

Cr(III), Mn(III) AND Fe(III) METAL COMPLEXES WITH DINEGATIVE TRIDENTATE HYDRAZONE SCHIFF BASE: SYNTHESIS AND CHARACTERIZATION

Yaul, A.R.^a, Thenge, P.G., Yaul, S.R., Pethe, G.B.^a,
Makode, J.T.^b & Aswar, A.S.*^c

^aDepartment of chemistry, Narayanrao Kale Smruti Model College, Karanja (Gh.), Dist.-Wardha-442203,

^bLate Narayanrao Amrutrao Deshmukh College, Chandur Bazar, Dist.- Amravati, (MS), India

^cDepartment of Chemistry, Sant Gadge Baba Amravati University, Amravati- 444 603, (MS), India.

aswaranand@gmail.com, amityaul1983@gmail.com

ABSTRACT

Cr(III), Mn(III) and Fe(III) complexes of 2,4-dihydroxybenzophenone-4-nitrobenzoylhydrazone (H_2L), were prepared, which were structurally characterized by elemental, electronic & infrared spectroscopy, magnetic susceptibility measurements and thermogravimetric analyses. Thermal degradation studies of metal complexes show that the final product is the metal oxide. An octahedral geometry is suggested for the Cr(III) and Fe(III) complexes whereas square pyramidal geometry for Mn(III) complex. Structural analysis reveals that the ligand presents as tridentate ligand with ONO donors and coordinates to the metal center in an enolic form.

Key word: hydrazone Schiff base, complexes, infrared spectra, thermogravimetric study

INTRODUCTION

In recent years, considerable attention has been paid to the chemistry of the metal complexes of Schiff bases containing nitrogen and oxygen donors [1-4] because of their stability and biological activity [5-10]. In addition, the presence of nitrogen and oxygen donor atoms in the complexes makes these compound effective and stereospecific catalysts for oxidation, reduction hydrolysis and other transformations of organic and inorganic chemistry [11-13]. Schiff bases of hydrazone moieties have an additional interest, because they also contain the $>C=N-$ structural unit, which forms a strong chelate ring giving possible electron delocalization. It is well known that some drugs have increased activity when administered as hydrazone metal complexes. The present work synthesizes and characterizes new metal complexes of hydrazone Schiff base. The hydrazone Schiff base (H_2L) of ONO dibasic ligand is synthesized by condensation of 4-nitrobenzoylhydrazide with 2,4-dihydroxybenzophenone (scheme 1). Three new complexes of H_2L ligand with Cr(III), Mn(III) and Fe(III) are synthesized.

EXPERIMENTAL MATERIALS AND PHYSICAL MEASUREMENTS

All the reagent and solvents (ethanol, methanol and diethyl ether) were of reagent grade and used without purification. Chromium chloride pentahydrate and ferric chloride hexahydrate were of S. D's fine chemicals. $Mn(OAc)_3 \cdot 2H_2O$ was

synthesized by reported method [14]. 2,4-dihydroxybenzophenone and 4-nitrobenzoylhydrazide were prepared by general method [15].

Microanalyses of carbon, hydrogen and nitrogen of the compounds were carried at RSIC, CDRI, Lucknow, India. Metal content in each complex was done gravimetrically by decomposing the complexes with conc. HNO_3 and then igniting to metal oxides [16]. The IR spectra were recorded on a Perkin Elmer infrared spectrophotometer in the range $4000-400\text{ cm}^{-1}$ at CDRI, Lucknow, India. Solid-state electronic spectra of the complexes were recorded on a carry 2300 spectrophotometer at SAIF, Chennai. ^1H-NMR spectra of ligand was recorded on a Bruker Ac 250 spectrometer at 250 MHz, using TMS as a reference in $DMSO-d_6$. The magnetic susceptibilities at room temperature were measured on a Gouy balance using $Hg[Co(NCS)_4]$ as the calibrant. Diamagnetic corrections for various atoms and structural units were computed using Pascal's constants. Thermogravimetric curves of the compounds were recorded in the temperature range $30-750^\circ C$ at the heating rate of $10^\circ C/min$.

SYNTHESIS OF HYDRAZONE LIGAND (H_2L)

The hydrazone ligand (H_2L) used in the present work was prepared by following general method (scheme 1). An ethanolic solution (40 ml) of 4-nitrobenzoylhydrazide (50 mmol) was added to an

SYNTHESIS AND CHARACTERIZATION OF A SERIES OF BIOLOGICALLY ACTIVE TRANSITION METAL COMPLEXES INCORPORATING TRIDENTATE ONO DONOR HYDRAZONE LIGAND

N. J. Suryawanshi, A. R. Yaul, G. B. Pethe and A. S. Aswar
Department of Chemistry, Sant Gadge Baba Amravati University, Amravati

