

Study of Growth and Characterization of Cobalt Tartrate Crystals

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Abstract — In present investigation, single crystals of cobalt tartrate were grown by using silica gel as a growth medium. These single crystals were grown by simple gel technique using diffusion method. The optimum growth conditions for these crystals were optimized by varying various parameters. The circular shaped, opaque and brown colored crystals were observed. The crystalline nature of grown crystal was confirmed by using powder X-ray diffraction technique which shows that cobalt tartrate hydrate has crystallized in orthorhombic structure. The functional groups present in the crystals were identified by using Fourier Transform Infrared Spectroscopy (FTIR) analysis which shows that the presence of O-H bond, C-H bond and metal-oxygen bond. The SEM study reveals that the crystals having flat, rectangular and orthorhombic shapes of different sizes and structures embedded in rock like structure. The analysis of EDAX has shown the presence of Cobalt and Oxygen. The values of energy gap and band gap energy were calculated from UV-visible absorption spectra and these values were determined as 8.45 eV and 5.27 eV respectively. The Differential Scanning Calorimetry (DSC) was done to find the thermal properties of the crystal which manifest the water of hydration in the crystal.

Keywords — Gel growth; Cobalt Tartrate; XRD; FTIR; SEM; EDAX; UV-Visible; DSC

1. Introduction

Several researchers have grown materials of great interest by gel technique [1]. They have modified such materials by suitable substitution for determination of the effect of modification of the composition. They have focus on the characteristics of the modification of the composition [2-5]. This growth process is free from convection, a systematic study of crystallization in gels begins with Lissegang's famous discovery of periodic crystallization in gel. This method has received a lot of attention because of its simplicity and efficiency in growing a single crystal of a particular compound. This process is one way to address growth through controlled distribution. This growth process has no convection [6-9].

Crystal habit of various crystals, grown under different conditions and also by different methods such as, melt growth, vapour phase growth, solution growth and gel growth were described by H.E. Buckley [10], P. Hartman [11], K. Kern [12], A. A. Chernov [13], W. K. Burton [14] and J. Mullin [15]. A number of factors such as concentration of reactants, pH of gel, impurities in the solvent, gel setting time, gel aging time etc. have considerable effect on growth rate. Growth and Characterization of some tartrate crystals were reported by Henisch and Henisch et al [16], Patel and Rao [17]. Growth of some crystals of tartrate compounds like calcium tartrate [18], barium tartrate [19], ammonium tartrate [20], zinc tartrate [21], sodium tartrate [22], and cadmium tartrate [23] were reported by earlier researchers. The compounds of tartaric acid find numerous applications in semiconductor and optics industries with the invention of lasers. The

tartrates find many applications in science and technology such as ferroelectric applications, ferroelectric-Ferro elastic applications and dielectric applications. Some tartrate compounds are used as tracers for military purposes [24-27]. They are also used for construction of transducers. many linear and non-linear mechanical devices [28, 29].

In the present investigation, single crystals of cobalt tartrate were grown by a simple gel technique using diffusion method. The optimum conditions were established by varying various parameters such as pH, concentration gel solution, setting time of the gel solution and concentration of the reactance. The optimum growth conditions for these crystals were determined. These crystals were characterized by using XRD, FTIR, SEM, EDAX, UV-visible and DSC.

2. Experimental Analysis

Cobalt tartrate crystals were grown by single diffusion method in silica gel medium at room temperature. The Sodium Meta Silicate (Na_2SiO_3) solution and acetic acid (CH_3COOH) was prepared by dissolving 22gm (Na_2SiO_3) into the 250ml distilled water and 15ml (CH_3COOH) dissolving into 250ml distilled water respectively. Then (Na_2SiO_3) was added into 6ml (CH_3COOH) drop by drop by maintaining the pH 4.2 with continues till the solution becomes milky. After that 15ml solution of Cobalt chloride (CoCl_2) with 1M added into the gel solution. This mixture was then transferred to the test tube of 15 cm \times 2.5 cm dimension. The open end of the tub was sealed with cotton, preventing evaporation and contamination of the exposed area and stored tubes at room temperature.

Volume 9, Issue 1 (XIII)

ISSN: 2394 – 7780

January – March 2022



International Journal of
Advance and Innovative Research

Indian Academicians and Researchers Association
www.iaraedu.com

CONTEMPORARY GOVERNMENT, PUBLIC POLICIES AND RISE OF NEO NATIONALISM IN INDIA

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ABSTRACT

Nationalism was an inevitable product of Indian Freedom Movement against the British Colonial government. It was based on Patriotic Foundation However the concept of "Nationalism" is not only concerned with the pride of historical glorious events but also with the collective efforts done for the eradication of hindrances to this National heir Dom. The feeling for the reshaping of the nation into more capable, smarter stronger and an ideal unit, is closely associated with the Nationalism: The bifarious decisions taken by the present Indian Government regarding the Demonetization, Terrorism, Cleanliness, erection of National monuments, recent removal of Article 370 of the Constitution P.M. Narendra Modi's straight dialogue with the NRIs and Indian citizens in regional or National language has convinced Neo Nationalism to the multicultural heterogeneous Indian society.

