is defined as a small object that behaves as a whole unit with respect to its transport and properties. Particles are further classified according to diameter. Coarse particles cover a range between 2,500 and 10,000 nanometers. Fine particles are sized between 100 and 2,500 nanometers.[1]

Nanoparticles may or may not exhibit size-related properties that differ significantly from those observed in fine particles or bulk materials. Although the size of most molecules would fit into the above outline, individual molecules are usually not referred to as nanoparticles.Nanoparticle research is currently an area of intense scientific interest due to a wide variety of potential applications in biomedical, optical and electronic fields.Nanotechnology involves manipulating properties and structures at the nanoscale, often involving dimensions that are just tiny fractions of the width of a human hair. Nanotechnology is already being used in products in its passive form, such as cosmetics and sunscreens, and it is expected that in the coming decades, new phases of products, such as better batteries and improved electronics equipment, will be developed and have far-reaching implications.[2-5]

One area of nanotechnology application that holds the promise of providing great benefits for society in the future is in the realm of medicine.[6-8] Nanotechnology is already being used as the basis for new, more effective drug delivery systems and is in early stage development as scaffolding in nerve regeneration research. Moreover, the National Cancer Institute has created the Alliance for Nanotechnology in Cancer in the hope that investments in this branch of nanomedicine could lead to breakthroughs in terms of detecting, diagnosing, and treating various forms of cancer.Nanotechnology medical developments over the coming years will have a wide variety of uses and could potentially save a great number of lives. Nanotechnology is already moving from being used in passive structures to active structures, through more targeted drug therapies or "smart drugs."These new drug therapies have already been shown to cause fewer side effects and be more effective than traditional therapies. In the future, nanotechnology will also aid in the formation of molecular systems that may be strikingly similar to living systems.These molecular structures could be the basis for the regeneration or replacement of body parts that are currently lost to infection, accident, or disease. These predictions for the future have great significance not only in encouraging nanotechnology research and development but also in determining a means of oversight. The number of products approaching the FDA approval and review process is likely to grow as time moves forward and as new nanotechnology medical applications are developed.[9]

To better understand current and future applications of nanotechnology in various fields of medicine, the project has developed two web-based resources that track medical developments focused on cancer and drug delivery systems.In the area of water purification, nanotechnology offers the possibility of an efficient removal of pollutants and germs. Today nanoparticles, nanomembrane and nanopowder used for detection and removal of chemical and biological substances include metals (e.g. Cadmium, copper, lead, mercury, nickel, zinc),nutrients viruses, bacteria, parasites and antibiotics.[10]

Basically, four classes of nanoscale materials that are being evaluated as functional materials for water purification e.g. metal-containing nanoparticles, carbonaceous nanomaterials, zeolites and dendrimers. Carbon nanotubes and nanofibers also show some positive results.Nanomaterials reveal good result than other techniques used in water treatment because of its high surface area (surface/volume ratio). It is suggested that these may be used in future at large scale water purification.

Dissolution kinetics may be the rate limiting step in the absorption process for many drugs. Decreasing the particle size increases surface area and the dissolution kinetics. Liposomes are normally used as carrier for hydrophilic drugs. Typical difficulties: physical instability, low activity, drug leakage Alternative: water-soluble,polymer-based nanoparticles. These are more site-specific and exhibit better controlled-release characteristics.To overcome toxicity issues, solid lipid nanospheres as carrier systems have been reported. This is a lipid that is solidified and stabilized by a surfactant.

4*H*-benzochromene display wide range of applications in Industrial and pharmaceutical chemistry. Hence synthesis of 4*H*-benzochromene has a great deal of interest. Many synthetic routes have been developed for the synthesis of 4*H*-benzochromene derivatives.

Elagamey, A.; Sawllim, S.; Taweel, F.; M, Elnagdi. Collect Czech*Chem Commum*, **1988**, *53*, 1534.