ABSTRACT

A new acid hydrazone (H_2L) derived from the condensation of 2-hydroxy-5-methylacetophenone and salicylhydrazide and its metal complexes of Mn(II), Co(II), Ni(II), Cu(II), Ti(III), Cr(III), Fe(III), Zr(IV) and $UO_2(VI)$ have been prepared. Their structures have been elucidated on the basis of elemental analyses, magnetic moment, spectral (IR and electronic), powder X-ray diffraction and thermogravimetric analysis (TG). The analytical data indicate 1:1 (metal: ligand) stoichiometry for all complexes. The powder X-ray diffraction suggests orthorhombic crystal system for Cu(II) complex. The complexes exhibit an octahedral geometry around the metal centre except Cu(II) ion. Cu(II) complex shows square planar geometry. The IR spectral data suggest that the ligand behaves as tridentate with ONO donor atoms sequence towards central metal ion. Electrical conductivity of the complexes was measured in their compressed pellet form and showed their semiconducting nature over a studied range of temperature. Thermal behaviour of complexes was studied using TG and data have been analyzed for kinetic parameters by Horowitz-Metzger method. The ligand and its complexes were also screened for their antibacterial activity against *E. coli*, *S. typhi*, *P. aeruginosa* and *S. aureus* bacterial strains by disc diffusion method.

Keywords: Acid hydrazone, TGA, Biological Activity, Powder XRD.

INTRODUCTION

The Schiff base metal complexes are in a field of coordination chemistry with increasing interest. These compounds have played a major role in the development of the inorganic chemistry due to easily excellent chelating properties, diversity of structural features and providing the effects of steric interactions on coordination geometry. Hydrazone Schiff bases have received a renewed attention in recent years because of their biological importance such as antimicrobial, antituberculosis, and antitumor activities [1-5]. The coordination compounds of hydrazones have been reported as enzyme inhibitors [6]. The metal complexes of hydrazones are also have been reported as potent inhibitors of DNA synthesis [7]. To the best of our knowledge, reports of substituted acetophenone hydrazones are scarce. Therefore, it is interesting to study complexes of hydrazone Schiff base ligands. In present work, we report the results of our study of 2-hydroxy-1-(2-hydroxy-5-methylphenyl)ethylidene]benzohydrazide and its Mn(II), Co(II), Ni(II), Cu(II), Ti(III), Cr(III), Fe(III), Zr(IV) and $UO_2(VI)$ complexes.

MATERIALS AND METHODS

All the chemicals used as starting materials for the synthesis of the ligand and its metal complexes were of AR grade or chemically pure purchased from Qualigens Chemicals. Solvents were purified and dried before the use by the literature methods. Zirconium (IV) acetate was prepared by the known method [8]. Carbon, hydrogen and nitrogen were estimated on a Carlo Erba 1108 C-H-N-S analyzer. The infrared spectra of the ligand and its complexes were scanned in the region $4000-400\text{ cm}^{-1}$ in KBr pellets on a Perkin Elmer RX-1 spectrophotometer. The $^1\text{H-NMR}$ spectrum of the synthesized ligand was recorded using the mixture of deuterated chloroform and dimethyl sulfoxide and TMS as an internal standard on a Bruker DRX-300 NMR Spectrophotometer. The magnetic susceptibility measurements of the metal complexes were carried out by Gouy method at room temperature using mercury(II) tetrathiocyanatocobalt(II), $\text{Hg}[\text{Co}(\text{SCN})_4]$ as the calibrant. Thermogravimetric analysis of the complexes was carried out to study their thermal stabilities. For this a simple manually operated thermobalance set up in our laboratory was used using 50-60 mg sample and temperature upto 700°C in air atmosphere. The balance used was Adico-80 having the sensitivity of 0.01 mg. The TG instrument was calibrated by using sample of copper(II) sulphate pentahydrate from room temperature to 700°C at a heating rate of $\sim 10^\circ\text{C min}^{-1}$. The antimicrobial activity of the ligand and its complexes was studied by the disc diffusion method against *E. coli*, *S. typhi*, *P. aeruginosa* and *S. aureus*. The media used were nutrient agar and nutrient broth. The plates were inoculated with 24 h cultures. The compounds were tested at a concentration of 500 ppm in DMSO by measuring the zone of inhibition of growth of the microorganisms in millimeter. Electrical conductivity measurements were obtained on the samples in the form of pellets ($\sim 2-3\text{ mm}$ thick and 12 mm diameter) at a pressure of 3 tons cm^{-2} . The surface of each sample was covered by a layer of silver foil, then was held between two copper electrodes and inserted with a holder vertically into a cylindrical electrical



**TRANSITION METAL POLYCHELATES WITH SALEN-TYPE SCHIFF BASE:
SYNTHETIC, SPECTROSCOPIC, THERMAL, ELECTRICAL CONDUCTIVITY,
BIOLOGICAL, AND COORDINATION ASPECTS**

**Jankiram B. Devhade, Gaurav B. Pethe, Amit R. Yaul, Aatish K. Maldhure,
Anand S. Aswar***

*Department of Chemistry,
SantGadge Baba Amravati University, Amravati-444 602
* E-mail: aswaranand@gmail.com*