In this paper emphasis is given on the examination of the intensity of the spirit of Neo-Nationalism within the various communities, groups of masses, based on age gender religion, income and education and also to examine how the Neo Nationalism itself is used in building the new image of India in the globalized scenario

Online survey was distributed across the country. Respondents were randomly divided into the groups based on the above mentioned Criterion Analysis of the responses demonstrated that extensive feelings are associated with Nationalism and vital public opinion that the existing government has accelerated the process of Neo Nationalism in India

Keywords: Neo Nationalism, Demonetization, Heterogeneous National heir Dom, Public Opinion.

INTRODUCTION

India is a parliamentary Democratic Republic in which the President of India is the head of state and the Prime Minister of India is the head of government. The organs of government include the legislative (law making); the executive (enforcement of law) and judiciary (interpretation of law).

The three tiers of government are: the federal, state and local governments. These tiers of government are known/identified with a federal system of government.

The core duty of any government is to provide the citizens of ex country all the basic public policies such as health, education, food & water. Public policies in India is in a state of Flux.

The nature of the policy process has changed dramatically due to changing government .A case is made to listen to the multiple voice that are emerging in governance processes; it is argued that are emerging in governance processes: It is argued that ait is necessary to create a space for dialogue among civil society and citizens. The demand for stronger link between research and policy has grown. Emerging Demographic trends at national level, such as urbanisation-and environmental trends at the global level – such as climate change have redefined the contours of public policies.

In India, Public policies are upgraded continuously as per the need of public and new policies come up day to day to serve the country.

Indian Prime Minister Narendra Modi (assumed office in 2014) and his Bharatiya Janata Party (BJP) have been referred to as new nationalist. Modi is a member of the Rashtriya Swayamsevak Sangh (RSS), a right-wing paramilitary organisation aligned with the BJP, which has also been said to advocate a new nationalist ideology. Modi's nationalist campaigns have been directed by BJP strategist Amit Shah, who currently serves as the Indian Home Minister (assumed office in 2019), and has been touted as a potential successor to Modi as Prime Minister.

The new nationalism has become a highly controversial issue by the consecutive electoral successes of new types of nationalist parties in various parts of the world. It should be acknowledged that the profile and discourse of the leaders of these parties played an important role in this increased interest. Politicians such as Vladimir Putin, Donald Trump, Viktor Orban, Recep Tayyip Erdogan, Rodrigo Duterte, and most recently Jair Bolsonaro display only partly similar profiles; however, develop an almost similar discourse, pointing to the rise of a complex and diversified phenomenon. They increasingly resort to national references in political rhetoric in



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Institutional Repositories of Pharmacy Colleges Affiliated to Savitribai Phule Pune University, Pune: A Study

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Abstract: This research paper deals with analysis of Institutional Repositories of Pharmacy Colleges affiliated to Savitribai Phule Pune University, Pune. Detail study of institutional repositories analyzed & findings are exposed. Different criteria's formed & used for the analyses of data. The study of this research paper focused on different aspects of contents of IR. Data Collected from total 29 Pharmacy Colleges affiliated to Savitribai Phule Pune University has been analyzed on the basis of different criteria's. Outcome of this research study exposed very strange & unexpected picture of institutional Repositories service. Findings of study compel to think on improvement of IR according to modern age & establish new platform to design IR.

Key words: Savitribai Phule Pune University, Pharmacy Colleges, Institutional Repository, Information & Communication Technology

(Abbreviations: IR – Institutional Repository, ICT –Information & Communication Technology)

1 Introduction:

Savitribai Phule Pune University, Pune one of the premier universities in India, is positioned in the North-western part of Pune city. It was established on 10th February, 1949 under the Poona University Act. The university issues 66 academic departments. It has about 307 recognized research institutes and 612 affiliated colleges offering graduate and under-graduate courses. There are 29 Pharmacy colleges. The Institutional repositories in the library of that college will be studied.

This is an electronic era & information & communication technology occupied all the fields of knowledge. Everyone is using computer, laptop, tab or mobile & involved to get knowledge on his fingertips. User want to information without wasting time & money. As an adaption with current generation every educational institutes is changing their services to user with the help of ICT. These institutions using different web technologies to retrieve information.