22 Gong, K.; Wang, H.; Fang, D.; Liu, Z. *CatalCommun*, **2008**, *9*, 650-653.

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24 Naimi-Jamal, M.; Mashkouri, S.; Sharifi, A. *Mol Divers*, **2010**, *14*, 473-477.

Research on Chemical Intermediates
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Fruit Extract of *Averrhoa bilimbi*: A Green Neoteric Micellar Medium for Isoxazole and Biginelli-Like Synthesis

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Abstract

A transition metal/ligand/additive/promoter-free synthesis of 3-methyl-4-arylmethylene-isoxazol-5(4*H*)-ones and the Biginelli-like synthesis is carried out in a natural acidic medium of *Averrhoa bilimbi* extract (ABE) with cleaner and facile approach smentioned here. The isoxazol-5(*4H*)-ones and 11-acetyl-2-methyl-5,6-dihydro-2*H*-2,6-methanobenzo[*g*][1,3,5]-oxadiaazocin-4(3*H*)-ones are synthesized, respectively, under aerobic conditions at room temperature and at reflux temperature of ethanol. This eco-friendly and economically cheap, non-toxic acidic catalytic media is obtained from the renewable resource, and its dynamic phase is confirmed by the optical microscopy, DLS technique, and with critical micelle concentration (c.m.c.) measurements. The notable advantages are excellent yields of the obtained products, versatility in handling substrates, reuse of the catalyst, use of no hazardous organic solvents, and minimization of waste or side products. So, the reported procedure is simple, evergreen, and a sound alternative to the existing protocols for isoxazol-5(4*H*)-one synthesis and for Biginelli-like synthesis as well.

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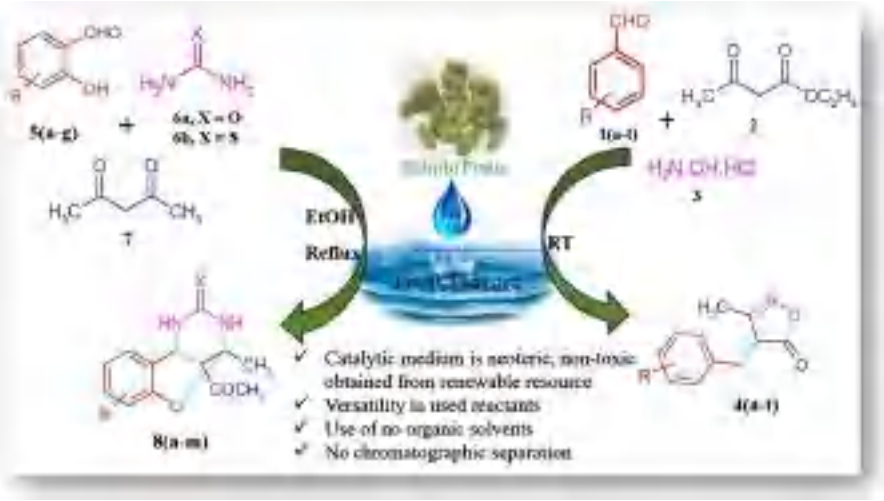
Graphic abstract



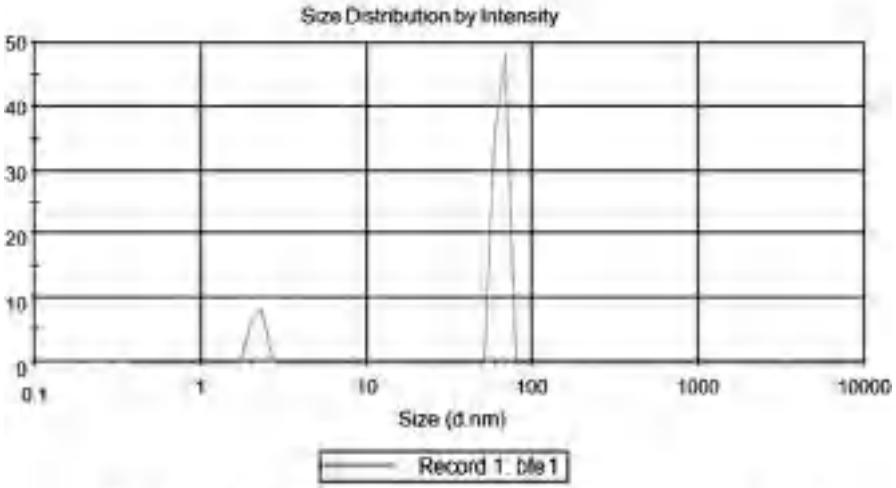
Keywords Isoxazol-5(4*H*)-ones · Biginelli-type synthesis · Neoteric media · Micellar catalysis · Green synthesis