ABSTRACT

Cr(III), Mn(III), Fe(III), Ti(III), Zr(IV), VO(IV), MoO₂(VI) and UO₂(VI) polychelates with salen type Schiff base 4,4'-bis[(N-butanessalicylalimine-5)azo]biphenyl (BNBSAP) prepared from dye 4,4'-bis[(salicylalimine-5)azo]biphenyl and 1,4-diaminobutane have been characterized by elemental analyses, IR and electronic spectra, magnetic susceptibility measurements and thermogravimetric analysis. All the polychelates are dark coloured solid and sparingly soluble in common organic solvents. ¹H-NMR spectrum of ligand clearly indicates the presence of OH and azomethine groups. Thermogravimetric analysis confirms the coordination of H₂O in polychelates. The thermal data have also been analyzed for the kinetic parameters by using Horowitz-Metzger method. Solid state dc conductivity of ligand and its polychelates was measured in their compressed pellet form over 373-413K range of temperatures and all compounds show semiconducting behaviour. The synthesis of polychelates were also screened for antimicrobial activity against various bacteria.

KEYWORDS: Polychelates, Thermal analysis, Electrical Conductivity, Biological Activity.

INTRODUCTION

Polymers have increasing interest over the last few decades in the fundamental research as well as in their potential applications in fields such as catalysis, ion exchange, photochemistry, selective separation, biological study, physical and materials chemistry [I-IV]. Chelate polymers are defined as materials in which metal ions are linked together with polyfunctional ligands and chelate polymers are also well known for their thermal stability [V]. The incorporation of transition metals into polymeric Schiff bases not only affects their physical characteristics, but also their chemical activity. Complexation of a metal ion to functional polymeric ligand changes its activity due to polymeric effect. Polymer-metal complexes are in general coordinating polymers containing one or more electron donor atoms such as N, S and O that can form coordination with most of the transition and toxic heavy metals. Among polymers those containing nitrogen as donor atoms have been synthesized and

ICTs Use in teaching and learning: Challenges for higher learning institutions

Dr. Umesh P. Meshram¹ Dr. Avinash J. Kadam² Dr. Ravindra N. Sontakke³ Dr. Sanjay P. Dhanwate⁴

NKS Model College Karanja (Ghadge) Dist-Wardha M.S-442203

umeshmeshram@rediffmail.com / nksmiqac@gmail.com

ABSTRACT

Many teachers are reluctant to use ICTs, especially computers and the internet. Some of the reasons for this reluctance include poor software design, skepticism about the effectiveness of computers in improving learning outcomes, lack of administrative support, increased time and effort needed to learn the technology and how to use it for teaching, and the fear of losing their authority in the classroom as it becomes more learner-centered. In terms of using internet and other ICT as a resource for lesson preparation, most of the teachers interviewed, admitted to never or rarely using it, while very few used the internet to gather information sporadically or regularly.

However, ICTs have not permeated to a great extent in many higher learning institutions in most developing countries due to many socio-economic and technological circumstances. This paper discusses new learning and training technologies considering their pedagogical, cost and technical implications

Keywords: information and communication technology, e-learning, teaching and learning technologies, higher learning institutions.

INTRODUCTION

ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a —diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage. Information Developments in Information and Communication Technologies (ICTs) have impacted all sectors of society, including the education sector. In higher education, application of ICTs in form

VARIATION IN LARVAL DURATION, ECONOMIC CHARACTERS, AND LIFE CYCLE OF MULBERRY SILKWORM, BIVOLTINE (CSR2 X CSR4) REARED IN RAINY & WINTER SEASON IN CLIMATIC CONDITION OF WARDHA DISTRICT OF VIDARBHA REGION OF MAHARASHTRA

L N Wankhade*

*Assistant Professor, Department of Zoology,

Narayanrao Kale Smruti Model College, Karanja (Ghadge), District Wardha (Maharashtra)

(Received: 28.09.2018; Revised: 30.10.2018; Accepted: 30.10.2018)



(RESEARCH PAPER IN ZOOLOGY)

Abstract

The growth and development of silkworm is greatly influenced by environmental condition. The variation in the environment condition in different season considerably affects the larval weight, larval duration, economic characters and life cycle of mulberry silkworm. The present study shows variation in the performance of mulberry silkworm, *Bombyx mori* L. bivoltine (CSR2 x CSR4) in respect of larval weight, larval duration, economic character and life cycle when reared in rainy and winter season in the climatic condition of Wardha District of Vidarbha region of Maharashtra. The silkworm larvae reared during winter season shows higher larval weight, cocoon weight, shell weight, shell ratio and egg laying as compared to the silkworm larvae reared during rainy season, while the larval duration, life cycle duration was recorded shortest in the silkworm larvae reared during rainy season as compared to the winter season, which showed longest larval developmental period and life cycle period during winter season.

Keywords: *Bombyx mori*, silkworm, larvae, different season.