As a results institutions using to providing their institutional repositories for users to show their prosperity of knowledge. IR playing a vital role to provide information resources to user & display richness of institutions in the field of knowledge. So it is important to study about existence of this IR service status. IR enable researchers to self- archive their research output & can improve the visibility, usage & impact of research conducted at institution.

2. Repository:

A place where or receptacle in which things are or may be stored.

A place where something's especially a natural resource is found in significant quantities.

A central location in which data is stored & managed the metadata will be aggregated in a repository.

3. Institutional Repository:

An institutional repository is an archive for collecting, preserving & disseminating digital copies of the intellectual output of an institution, particularly research institution

4. Contents of Institutional Repository:

An institutional repository can be viewed a set of services that a university offers to members of its community for the managements & dissemination of digital materials created by the institution & its community members.

For a university, this includes materials such as monographs, reprints of academic journal articles- both before (reprints) & after (post prints) undergoing peer review as well as electronic theses & dissertations. An institutional repository might also include other digital assets generated by academics such as datasets, administrative documents course notes, learning objects or conference proceedings. Deposit of materials in institutional repository is sometimes mandated by institutions.

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Impact Factor-7.675 (SJIF)

ISSN-2278-9308

B.Aadhar

Peer Reviewed & Refereed Indexed

Multidisciplinary International Research Journal

ISSUE No- (CCCXVII) 317

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१९३९ साली दुसरे महायुद्ध सुरू झाले तेव्हा ब्रिटनने भारत आपली वसाहत या नात्याने 'भारत आपल्या बान्हने युद्धात उतरत आहे.' असे जाहीर केले. त्यामुळे संपूर्ण भारतात ब्रिटिशांच्या या कृतीचा निषेध करण्यात आला आणि तेथूनच खऱ्या अर्थाने स्वातंत्र्य चळवळीच्या शेवटच्या पर्वाला सुरुवात झाली. महात्मा गांधींनी वैयक्तिक सत्याग्रहापासून या आंदोलनाला सुरुवात केली.

सप्टेंबर १९३९ च्या काँग्रेस वर्किंग कमिटीच्या बैठकीत असा प्रस्ताव मांडण्यात आला की, 'हिंदुस्थानच्या शांततेचा व युद्धाचा प्रश्न हिंदी जनतेने ठरविला पाहिजे.' काँग्रेसच्या या प्रस्तावाला इंग्रज सरकारने प्रतिसाद दिला नाही म्हणून काँग्रेस वर्किंग कमिटीने विविध प्रांतातील काँग्रेसच्या मंत्रिमंडळांना राजीनामे देण्याचा आदेश दिला. या आदेशाप्रमाणे मुंबई इलाख्यातील बाळासाहेब खेर यांच्या मंत्रिमंडळाने राजीनामा दिला.

मार्च १९४० च्या बिहारमधील रामगढ येथील काँग्रेसच्या अधिवेशनात स्वातंत्र्याच्या मागणीचा पुनरुच्चार करण्यात आला व घटना समितीची मागणी करण्यात आली. जुलै १९४० मध्ये काँग्रेस कार्यकारणीच्या बैठकीत अधिक आक्रमक भूमिका घेऊन इंग्रजांना स्पष्ट शब्दात सांगण्यात आले की, महायुद्ध संपताच ब्रिटिशांनी भारताला स्वातंत्र्य द्यावे. तत्पूर्वी केंद्रात राष्ट्रीय सरकार स्थापन करावे. परंतु एवढ्याने भागणार नव्हते कारण ब्रिटिशां सरकार स्वातंत्र्य चळवळ दडपून टाकण्याचा प्रयत्न करीत होते. अशा परिस्थितीत काँग्रेसने वैयक्तिक सत्याग्रह चळवळ सुरू केली.

ब्रिटिशांच्या अडचणीच्या परिस्थितीत कायदेभंग चळवळ सुरू करून शासन यंत्रणा मोडून काढणे अशी काँग्रेसची इच्छा नव्हती. इंग्रजांच्या धोरणांचा निषेध करावा, मात्र त्यांच्या युद्ध प्रयत्नात अडथळे निर्माण करू नयेत यासाठी काँग्रेसने वैयक्तिक सत्याग्रहाचा निर्णय घेतला. वैयक्तिक सत्याग्रह याचा अर्थ गांधीजी सांगतात त्या स्वयंसेवकाने एकट्याने इंग्रजांचा कायदा मोडायचा व इंग्रज ठोठावतील ती शिक्षा स्विकारावी असा होता.

सत्याग्रह महात्मा गांधींनी निर्धारित केलेल्या पध्तीप्रमाणे करावयाचा असल्याने सत्याग्रहींची निवड करण्यात येत असे. पूर्वखानदेश जिल्हा काँग्रेस कमिटीचे चिटणीस केशव गोविंद लेले यांच्यावर वैयक्तिक सत्याग्रह संचलनाची जबाबदारी असल्याने ते सत्याग्रहींची नावे गांधीजींकडे पाठवून मान्यता मिळवीत असत.