Introduction

The selection of an appropriate reaction medium implementing solvent or solvent mixture is of paramount importance besides task-specific reaction catalysis and energy requirements, in the synthetic research field. One important aspect of green chemistry is the selection of solvents with minimum toxicity, pollution, or energy demand, practically which is achieved by the replacement of hazardous substrates in chemical processes with relatively ecologically benign ones. From this perspective, water is the most studied solvent from a green chemistry standpoint, and it is the solvent selected by nature do carry out the biological processes. Reactions in the aqueous media are generally environmentally safe, simple to handle, comparatively cheaper to operate, and especially important in the industry [1, 2]. As an effect, using water as a reaction medium is worthwhile to be explored and is still an active field of research opening a pace to new reactivity and devoted to accomplishing greener chemical processes [3, 4].

However, in most of the catalytic processes, the volatile organic solvents employed as reaction media often creating a great deal of safety and health, environmental issues due to their flammable and toxic nature [5, 6]. The use of eco-compatible reaction medium which drives the transformation towards the target product side with higher yield with lesser energy consumption is sustainable and is welcomed [7]. In organic synthesis, the use of eccentric organic solvents has its rewards like synthetic competence by stabilizing the catalyst, curating the mode of product

(a) Optical microscopic image of reaction mixture indicating the formation of spherical colloidal aggregates with ABE



(b) DLS study of reaction mixture showing the average size of micelles formed by ABE

Fig. 2 **a** Optical microscopic image of reaction mixture indicating the formation of spherical colloidal aggregates with ABE. **b** DLS study of reaction mixture showing the average size of micelles formed by ABE

The high-performance liquid chromatography/quadrupole time-of-flight mass spectrometry (HPLC–Q-TOF–MS/MS) technique is a sensitive, high-speed and established technique with shorter analysis time and greater accuracy of the m/z value [108, 109]. Thus, the bilimbi fruit extract, ABE, is assayed with the help of

Table 3 Synthesis of 4-(4-arylbenzylidene)-3-methylisoxazol-5(4*H*)-ones in ABE[a]

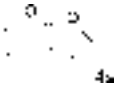
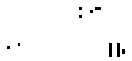
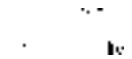
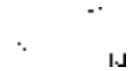
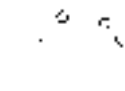
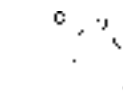
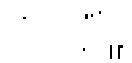
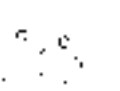
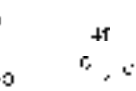
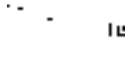
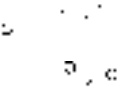
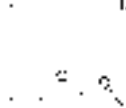
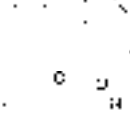
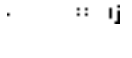
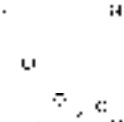
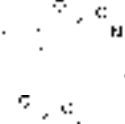
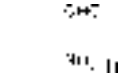
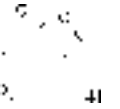
Entry	Ar	Product	Time (min)	Yield[b]	M.P. (°C) Found (Literature) [Ref.]
1			90	90	142–143 (143–144) [74]
2			120	97	248–250 (211–212) [74]
3			120	97	175–177 (173–175) [75]
4			90	95	206–207 (225–226) [75]
5			120	86	217 (215–217) [75]
6			120	92	152–154 (178–179) [78]
7			120	90	168 [New]
8			210	93	163–164 (162–165) [82]
9			150	90	79–82 [New]
10			240	91	152–158 [New]
11			210	91	126–128 (126–127) [82]
12			240	83	140–144 [New]
13			180	87	223–224 (204) [114]