Introduction

Sericulture is an agro-based cottage industry providing high employment and income source to the rural economy of India. The mulberry silkworms, *Bombyx mori* is highly sensitive to environmental fluctuations and have adverse effects of extreme fluctuations in temperature and humidity as they are domesticated since thousands of years. Among the environmental factors temperature and humidity plays an important role thus affecting the growth and development of silkworm. Environment also play an important role in the production of mulberry leaves which is the essential food source of the mulberry silkworm for the production of cocoon crop (Sharma *et al.*, 1995) The seasonal differences in the environmental components considerably affects the genotypic expression in the form of phenotypic output of silkworm crop such as cocoon weight, shell weight and cocoon shell ratio (V K Rahmathulla, 2012). The quality of mulberry leaves and environmental conditions influence the dietary efficiency and growth of silkworm (Rahmathulla *et al.*, 2004). Therefore the present study was undertaken to evaluate the performance of mulberry silkworm, *Bombyx mori* L. bivoltine (CSR2 x CSR4) in respect of larval weight, larval duration, economic character and life cycle when reared in rainy and winter season in the climatic condition of Wardha District of Vidarbha region of Maharashtra.

Material and Methods

The present study was undertaken in rearing room of Narayanrao Kale Smruti Model College, Karanja (Ghadge), District Wardha to evaluate the rearing performance and economic traits of bivoltine silkworm race CSR2 x CSR4 of mulberry silkworm, *Bombyx mori* during winter and rainy season. Disease free egg laying of Bivoltine hybrid (CSR2 x CSR4) was obtained from "State Silk Park" Department of Sericulture, Dabha, Amravati (Maharashtra). V1 mulberry variety planted in the field of NKS Model College, Karanja (Gh.), District Wardha was used to feed CSR2 x CSR4 bivoltine silkworm, *B. mori*.

The newly hatched larvae were brushed. The silkworm rearing was carried out in rainy and winter season as per the rearing technique described by Dandin *et al.*, (2003). The larvae were given feeding 4 times a day till spinning. The rearing of I, II & III instars was carried out in chowki, while IV & V instars was done in plastic tray on rearing stand. When the mature larvae looked translucent and ready for spinning, they were placed on plastic mountages for spinning. The spun cocoons were harvested on 5th day of starting of spinning. During rearing temperature and humidity were maintained and recorded. Larval weight, larval developmental period, economic character, fecundity and total life cycle were recorded and compared.

Results

During rearing from hatching of larvae to spinning stage the minimum and maximum temperature recorded was between 20.4°C to 30.2°C and minimum and maximum humidity recorded was between 70% to 94% during winter season (Table 1), while it was recorded between 25.3°C to 30.5°C and 75% to 99% respectively during rainy season, mostly the weather was rainy during rearing. There were found decrease in temperature and humidity during winter season as compared to the rainy season (Table.2). There were found significant differences in the larval weight, larval duration, economic character and life cycle duration when the larvae were reared during winter and rainy season. The larval weight of 5th stage 8th day larvae was recorded highest (4.437g) when reared during winter season as compared to the larvae weight (4.210) when larvae reared during rainy season (Table.3). The larval duration was recorded shortest (25 days) when larvae reared during rainy season while it was recorded longest (27 days) when reared during winter season. There were also found differences in economic characters when larvae reared during two different seasons. The economic characters was recorded highest with Cocoon wt (1.840g), pupal weight (1.410g) shell weight (0.430g) and shell ratio (23.36%) when larvae reared during winter season as compared to Cocoon wt (1.625g), pupal weight (1.255g) shell weight (0.370g) and shell ratio (22.76%) when larvae reared during rainy season. The no. of egg laying per female moth was recorded (567) in moths of larvae reared during winter season while it was recorded (562) in moths of larvae reared during rainy season. The total life cycle duration was found to be shortest (40 days) when larvae reared during rainy season while it was recorded longest (43 days) when reared during winter season.

Discussion

As the silkworm is poikilothermic, among the biotic factors, temperature plays a major role on growth and productivity of silkworm (Benjamin, 1986). Seasonal variation had pronounced effect on the larval growth economic characters of the silkworm. Environmental factors especially temperature and relative humidity play very important role in the life cycle of silkworm. Therefore the result of the present study indicated that the high temperature and low humidity has greater effect on larval development and cocoon parameter. It was noticed that during winter season the larval weight, economic characters such as cocoon weight, shell weight and shell ratio was increased as compared to rainy season. There was a slight difference in the number of egg laying of silk moth of larvae reared during rainy and winter season. The shortest life cycle of the silkworm was during rainy season whereas the life cycle of the silkworm larvae reared during winter season was delayed and took

DIFFRACTION, FT-IR STUDIES OF AMINO ACID DOPED POTASSIUM DIHYDROGEN PHOSPHATE (KDP) SINGLE CRYSTAL BY MODIFIED CTB THERMOMETER