वैयक्तिक सत्याग्रहासाठी पूर्वखानदेशाचे सत्याग्रही शिविर यावल येथे ८ ते १२ सप्टेंबर १९४० या काळात आयोजित करण्यात आले होते. या शिविरास वैयक्तिक सत्याग्रहात अपेक्षित असलेल्या कार्याची चर्चा करण्यात आली. त्यानंतर जिल्ह्याभरात वैयक्तिक सत्याग्रहाला सुरुवात झालेली दिसून येते. या वैयक्तिक सत्याग्रहात धरणगावातील सत्याग्रहींनी व व्यापाऱ्यांनीही सहभाग घेतलेला दिसतो.

युद्ध विरोधी वातावरण पूर्वखानदेशात हळूहळू जोर पकडत होते. या वैयक्तिक सत्याग्रहात धरणगाव येथील व्यापाऱ्यांनी अशांत: हरताड पाडला. ३ जानेवारी १९४१ रोजी हरताड पाडण्यात आला.

पूर्वखानदेश जिल्हा कलेक्टरच्या गोपनीय पत्रानुसार, ६ जानेवारी १९४१ रोजी धरणगाव येथील व्यापाऱ्यांनी हरताड पाडून ब्रिटिशांच्या युद्धविरोधी धोरणाचा निषेध केलेला दिसतो.

पूर्वखानदेश कलेक्टरच्या गोपनीय पत्रानुसार, धरणगावचे सुर्यकांत मधुसूदन भोळे यांनी ३१ जानेवारी १९४१ रोजी सकाळी १० वा.सत्याग्रह केला. त्यांना तावडतोव अटक करण्यात आली. व त्यांना एरंडोल येथील दंडाधिकारी वर्ग-१ यांच्या न्यायालयात खटल्याच्या कामकाजाच्या पाठपुराव्यासाठी पाठविण्यात आले. त्यांना रस्तर आरोपाखाली दोषी ठरविण्यात आले. व त्यांना कलम ३८(५) नुसार एक दिवसाची कैद व २५ रु.दंड ठोठावण्यात आला व दंड न भरल्यास १५ दिवसाची कैद भोगावी अशी शिक्षा ठोठावण्यात आली. त्यांना वर्ग-३ चा दर्जा देण्यात आला.



ISSN 2319 - 8508
AN INTERNATIONAL MULTIDISCIPLINARY
HALF YEARLY RESEARCH JOURNAL

GALAXY LINK

Volume - X

Issue - I

November - April - 2021-22

Marathi Part - I

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वासुदेव विठ्ठल तथा अण्णासाहेब दास्ताने यांनी १९२० नंतर महात्मा गांधींच्या आदेशानुसार आपली वकीली सोडली त्यानंतर वकील म्हणून ते कधीही कोर्टात गेले नाहीत. एवढेच नव्हे तर आपली सर्व संपत्ती आपल्या भावांमध्ये वाटून कडगाव येथे आश्रम काढून तेथे सुतकताई, चरखा दुरुस्ती याचे प्रशिक्षण सुरु केले. आपली सुट्याबुटातली वस्त्रे त्यागून साधा सदरा, धोतर व उपरणे असा पहेराव धारण केला. मात्र अण्णासाहेब दास्ताने यांच्यावर सुरुवातीला लोकमान्य टिळकांचा प्रचंड प्रभाव होता. म्हणून ते लोकमान्य टिळक यांची वेळोवेळी भेटी घेऊन क्रांतीकारी कार्याविषयी त्यांच्याकडून ते मार्गदर्शन घेत असत. आणि त्याची अंमलबजावणी त्यांनी भुसावळ याठिकाणी तरुणांना एकत्र करून त्यांच्यात जहाल राष्ट्रवादी विचार रुजविले. तसेच क्रांतीकारकांना दारुगोळा व बंदुकीचा सराव करता यावा म्हणून त्यांनी धुळयाजवळ शंभर एकर शेती घेऊन क्रांतीकार्याला चालणा दिलेली दिसते.