Table 6 Comparison of reported catalysts with ABE micellar medium

Sr. No	Catalyst	Reaction conditions	Time	Yield (%)	Ref
For synthesis of 4-(4-hydroxybenzylidene)-3-methylisoxazol-5(4H)-one, 4b:					
1	Sodium acetate (10 mmol), visible light	H_2O:EtOH (1:1 v/v)	10 min	66	[114]
2	Boric acid (10 mol%)	H_2O, RT	100 min	93	[74]
3	DL-Tartaric acid (5 mol%)	H_2O, RT	110 min	78	[75]
4	Salicylic acid (15 mol%)	H_2O, RT	75 min	92	[77]
5	Pyridine (4 mmol)	H_2O, ultrasonic irradiation	1.0 h	82	[79]
6	Nano-MgO (3 mol%)	H_2O, RT	70 min	95	[80]
7	Lemon juice (1 mL)	H_2O:EtOH (9:1), 90 °C	55 min	95	[78]
8	Starch solution(4 mL)	Thermal heating (80 °C) Or Microwave irradiation	52 min Or 7 min	85 Or 93	[115]
9	DABCO Functionalized Dicationic Ionic Liquid (DDIL) (20 mol%)	Grinding, RT	8 min	84	[81, 82]
10	4-(N,N-dimethylpyridinium) acetate DMAP-AcOH (30 mol%)	70 °C	Immediately	98	[82]
11	Dowex (R)50WX4/H_2O (1 g)	HO, RT	35 min	93	[116]
12	Without catalyst	H_2O, 5 °C	20 min	88	[117]
13	Choline chloride: Urea (1:2)	80 °C	20 min	91	[118]
14	**ABE (3.0 mL)**	RT	120 min	94	*
*For synthesis 11-acetyl-2-methyl-5,6-dihydo-2H-2,6-methanobenzo[**g**][1,3,5]-oxadiazocin-4(3H)-one, 8a:*					
16	$NaHSO_4$	Solvent-free, Microwave, 85 °C	10 min	93	[64]
17	Acetic acid	Ethanol, reflux	4–8 h	69	[67]
18	p-toluenesulphonic acid	Water, RT and Reflux	24–36 h	88	[66]
19	$MgBr_2$	100 °C	90 min	87	[65]]
21	**ABE (2 mL)**	Ethanol, reflux	2.5 h	95	*

*Present method. NR = No formation of products

Preparation of *Averrhoa bilimbi* Extract (ABE)

Averrhoa bilimbi fruits known as bilimbi which are fresh and mature were collected from the botanical garden, Department of Botany, Shivaji University, Kolhapur. These fruits (Fig. 7a) were thoroughly washed with water, deseeded and then cut into small pieces with knife (Fig. 7b). These pieces were crushed with the help of mortar and pestle to get the turbid juice which is filtered through the muslin cloth to get fibre-free extract (Fig. 7c). This obtained extract was stored at the temperature of 0–5 °C, and it is found to be stable for several days.

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Revisit to Henry reaction by non conventional heterogeneous and efficient catalyst for nitroalcohol synthesis

Swati D. Jadhav[1] · Rupesh C. Patil[1] · Ashutosh A. Jagdale[1] · Suresh S. Patil[1]

Received: 6 July 2021 / Accepted: 13 October 2021

Abstract

A sustainable, green and efficient process for the synthesis of 2-nitro alcohol derivatives from different substituted aromatic aldehydes with nitroalkane by stirring at ambient temperature with high product yield is reported. Adoption of very mild reaction conditions, use of Calcined Eggshell (CES) as natural catalyst and simple workup are expected to contribute to the development of environmentally benign synthetic method for Henry (nitroaldol) reaction. CES is ecologically safe, inexpensive, and attractive heterogeneous base catalyst obtained from renewable resources, thus opening a new perspective for this process.