V. R. Raghorte¹, G. C. Wakde¹, N. S. Meshram² and K. G. Rewatkar²

¹Assistant professor, Department of Physics, Narayanrao Kale Smruti Model College, Karanja(Gh.) Wardha,

²Assistant professor, Department of Physics, Dr. Ambedkar College, Deekshabhoomi, Nagpur, 440010

³Associate professor, Department of Physics, Dr. Ambedkar College, Deekshabhoomi, Nagpur, 440010

Email {vijayphy26@rediffmail.com}

Abstract

Due to very large polarizability and wide transparency window, semiorganic NLO materials have alternative to inorganic materials because of their efficient molecular nonlinearity over a broad frequency range, low cost, low refractive index, low dielectric constant, inherent synthetic flexibility, moderate optical damage density, fast response with the better process ability and ease of fabrication into devices. A Semi organic crystal of amino acid (valine) doped KDP (KH_2PO_4) have grown by modified CTB thermometer as well as by rotating seed crystal method (RSCM). The concentration of dopants was altered in every step for different rotation rate. The good quality transparent crystals has been harvested; the dimensions of grown crystal observed from 1mm to 4 cm. crystalline perfection, all lattice parameter of grown single crystal have been determined by powder X-ray diffraction analysis. The functional groups of LV doped KDP were identified using vibration spectra analysis. The chemical composition as weight percentage (wt %) of C, N, K, P and O as obtained from EDAX analysis. A quantitative interpretation of influence of amino acid L-valine verified by mathematical model usually describes a system by a set of variables and a set of equations that establish relationships between the variables.

Key Words : crystal growth, XRD, FT-IR, EDAX analysis.

1. Introduction

Non-Linear Optics in which the dielectric polarization P responds nonlinearly to the electric field E of the light. This nonlinearity is typically only observed at very high light intensities such as those provided by lasers. KDP is a representative of hydrogen bonded materials which posses important piezoelectric, ferroelectric, electro-optic and mainly NLO properties. [1]. Due to their potential application NLO materials was of widely used in optical devices.

In present communication, the doped crystal of KDP by valine amino acid had been prepared by modified CTB as well as by SRCM. Initially pure KDP seeds crystal was prepared by slow cooling and slow evaporation of saturated solution in a clean controlled temperature enclosure. The amount of KDP in a solvent (water) can be calculated by using solubility curve of Pure KDP and the amount of solute (m) for different concentration of dopant can be calculated by using mole percentage formula.

The SR method setup has been modified in some aspects in order to grow clear bulk size KDP crystals. A glass ampoule was designed and fabricated at laboratory for the growth of KDP single crystal, by modifying the CTB using spiral glass tube of heating in SR method shown in figure 1. Especially design Spiral glass tube used to surround the bottom of glass ampoule to maintain constant temperature during growth of crystal. A clean defect free Seed along (100) plane which was fixed by

mounted at the bottom of the ampoule in such a way that the seed should be tight at the end of ampoule to avoid bidirectional growth of crystal from the surround area of crystal. The face was exposed to the solution of LVKDP so that the growth of bulk size crystal can be initiated. The solvent get was saturated using pH- 4.8 for L- valine [2-5]. The top open face of the ampoule was covered by a thick plastic sheet with a hole at the center for facilitating controlled evaporation of the solvent. The whole setup was placed in a zero vibration zone area. After 15 days a good quality transparent crystal of LVKDP was observed with growth rate 2mm per day for 10-12 days and dimension reached up to 40 mm in height is shown in figure 2.



Fig. 1 : CTB tank with spiral glass tube of heating in SR method

Progress of Financial Inclusion in India – The Crisil Inclusive Analysis

Sanjay P. Dhanwate & Anumita Agarwal

INTRODUCTION

Financial Inclusion is gaining global priority as it is capable of bolstering sustainable, balanced inclusive economic growth at the macro level and promoting economic and social inclusion at the household and enterprise level especially among financially excluded and under-privileged populations. There are three elements of integral financial strategy i.e. financial education, financial inclusion and financial stability. Financial Inclusion works from the supply side by providing access to various financial services; financial education feeds the demand side by promoting awareness among the people regarding the needs and benefits of financial services offered by banks and other institutions. Further these two strategies promote the third element of financial stability.

DEFINITION OF FINANCIAL INCLUSION

Financial Inclusion may be broadly defined as universal access to a wide range of financial services at a reasonable cost. These not only include banking products but also other financial services such as insurance and equity products (The Committee on Financial Sector Reforms, Chairman: Dr. Raghuram G. Rajan). If the term 'Financial Inclusion' is elaborated it means that all working age adults (persons at the age 15+) have effective and quality access to and usage of – at a cost affordable to the customers and sustainable for the providers – financial services provided by formal institutions. "Effective access" involves convenient and responsible delivery of services that re responsive to the needs of financially excluded and underserved customers, at a cost affordable to the customers and sustainable for the providers. The demonstration of effective access is usage. The fact that a customer can access services offered by a formal financial service provider does not mean she or he is "financially included". For this, the condition of "effective access" must be met (GPI White Paper, 2016).