वासुदेव विठ्ठल दास्ताने पदवीचे शिक्षण घेण्यासाठी (बी.ए.करण्यासाठी) पुण्याच्या डेक्कन महाविद्यालयात १९०० साली दाखल झाले. तेथे त्यांचा सेनापती बापट व महादेव रणदिवे या मित्रांशी जवळचा संबंध आला. हे तिन्ही मित्र नेहमी ब्रिटीश साम्राज्याच्या गुलामगिरीतून सुटका करण्यासाठी आपण शरीर सामर्थ्य वाढवून राष्ट्रासाठी काहीतरी केले पाहिजे असे क्रांतीकारी विचार त्यांच्या मनात नेहमी घोळत असत. सेनापती बापट यांचा निर्णय व अन्यायाविरुद्ध पेटून उठण्याचा स्वभाव हेरून १९०२ साली वासुदेव दास्ताने, महादेव रणदिवे व दामोदरपंत बळवंत भिडे गुरुजी यांनी बापट यांना सशस्त्र क्रांतीची शपथ दिली.^१ या शपथेसंबंधी सेनापती बापट म्हणतात, ही शपथ मला मिळाली नसती तर मी अत्यंत गरीब कुटुंबातील मुलगा कोठेतरी चाकरी करित भाकरी मिळवीत एके दिवशी संपलो असतां. सेनापती बापट यांनी वासुदेव दास्ताने, माधवराव व दामोदर भटजी यांना आपले राजकीय गुरु मानले होते.^२

वासुदेव दास्ताने, सेनापती बापट व रणदिवे बंधू बाँब, पिस्तुले जमविणे ते लपवून ठेवणे किंवा इकडून तिकडे पोहोचविण्याचे कामे ही मित्र मंडळी आपापले व्यवसाय सांभाळून करत असत.^३ या कामासाठी वासुदेव दास्ताने यांच्या धुळयाजवळ असलेल्या शेताचाही उपयोग झाला.

वासुदेव दास्ताने यांनी मुद्दाम इंदोरजवळ तसेच धुळयापासून तीन चार मैल अंतरावर चाळीसगाव रोडवर शंभर विघे जमीन घेतली होती. या शेतीचा उपयोग प्रामुख्याने क्रांतिकारकांना राहण्यासाठी व हत्यारांच्या निशाणबाजीचे शिक्षण घेण्यासाठी उपयोग करण्यात येत असे.^४



१. मीर शुक्रुल्ला यांचे खिलाफत चळवळ व हिंदू-मुस्लिम ऐक्यासाठी दिलेले योगदान

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महात्मा गांधींनी १९२० मध्ये असहकार चळवळ सुरु केली ही चळवळ अतिशय आगळी वेगळी अशी होती. जगावर सत्ता असलेल्या ब्रिटीशांशी लढण्यासाठी गांधीजींनी सत्य, अहिंसा व असहकाराचा मार्ग निवडला. यानून ब्रिटीश सरकारला गांधीजींनी मोठा धक्का दिला. ब्रिटीशांशी लढण्यासाठी असहकारासोबत राष्ट्रीय शिक्षण, सरकारी नोकऱ्या, पदव्या, मानसन्मानाच्या जागा यांचा त्याग करायचा होता. तसेच असहकार चळवळीला मुस्लिम शिमांचे सहकार्य मिळाले असल्याने खिलाफत चळवळीला महात्मा गांधींनी पाठींबा दिलेला होता. एवढेच नव्हे तर काँग्रेसने खिलाफत चळवळ आणखी मानून गावागावांमध्ये खिलाफत कमिट्या स्थापन करून हिंदू-मुस्लिम ऐक्यासाठी प्रयत्न सुरु केले होते. पूर्वखानदेश जिल्हयातील जळगाव येथील मीर शुक्रुल्ला हे खिलाफत चळवळीपासून काँग्रेस पक्षात सक्रिय होऊन त्यांनी खानदेशात खिलाफत चळवळीचा मोठा प्रचार-प्रसार केला. एवढेच नव्हे तर आयुष्यभर त्यांनी काँग्रेस पक्षात राहून स्वातंत्र्याच्या विविध चळवळींमध्ये झोकून दिलेले आपल्याला दिसून येते.

मीर फर्जत अली १८५७ च्या स्वातंत्र्य युद्धाच्या वेळी इंग्रजांशी लढा देतांना अत्याचार सहन करीत कुटुंबीयांना नेपाळच्या बस्ती जिल्हयातून कसेबसे धरणगाव येथे आणले. त्यानंतर जळगावला स्थायिक झाले. आपल्या पूर्वजांचे बलिदान व देशप्रेमाणे प्रभावित मीर शुक्रुल्ला जीवनभर देशाच्या स्वातंत्र्यासाठी लढले.^१