Graphical abstract

Keywords Calcined eggshell · Heterogeneous catalyst · Henry reaction · Nitro alcohol

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Introduction

The Henry reaction, also well-known as nitro alcohol reaction, is a powerful carbon–carbon bond-forming reaction that can be used to synthesize 2-nitro alcohols by the reaction between nitroalkane and an aromatic compound. The synthetic utility of the Henry reaction providing 2-nitro alcohols, which are precursors of variety of organic compounds such as 1,2-amino alcohols, α-hydroxycarboxylic acids, amino sugars, nitroketones, nitroalkenes, ketones (Nef reaction) and other important compounds useful in medicinal chemistry [1].

Particularly, nitroaldol adducts of α-amino aldehydes can readily be converted into pharmacologically important molecules such as the anti-HIV drug amprenavir [2] as well as α-hydroxy-β-amino acids, a valuable backbone of peptide mimetics [3], hepatotoxin 7-epicylindrospermopsin [4], taxotere side-chain and (–)bestatin, [5, 6], the β-receptor agonists (–)denopamine and (–)arbutamine [7], the β-blocker (S)-propanolol [8] and antibiotics such as chloroamphenicol, ephedrine, nor-ephedrine and anthracycline [9, 10].

The Henry reaction was discovered in 1895 by L. Henry, by the combination of a nitroalkane and an aldehyde or ketone in the presence of a base to form 2-nitro alcohols [11]. 2-Nitroalcohols formed from aryl aldehydes have a tendency to eliminate water to form nitroalkenes [12] which readily polymerize. The classical methods for Henry reaction using base catalysts such as alkali metal hydroxides, alkoxides [13], calcium hydroxide [14], aluminium ethoxides [15], ammonium acetate [16], primary amines [17] and anion exchange resin [18] predominantly gave dehydrated products along with nitro alcohols. Metal–Organic frameworks are used as versatile heterogeneous solid catalysts for Henry reactions [19]. Careful control of the reaction condition is crucial to achieve better yields of 2-nitro alcohols.

Calcined eggshell is used as an efficient heterogeneous base catalyst to produce biodiesel from waste frying oil [20, 21] and for transesterification of non-edible free fatty acid-containing oils [22].

In continuation of our research work concerning the development of natural catalysts for organic transformations [23–32], herein, we report an efficient synthesis of 2-nitro alcohols catalysed by CES-catalyst as natural base catalyst at ambient temperature using the environmentally benign EtOH: water (1:1) solvent system. CES-catalyst obtained from chicken eggshells contains calcium carbonate 85–95% along with 1.4% magnesium carbonate, 0.76% calcium phosphate, 4% organic matter and trace amount of Na, K, Zn, Mn, Fe and Cu [33].

The Henry reaction proceeds under mild conditions with catalytic amount of CES to afford 2-nitro alcohols in considerably excellent yield.

Research on Chemical Intermediates
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Calcined eggshells as a highly efficient catalyst for the synthesis of 2-amino 4*H*-chromene derivatives