Dilip Mookherjee emphasizes two other important aspects of financial inclusion in the context of India. The first is the necessity of wider financial inclusion to improve the efficiency and targeting of government welfare programs. For example, transfers that can be made directly to citizen bank accounts can help to eliminate corrupt and inefficient intermediaries.

Principal, NKS Model College, Karanja (GH.), Wardha, Maharashtra
Dept. of Economics, PNG Government PG College, Ramnagar (Nainital), Uttarakhand.



URBANIZATION DIET AND HEALTH

Sarita M. Raut

N.K.S.M. College Karanja (Gh.)

ABSTRACT

Root cause of various disease is urbanization, due to which flora and fauna along with human life are endangered, while keeping abreast with the developmental place of time, we are heading on deterioration and degradation. With the changing life style in diet, use of fast-foods consumption of high calories, inadequate, consumption of proteins, hectic lifestyle, deforestation, toxic gasses are inviting various disease for example insufficiency of oxygen, traction of cells and organs, free radicles, imbalance consumption of junk food. As per the survey and conclusions of WHO, NIN and ICMR the disease which mostly age groups between 60-80 get affected, new age-group between 12 to 15 are getting affecting. To avoid all these, we need to adopt healthy habit like proper physical exercise, Balanced diet yoga and physical movement should be included.

Keywords: Urbanization, calories, proteins, junk food.

Urbanization increasing very speedily in today's age. Return to villages is a slogan in previous time, but now, it is a mentality of people to arrive in cities. It impacts on diet preferences methods of diet, physical movement and health in growing and progressive world after industrial evolution in an age of science there should be some impacts on human life due to fast changing scenario. We should know urbanization, diet and health.

What is urbanization? "As a social scientist. He is interested in

the whole complex situation all the inter-relationship that make-up urban social life. He deals with one but with all aspects of the urban social universe-Erickson"

Urbanization deals with the impact of city life on social actions, social relationship, social institution and the type of civilization derived from and based on urban modes of life - E.E.Bergel."

Medical dictionary - "Diet means anything when taken into the body which serves to nourish

समुद्रायाच्या वृत्ती प्रवृत्तीचे दिग्दर्शन करतात.

५) गुर्जरी लोकबोलीतील काही वाक्प्रयोगांची तुलना प्रमाण मराठीतील वाक्प्रयोगांशी करता येत नाही. कारणते खास गुर्जरी बोलीतील आहेत.

६) गुर्जरी बोलीतील वाक्प्रयोगात भावरम्यता, भाषेची लवाचकता, कल्पनारम्यता, चटकदारपणा, व्यक्तीचित्रण, लोकजीवनाचा संदर्भ वगैरे वैशिष्ट्ये आढळतात.

संदर्भ :-

१) खानदेशचासांस्कृतिक इतिहास - (संपादक डॉ. मृ.ब.शहा), खंड -२, का.स.वाणी मराठी प्रगत अध्ययन संस्था, धुळे.

२) गुर्जरी लोकसाहित्य - डॉ. दिलीप पटेल, गुर्जर समाज साहित्य विद्या मन्दिर, जयपुर, प्रथम संस्करण, १९९९.

३) लोकसाहित्यशास्त्रसंस्कृतीदर्शन - डॉ. बापूराव देसाई, मधुराज पब्लिकेशन्स, पुणे, प्रथमावृत्ती-२००२

□ □ □

13

आंबेडकरपूर्व दलित चळवळीतील शिवराम

जानबा कांबळे यांचे कार्य

प्रा.डॉ. वंदना हरिभाऊ तागडे

इतिहास विभाग प्रमुख

नारायणराव काळे स्मृती मॉडेल कॉलेज

कारंजा (घाडगे), जि.वर्धा

ब्राम्हणी धर्मामुळे समाजात अनेक वाईट प्रथा प्रचलित झाल्या होत्या. यामुळे समाजाचे मोठे नुकसान झाले होते. जातीभेदामुळे समाज अनेक गटात विभागल्या गेला होता. त्यातून समाजात द्वेषाचे, मत्सराने वातावरण निर्माण झाले होते. अस्पृश्यांना समाजात अव्यवहार्य अशी वागणूक मिळत असे. पशूपक्षापेशाही त्यांचे जीवन हलाखीचे झाले होते. सर्व मानव जात एकाच ईश्वराची लेकरे असतांना केवळ उद्योगभिन्नतेस्तव उच्च-निच गणने योग्य नाही. परमेश्वराने जन्म दिलेल्या लेकरांशी तो दुजाभाव कसा करेल? हा प्रश्न अनुत्तरीत होता. अस्पृश्यांना मिळत असलेल्या वाईट वागणुकीमुळे त्यांनी ख्रिश्चन धर्म देखील स्विकारला होता. ब्रिटीश सरकारने दलितांना थोडे शिक्षण देण्याची, पलटणीत व पोलीसात नोकऱ्या देण्याची सोय केल्यामुळे आपल्या आधीच्या स्थितीबाबत विचार करू लागले. ख्रिस्ती मिशनरी, प्रार्थना समाज व बडोदयाचे अधिराज सयाजीराव गायकवाड यांनी अत्यंत जातीच्या उध्दारार्थ शाळा काढल्या. त्यामुळे दलितांच्या स्थितीमध्ये सुधारणा होवून त्यांचे डोळे उघडले. आपली स्थिती इतकी वाईट का झाली यासंबंधी विचार करण्यासाठी काही दलित उध्दारक पृढे आले. त्यांनी दलितांच्या उध्दारासाठी चळवळ उभारली.