आपल्या पूर्वजांचे बलिदान व देशप्रेमाणे प्रभावित मीर शुक्रुल्ला जीवनभर देशाच्या स्वातंत्र्या करीता लढले. महात्मा गांधीजींची खिलाफत चळवळ फोफावत असतांना जळगावलाही तिचा प्रसार झाला. मीर शुक्रुल्ला १९२० पासून महात्मा गांधीसोबत खिलाफत चळवळीसह स्वातंत्र्य चळवळीत सहभागी राहिले. या आंदोलनामुळे मीर शुक्रुल्ला यांचे सोबत सर्वसामान्य मुस्लिम समाजही राष्ट्रीय प्रवाहात उतरून असहयोग आंदोलनात सहभागी झाले. मीर शुक्रुल्ला यांच्या प्रयत्नाने हिंदू-मुसलमानांमध्ये अभूतपूर्व असे ऐक्य घडून आले. खिलाफत चळवळीत सहभाग असल्याने मौलाना शौकत अली जोहर, इक्रीम अजमल खान, मौलाना अब्दुलबारी, अब्दुल्ला बरेलवी, बी अम्मा, मौलाना हसरत मुहानी यांच्याशी मीर शुक्रुल्ला यांचे जवळचे संबंध होते.^२

खिलाफत चळवळीच्या काळात चासुदेव दास्ताने यांनी हिंदू-मुस्लिम ऐक्याचा प्रचार करीत असतांना अनेक मुस्लिम कार्यकर्ते मिळविले. त्यात जळगावचे मीर शुक्रुल्ला कट्टर इस्लाम धर्मीय, परंतु सालस व्यक्तीचे गृहस्थ. चासुदेव दास्ताने यांच्या





COUPLING REACTIONS OF ARYLDIAZONIUM SALT. PART-XII: REVIEW ON
COUPLING OF ARYLDIAZONIUM SALT OF AMINOBENZOTHIAZOLES WITH
AROMATIC OR HETEROAROMATIC MOFITS

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ABSTRACT: The Aminobenzothiazole-azo compounds are industrially very important for technical purposes. Azo group compounds are commonly used in preparation of or as synthetic colour molecules. They are prepared beginning with primary aromatic amines by diazotization and coupling on aromatic moifits. The compounds were studied to arrive at their skeleton using different type of data (spectroscopic and the analytical) using spectroscopies such as UV-Vis., FT-IR, ¹H-NMR. Azo compounds of amino benzothiazole have varied applications in pigments, many used in food, cosmetics and drug industry as well.

KEYWORDS: Aminobenzothiazole, azo, diazotization, dyes, Antibacterial and Antioxidant Activity

INTRODUCTION:

The compounds of azo class or dyes are analyzed by occurrence of the azo (-N=N-) moiety in their skeleton, conjugated with different or identical, mono or dicyclic aromatic, polycyclic aromatic or hetero-aromatic systems. Due to their precise physio-chemical properties and biological activities, they have found a broad application viz. in cosmetic, pharmaceutical, dyeing or textile, food industry and also in analytical field.

The diazonium compounds, epitomize a main group of organic compounds having functional formula R-N≡N⁺X⁻ in which R = alkyl or aryl and X = organic or inorganic anion such as a F, Cl, Br and or I group. Diazonium salts, where R is an aryl group, are precious intermediates and have many applications in organic chemistry synthesis. Since, their discovery in 1858¹ many protruding named reactions associated with diazonium salts of arene moiety and have evolved throughout development of one century plus. In 1884, Sandmeyer found out that by treating with copper chloride, benzene diazonium salt was converted into





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ADVANCES AND PERSPECTIVES OF FE METAL NANOPARTICLES SYNTHESIZED IN IONIC LIQUID AND THEIR APPLICATIONS

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ABSTRACT:

Green chemistry and Sustainable development in the field of synthetic organic chemistry is central in the advancement of environmentally friendly strategies towards the synthesis of molecules of commercial and biological relevance. There are large numbers of efficient methodologies have already been disclosed under the guidelines of green and sustainable chemistry. However, as a novel catalytic system i.e metal nano-particles in ionic liquids have recently been gaining popularity as a state-of-the-art solution for organic transformations. Metal nano-particles in ionic liquids offers miraculous promises as it is an exceptional catalytic system that have a potential to replace the conventional methods of organic synthesis, and besides that are found labile in the field of pharmaceuticals, biochemistry, molecular biology, and process and technology as well. In this review, our aim is to investigate the recent developments in the synthesis of fe metal nanoparticles synthesized in ionic liquid which refers to the catalytic system, of choice, and offers exceptional functional group tolerance as well as delivers highly specific organic transformations which provides considerably improved eco-friendly, cost effective and sustainable alternatives to the conventional catalytic processes.

Keywords: Metal nanoparticles, ionic liquids, green and sustainable development, catalytic system.