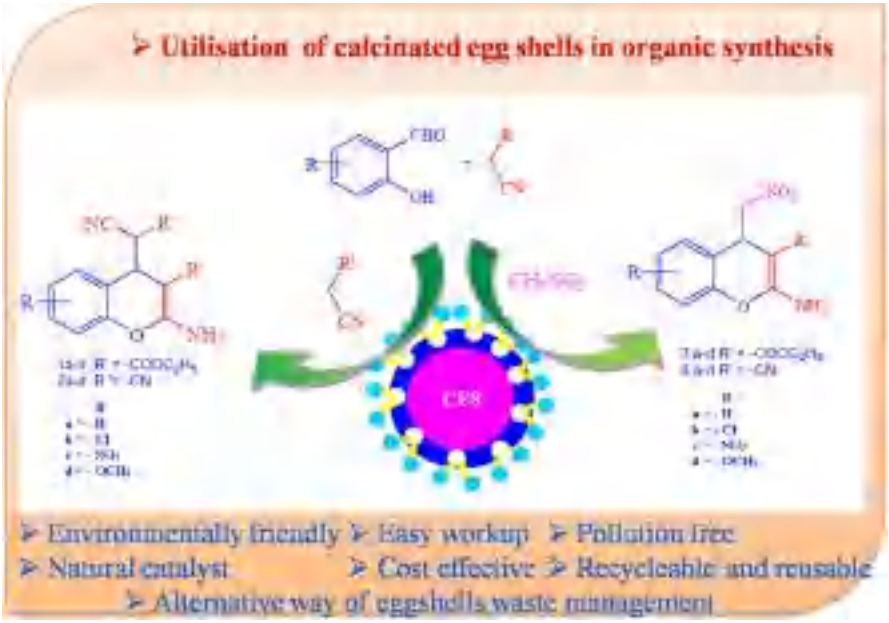
Swati D. Jadhav[1] · Suresh S. Patil[1]

Received: 9 July 2023 / Accepted: 9 August 2023

Abstract

A highly efficient and convenient green method using highly efficient natural catalyst calcined eggshell (CES) is described for synthesis of 2-amino 4*H*-chromene derivatives in ethanol–water system. The new inexpensive green catalyst CES is obtained from waste natural resources. This method offers mild reaction conditions at ambient temperature, with short reaction times and clean work up procedures. This is an economical and green alternative for existing methodologies.

Graphical abstract



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Keywords Natural catalyst · 4*H*-chromene · CES · Green chemistry

Introduction

In multicomponent reactions, at least three reactants react together in one vessel to afford a product. The multicomponent reactions are in contrast to regular stepwise reactions, in which only two starting materials react at a time [1–5].

Chromene derivatives are found in plants, vegetables and fruits [6]. Some of the chromene derivatives display remarkable effect. They possess effective biological activities [7], antibacterial [8, 9], antimicrobial [10, 11], cytotoxic [12], antifungal [13, 14] and antitumor [15, 16] activities. Substituted 4*H*-chromenes can bind Bcl-2 protein and hence can play significant role to develop anticancer agents. Hence, need for development of efficient methodologies for synthesis of 4*H*-chromenes is of great interest for the researchers. 2-Amino 4*H*-chromene derivatives have been synthesized by reacting salicylaldehydes with nitromethane, malononitrile or ethylcyanoacetate in the presence of various catalysts such as ammonium acetate [17], KF-Al_2O_3 [18], Al_2O_3 [19], molecular sieves [20], amberlyst-A21 [21] and $Zr(KPO_4)_2$ [22], NaOAc/KF [23] and tertiary amine-thiourea [24]. Scientists have improved chromene synthesis using natural deep eutectic solvent [25], triethylenetetramine-grafted magnetic graphene oxide [26], choline chloride/urea [27], (γ-Fe_2O_3-Im-Py)$_2WO_4$ [28], MOF-5 [29], ruthenium (II) as catalyst [30].

Eggs are consumed all over the world, as they are natural sources of all essential vitamins, minerals and amino acids. Eggshell is a solid waste produced worldwide on a large scale which is disposed of without any prior treatment. Main chemical constituents of eggshells are calcium carbonate, calcium phosphate, magnesium carbonate and organic matter [31]. Recently waste eggshells have been used as humidity adsorbent [32], as a supplement in lime stabilization of clay soil [33], as an adsorbent to remove anionic dye [34], to remove chromium [35], to remove hazardous malachite green dye [36] from aqueous solution. Eggshell powder is also efficiently used as a natural source of calcium for treatment of osteoporosis [37], as catalyst for isomerization of lactose to lactulose [38]. Eggshell powder is calcined at higher temperature and is used as a cost-effective catalyst for production of biodiesel [39], as heterogeneous catalyst for the synthesis of biodiesel from a non-edible feedstock, mahua oil (*Madhuca indica*) [40], as an active base catalyst in the synthesis of dimethyl carbonate by transesterification [41].