Unsymmetrical Schiff Base Ligand and Its Complexes: Synthesis, Spectroscopic, Thermal, Electrical and Biological Studies

G. B. Pethe, A.R. Yaul,
Department of Chemistry,
NKS Model College,
Karanja (Gh), Dist. Wardha, M.S. India

U.P. Meshram and A. S. Aswar
Department of Chemistry,
Sant Gadge Baba Amravati University,
Amravati, M.S. India
E mail- gaurav.pethe@gmail.com

Abstract:

Co(II), Ni(II), Zn(II) and Cd(II) complex with an unsymmetrical tetradentate Schiff base ligand 1-(5-chloro-2-hydroxyphenyl)ethylidene-1-(2-hydroxy-5-methyl-3-nitrophenyl)ethylidene carbonohydrazide derived from 5-chloro-2-hydroxyacetophenone, 2-hydroxy-5-methyl-3-nitro acetophenone and carbonohydrazide have been prepared. All the complexes have been characterized by elemental analysis, UV-Vis and IR spectroscopy, magnetic measurements and thermal analysis. The complexes were found to be quite stable and decomposition of the complexes ended with respective metal oxides as an end product. The IR spectral data suggest that the ligand behaves as a dibasic tetradentate ligand with ONNO donor atoms sequence towards central metal ion. The dc electrical conductivity has been measured over 313-403 K temperature range and all the compounds showed semiconducting behavior as their conductivity increases with increase in temperature. The ligand and its complexes have also been screened for their antimicrobial activity using various micro-organisms and all of them were found to be moderately active against the organisms.

Keywords: Unsymmetrical Schiff base, Transition metal complexes, d.c. conductivity, TGA, antimicrobial activity.

Introduction:

Unsymmetrical Schiff base ligands are an important class of organic ligands in coordination chemistry, which increase the chemical and biological aspects of the compounds because of their physiological activity, biological capability and applications in analytical chemistry [1, 2]. Unsymmetrical Schiff base ligands derived from substituted carbonohydrazide have played an important part in revealing the preferred coordination geometries of metal complexes and have valuable importance in the coordination chemistry due to their preparative accessibility and structural variability [3, 4]. The preparation of the metal complexes of unsymmetrical Schiff base of carbonohydrazide and substituted hydroxyl acetophenone has come from the desire to form simple unsymmetrical complexes for their physicochemical characterization and structural elucidation. In this paper synthesis and characterization of the unsymmetrical Schiff base derived from 5-chloro-2-hydroxy acetophenone, 2-hydroxy-5-methyl-3-nitro acetophenone and carbonohydrazide have and its metal complexes.

Materials and Methods:

All the chemicals and solvents used as starting materials for the synthesis of ligand and its metal complexes were of analytical grade procured from SD's fine chemicals and Qualigens Chemicals. The metal salts used for preparation of complexes i.e, cobalt acetate dihydrate, nickel acetate dihydrate, zinc acetate dihydrate, cadmium chloride monohydrate were used as received.

1. Comparative Study on Rearing Performance of 3 Strains of ERI Silkworm, *Samia Ricini* During Early Summer Season in Climatic Condition of Vidarbha Region of Maharashtra

Lokesh N. Wankhade

Department of Zoology, Narayanrao Kale Smruti Model College, Karanja (Ghadge),
District Wardha (M.S).

Abstract

The rearing performance of 3 strains of eri silkworm, Greenish Blue Zebra (GBZ), Greenish Blue Plain (GBP) and Greenish Blue Spotted (GBS) was evaluated during early summer (February- March) in the climatic condition of vidarbha region of Maharashtra. The evaluation of these 3 strains of eri silkworm was done by considering various parameters such as larval weight, economic characters (cocoon weight, shell weight, shell ratio), ERR% (Effective Rate of Rearing), larval mortality and fecundity. The larval weight, economic characters (cocoon weight, shell weight, Shell ratio) ERR%, egg laying and hatching percentage was recorded highest in GBZ strain followed by GBP and GBS strain of eri silkworm. The larval mortality was also recorded least in GBZ strain as compared to GBP and GBP strain. The larval duration was recorded shortest and similar in GBZ and GBP followed by GBS strain. There were found slightly variations in various parameters between GBZ and GBP strain. The result of study revealed that the performance of the GBZ strain of eri silkworm was better as compared to GBP and GBS strain in early summer in climatic condition of vidarbha region of Maharashtra.