1. INTRODUCTION

The myriad applications of nanomaterials have led to increasing demand in the chemical industry. Hence, quite a large number of chemicals, for instance solvents, raw materials, reagents, and template materials, have successfully been utilized for the production of nanomaterials. In addition, it has been evidenced that the creation of toxic or hazardous intermediates and products, as well as chemical wastes has increased through the chemical transformation which are aiming to prepare desirable chemicals. In order to control or reduce or eliminate the generation of undesirable products and to minimize the use of hazardous materials in chemical processes, the concept of green and sustainable development in chemistry was introduced to chemical science and industry. ¹⁻¹¹





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Review Article



Coupling Reactions of Aryldiazonium Salt. Part-XI: Review on Coupling of Aryldiazonium Salts of Aminobenzothiazoles with Aromatic and Heterocyclic Components.

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Received: 09-07-2021; Revised: 25-09-2021; Accepted: 02-10-2021; Published on: 15-10-2021.

ABSTRACT

The azo compounds synthesized from substituted 2-aminobenzothiazoles were scientifically significant for sensor, nano chemistry and pharmaceutically useful applications. Azo-dyes were very important and useful class of synthetic organic compounds, that have a huge variety of applications.

Keywords: 2-Aminobenzothiazole, azo dyes, diazotization, coupling, Biological Activity.

QUICK RESPONSE CODE →

DOI:

10.47583/ijpsrr.2021.v70i02.011

DOI link: <http://dx.doi.org/10.47583/ijpsrr.2021.v70i02.011>

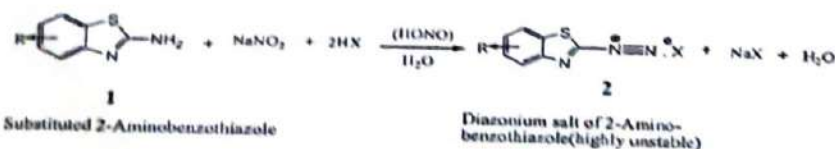
INTRODUCTION

Azo compounds have good fastness and high dyeing properties, also wide applications such as dyeing of textile fibers, cosmetics, plastics, paper, leather and bio-medical studies. Azo compounds were synthesized from aminobenzothiazole and different aromatic or heteroaromatic anilines or phenols. Azo class of compounds or dyes were peculiarly characterized by analysis of the azo group (-N=N-) in their skeleton with aromatic or hetero-aromatic systems. The physio-chemical properties and biological activities makes them useful in variety of applications and in analytical field.

Since, their discovery in 1858¹ many protruding named reactions associated with diazonium salts of arene moiety and have evolved throughout development of one century plus. In 1884, Sandmeyer found out that by treating with

copper chloride, benzene diazonium salt was converted into chlorobenzene². The azo compounds are also valuable in the pharmaceutical and medicinal fields³ and possibly the azo-imine linkage would be accountable for biological activities showed by some Schiff bases as reported⁴. Preparation of most of the azo compounds includes diazotization of a primary (aromatic or heteroaromatic) amine, along with by coupling with coupling agents⁵ viz. pentane-2,4-dione (or acetylacetone)⁶, phenols⁷⁻¹¹.

Literature shows studies on the derivatives in order to explain the newer aptitudes of similar type of compounds. Sometimes azo compounds are frequently described as a chromogen in the literature¹¹. The hydroxy⁷⁻¹¹ or amino-¹² groups are common functional group of organic compounds used as coupling agents¹³. The appearance of various classes of synthetic dyes¹⁴ containing azo dyes occurred due to constant effort. Recently, from our laboratory a review is published¹⁵ pertaining to the reaction of varied diazonium salt with salicylic acid and phenolic compounds, coupling reactions of aryldiazonium salt of various substituted 2-aminobenzothiazoles with Aromatic or Heteroaromatic motifs formed azo dyes¹⁶, the diazotization proceeds with easy processes and ecologically benign situations with high yields of the products¹⁷.



Scheme 1: Typical reaction Mechanism of Diazonium salt synthesis.



Scheme-2: Coupling Reaction of Diazonium salt with aromatic or hetero-aromatic compound.





Assessment of Aflatoxins, Aflatoxigenic Fungi and Mycoflora Associated with Cereals

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Manuscript details:

Received: 20.05.2022
Accepted: 28.09.2022
Published: 30.09.2022

Cite this article as:

Kolhe AS and Chaudhari SB (2022) Assessment of Aflatoxins, Aflatoxigenic Fungi and Mycoflora Associated with Cereals, MS, India, *Int. J. of Life Sciences*, 10 (3): 207-212.