To extend our research regarding the development of new natural catalysts for organic synthesis [42–48], we expand the use of calcined eggshell (CES) for synthesis of 2-amino 4*H*-chromenes. We introduce this method as a highly efficient method for synthesis of 2-amino 4*H*-chromenes using calcined egg shells (CES) as a natural base catalyst (Scheme 1).

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मो . नं . ८७६६८९२२६४

प्रस्तावना:

भारत हा खेड्यांचा देश आहे. खेड्यांचा विकास झाल्या शिवाय देशाचा विकास होणार नाही. यासाठी 'खेड्यांकडे चला' अशी घोषणा महात्मा गांधी यांनी दिली. महात्मा गांधीजींच्या विचाराने प्रेरीत होवून ग्रामीण भागाचा विकास करणेसाठी सांगली जिल्हाचे सुपुत्र वि.स.पागे यांनी महाराष्ट्रात 'रोजगार हमी' योजनेची सुरवात केली. महाराष्ट्रात या योजनेला प्रचंड यश मिळाले. या योजने मधून अनेक कामे उभी राहिली या यशामळे या याजनेची राज्य स्तरावर अंमलबजवणी करावी असा विचार पुढे आला. यानुसार भारतात २००५ मध्ये तात्कालिन आघाडी सरकारने हा कार्यक्रम राष्ट्रीय ग्रामीण पातळीवर रावविण्यासाठी 'राष्ट्रीय ग्रामीण रोजगार हमी अधिनियम २००५' मंजुर केला. यानुसार वर्षातील किमान १०० दिवस रोजगार पुरविण्याची हमी देण्यात आली. २ फेब्रुवारी २००६ पासुन देशातील निवडक २०० जिल्हयात या योजनेच्या अंमलबजावणीस सुरवात केली.

उद्देश:

१. मनरेगा संकल्पना अभ्यासणे.
२. मनरेगा योजनेची वैशिष्टये अभ्यासणे.
३. मनरेगा योजनेच्या कार्याचा आढावा घेणे.
४. मनरेगा योजनेचे टीकात्मक परिक्षण करणे.

अभ्यासपध्दती:

प्रस्तुत शोधनिबंध हा दुय्यम तथ्य संकलनावर आधारित असून ही माहिती संकलन करण्यासठी विविध मासिके, वर्तमानपत्रे, काही संदर्भ ग्रंथ आणि वेबसाइट यांचा आधार घेतला आहे.

मनरेगा कायदा संकल्पना:

'राष्ट्रीय ग्रामीण रोजगार हमी अधिनियम २००५' हा जगातील पहिला रोजगार हमी देणारा व प्रचंड मोठया प्रमाणात रावबण्यात येणारा कार्यक्रम आहे.या कार्यक्रमातून ग्रामीण भागात वनीकरण, मृदासंधारण, दुष्काळातील कामे, पूर नियंत्रणाची व संरक्षणाची कामे तसेच सर्व हंगामात वापरात येईल अशा रस्त्यांची निर्मितीवर भर देण्यात आला आहे. राष्ट्रीय ग्रामीण रोजगार हमी अधिनियम सप्टेंबर २००५ मध्ये मंजुर केला. तसेच २ फेब्रुवारी २००६ पासुन लागू करण्यात आला. सुरवातीला देशातील मागासलेल्या २०० जिल्हयात हा कार्यक्रम रावविण्यात आला. तर या योजनेच्या दुसऱ्या टप्प्यात २००७२००८ मध्ये तो आणखी १३० जिल्हयात लागू करण्यात आला. सुरवातीला केलेल्या उदिष्टानुसार राष्ट्रीय ग्रामीण रोजगार हमी अधिनियम योजना पाच वर्षात संपूर्ण देशात लागू करावयाची होती परंतू संपूर्ण देशभर रोजगार सुरक्षा देणे व त्याची मागणी लक्षात घेता तिसऱ्या टप्प्यात १ एप्रिल २००८ पासून उर्वरित २७४ जिल्हयामध्ये लागू केला गेला.

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अशा प्रकारे सर्व देशभर राष्ट्रीय ग्रामीण रोजगार हमी योजना संपूर्ण देशभर लागू झाली. जिथे पूर्वीपासून राष्ट्रीय कामासाठी

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of RESEARCH STUDENT, DEPT. OF ECONOMICS, S.U. KOLHAPUR.

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He/She has presented the paper entitled "मनरेगा योजनेचा समाजावरील परिणाम"

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Dr. Udaysinh R. Manepatil
Principal

Water Resources Development and Management in India

Mr. Amar Raju Jadhav
(Research student)(Research student)
ShivajiUniversity,KolhapurShivajiUniversity,
Kolhapur

Mr.Sanjay Maruti Patil
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ShivajiUniversity,KolhapurShivajiUniversity,
Kolhapur

Abstract:

Water is one of the most essential natural resources for sustaining life. Its development and management play an important role in agriculture production. Integrated water management is vital for poverty reduction, environmental sustainable and sustainable economic development. In view of the rapid increase in population, industrialization, andurbanization, the demand for water for meeting various requirements is continuously increasing. Therefore, we are facing many challenges in the water sector, which include reducing per capita water availability, the decline in groundwater table in many areas, and saltwater intrusion in coastal aquifers. The quality of surface water and groundwater is also deteriorating because of increasing pollution loads from various sources. Climate change may also adversely affect the availability and distribution of water resources. This article presents to development and management of water resources in India.

Introduction

Water is essential to human life. In fact, since 60% of the human body is water, it can be said that water is life itself. Without water, no field of human activity can be complete. Today, the world is debating if the flow of information is more important than the flow of energy. That is a good question. But the flow of water is still more important. It is fundamental to the economy and to ecology – and to human equity. The issue of water is becoming still more critical in view of climate change and related environmental concerns.

Water is central to some of the flagship programs in India. The modernization of India may be largely dependent on the modernization of its water management. This is not surprising since India supports 17% of the global population but has only 4% of the world's water resources. Better and more efficient use of water is a challenge for Indian agriculture and industry alike. It requires setting new benchmarks in both villages and in the cities. In India, 54% of people are dependent on farming for their livelihood. Yet, their share of national income is only 14%. To make agriculture more remunerative and to improve the prosperity of farming communities, the Indian government has introduced many new projects.Like a: 'HarKhet ko Paani' (Water for Every Farm), Per Drop, More Crop etc.

Now, 75% of water in India is used by agriculture and only 14% by industry. In the coming years, this ratio may change. The total demand for water will also rise. The efficiency of water use and reuse, therefore, has to be built into the blueprint of industrial projects. Business and industry need to be a part of the solution. India is urbanizing at a rate not seen in its history. An effort is being made to build or upgrade 100 modern cities as part of the Smart Cities initiative. Reuse of water, solid waste management and better sanitation infrastructure and practices are benchmarks to assess Smart Cities. In urban India, 35 billion liters of wastewater is produced every day. It is vital to adopt technology to reduce the toxic content of this water, and to deploy it for irrigation and other purposes. This has to be part of any urban planning program.

Objective

1. To study the water resourceplanning and development in India
2. To Analyze Management of Groundwater Resources

Methodology

This research paper is based on secondary data. The secondary data is taken from the various sources like a government of India, economic survey, ministry of finance, census of India 2001 and 2011, planning commission reports.

Water for agriculture

In order to meet the challenges of overall water scarcity scenario in the country, various measures can be taken, such as the construction of water harvesting structures, mass awareness among citizen for water conservation, construction of new water storage structures, interlinking of rivers, renovation, and repair of existing water bodies etc.

Water budgeting and planning the cropping patterns for the oncoming agricultural season(s), the strategy for avoiding water-intensive crops to the extent in consultation with the relevant expert departments are