Available online on <http://www.ijlsci.in>
ISSN: 2320-964X (Online)
ISSN: 2320-7817 (Print)



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ABSTRACT

Aflatoxins are one of the most potent toxic substances that occur naturally. These are a group of closely related mycotoxins produced by fungal species such as *Aspergillus flavus* and *Aspergillus parasiticus*. Which commonly grow on foods and feeds. Sample of cereal seeds viz., Bajra, Jowar, Maize and Wheat were collected. Dilution plate and agar-plate methods were used for isolation of mycoflora associated with collected samples. All isolates of *Aspergillus flavus* obtained from collected samples were screened for their aflatoxigenic potential in SMKY liquid medium. In all fourteen different fungi were isolated from cereal seeds. *Aspergillus flavus*, *A. niger*, *A. ochraceus*, *Aspergillus sp.*, *Fusarium sp.* and *Penicillium sp.* were stand out common seed infesting fungi, *A. flavus* was dominant in all fungi and its 70.1 % strains were aflatoxigenic. Highest percentage of aflatoxigenic fungi was recorded in Maize seeds (86.20%). Aflatoxin producing potentials of *Aspergillus flavus* obtained from Maize (14.38 ppm) followed by Bajra (11.94ppm), Wheat (11.63 ppm), and Jowar (11.11 ppm). Analysis of cereal grain seeds for its natural aflatoxin contamination revealed that 26.25 % samples were naturally contaminated with aflatoxin. Maximum concentration of aflatoxin B₁ was detected in Maize seeds (27.87 ppb) followed by Jowar seeds (8.38 ppb), Wheat seeds (5.61 ppb) and Bajra seeds (5.25 ppb). Cereals contaminated with aflatoxin has poses a potential threat for the life of human and animal beings.

Keywords – Cereals, Mycoflora, *Aspergillus flavus*, aflatoxins.

INTRODUCTION

Aflatoxins are one of the most potent toxic substances that occur naturally. These are a group of closely related mycotoxins produced by fungal species such as *Aspergillus flavus* and *Aspergillus parasiticus*. Which commonly grow on foods and feeds (Chaudhary and Kolhe, 2022; Kolhe, 2016). The cereals are common and important staple food crops for the people of the Jalgaon District of Maharashtra State. Most of the cereal crops are mainly grown as rainfed in the queer weather conditions during Kharif (rainy) season.





Study of Mycoflora, Aflatoxigenic Fungi and Aflatoxin in Fish Feeds.

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Manuscript details:

Received: 14.04.2022

Accepted: 24.06.2022

Published: 30.06.2022

Cite this article as:

Chaudhari SB and Kolhe AS (2022) Study of Mycoflora, Aflatoxigenic Fungi and Aflatoxin in Fish Feeds, MS, India, *Int. J. of Life Sciences*, 10 (2): 187-191.

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

ISSN: 2320-964X (Online)

ISSN: 2320-7817 (Print)



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ABSTRACT

Sample of fish feeds were collected from Mumbai, agar-plate methods were used for isolation of mycoflora associated with collected samples. All isolates of *Aspergillus flavus* obtained from collected samples were screened for their aflatoxigenic potential in SMKY liquid medium. In all seventeen different fungi were isolated from fish feeds. *Aspergillus flavus*, *A. niger*, *A. ochraceous*, *Aspergillus sp.*, *Fusarium sp.* and *Penicillium sp.* were stand out common seed infesting fungi, *A. flavus* was dominant in all fungi and its 76% strains were aflatoxigenic. Highest percentage of aflatoxigenic fungi was recorded in Feed Ingredients (86.2%). Analysis of fish feeds for its natural aflatoxin contamination revealed that 26.67% samples were naturally contaminated with aflatoxin. Maximum concentration of aflatoxin B₁ was detected in Local fish feed (93.67 ppb) followed by Feed Ingredients (92.89 ppb) and Commercial fish feed (84.38 ppb). Oil seeds contaminated with aflatoxin has poses a potential threat for the life of aquaculture animals.

Keywords – fish feeds, Mycoflora, *Aspergillus flavus*, aflatoxin.

INTRODUCTION

Aflatoxicosis is a disease that can affect many species of fish, and results when feed contaminated with aflatoxins is eaten by the fish (Ashley, 1970). Aflatoxins are one of the most potent toxic substances that occur naturally. These are a group of closely related mycotoxins produced by fungal species such as *Aspergillus flavus* and *Aspergillus parasiticus*. Which commonly grow on human foods and animal feeds (Dwarkanath *et al.*, 1969; Kolhe, (2016); Nagarajan and Bhat, 1973; Basappa *et al.*, 1977; Kolhe, *et al.*, 1994; Verma *et al.*, 1996, Kolhe and Chaudhari, 2011, Chaudhari and Kolhe, 2017). Oilseed crops are primarily soybeans, sunflower seed, canola, rapeseed, safflower, flaxseed, mustard seed, peanuts and cottonseed, Wheat and Maize. After extraction of the oil the residue is a valuable source of protein, especially for animal feeding stuffs as in seed cake or press cake.