Key words: eri silkworm, strain

Introduction

Sericulture is a viable agro-based industry and suited to the socio-economically poor and rural India. India occupies second position in the overall global silk production and stands as one of the major exporters of silk fabric all over the world. Eri culture is the rearing of eri silkworm (*Philosamia ricini* OR *Samia ricini*) for the production of eri cocoons. The Eri silkworm *S. ricini* is multivoltine and polyphagous and feeds on a wide range of food plants. Castor (*Ricinus communis*) is the primary food plant of eri silkworm. Eri silkworm has several eco-races like

20. Occurrence of Insect Pest Complex Associated with Castor (*Ricinus Communis* L.) in Agro-Ecosystem of Karanja (Ghadge) of Wardha District of Maharashtra

L. N. Wankhade
R. S. Bhonde
P. A. Bidwaia

Abstract

In order to understand the occurrence of insect pests complex associated with Castor (*Ricinus communis*) plantation agro- ecosystem, a regular observation and sampling was done on castor crop field of nearby villages of Karanja (Ghadge) of Wardha district. It was observed that castor being preferred by many insect pests as host plant, many predatory and parasitoid insect for preying on insect pest and for shelter. The collected insects were observed and categorized accordingly; insect pests, predators and parasitoid insects. About ten species of insect pests of different orders viz. lepidoptera, hemiptera, orthoptera and thysanoptera were recorded. Three species of predator and parasitoid insects from order araneae, hymenoptera and coleoptera was recorded. From order lepidoptera insect pest one each from noctuidae (*Spodoptera litura*), and limacodidae (*Latoia lepida*), three from erebidae (*Achaea janata*, *Spilosoma oblique*, *Amsacta albistriga*) and one from crambidae (*Conogethes punctiferalis*) family were recorded. From order hemiptera, insect pest one each from cicadellidae (*Empoasca flavescens*) and from aleyrodidae (*Trialeurodes ricini*) family were recorded. From order orthoptera only one insect pest from pyrgomorphidae (*Atractomorpha crenulata*) family was recorded. From order thysanoptera also only one insect pest from thirpidae (*Scirtothrips dorsalis*) family was recorded. From order araneae only one predatory spider was recorded from family eresidae (*Stegodyphus*). In case of parasitoid insects one wasp from order hymenoptera of family braconidae (*Bracon* sp.) and one beetle from order coleoptera of family meloidae were recorded. The present study provides information about occurrence of different insect pests, predatory and parasitoid insect associated with castor (*Ricinus communis*) in Karanja (Ghadge) of Wardha district of Maharashtra.



Nuclear Diameter and Neurosecretory Intensity of Cerebral Ganglion: Thermal Relation of Slug, *Semperula Maculate*

P.A. Bidwai

Assistant professor,
Department of Zoology,
Narayanrao Kale Smruti Model College, Karanja (Gh) Dist- Wardha
pushpanjalib75@gmail.com

Abstract

In *Semperula maculata*, A and B neurosecretory cells of cerebral ganglion with respect to warm acclimation was studied. Neurosecretory cells of cerebral ganglion in warm acclimation slugs showed strong vacuolization and very less neurosecretory granules was present in the axon and neuropilar area. Nuclear diameter showed enlargement and neurosecretory intensity was lowered while in control slug, neurosecretory granules seen in perinuclear region of both A and B cells and neuropile with considerable amount of neurosecretory material.

Keywords- Slug, Thermal, Cerebral ganglion

Introduction-

The terrestrial mollusks mainly face scarcity problems in the environment of variable humidity and temperature. The physiological and biochemical changes in the unfavorable conditions have been studied by Florkin and scheer (1972). Land slugs play significant role in ecosystem. Every organism plays an extremely important role on the earth. The perusal of literature indicate that the studies of thermal relation of slug with neurosecretory cells are of great important because of their role in ecosystem.

Material and Method-

Adult fully matured slugs, *Semperula maculata* were collected from the city garden Paratwada and around Paratwada city, Maharashtra, India from July to September. The temperature of the soil at the time of collection varied generally from 26°C to 28°C. Slugs were brought to the laboratory and were maintained in the glass tough containing sufficient moist soil. They were fed once in a day with plant vegetation. Slugs were acclimated at room temperature (26°C to 28°C) for 3 to 4 days. For acclimation slugs were kept inside the BOD incubator at temperature 32°C+0.5°C and 36°C + 0.5°C for warm acclimation and at temperature 15°C+0.5°C and 10°C+ 0.5°C for cold acclimation for 10 days. The slugs were gradually warmed or cooled until the desired acclimatized temperature was reached. Every after 2 days the soil in jar were replaced with moist soil already brought up to appropriate acclimation temperature. Concomitantly control slug were maintained similarly by keeping animals at a temperature (26°C to 28°C).The slugs were gently handled during experiment so that the slugs did not suffer from any psychosomatic shock. A group of five slug control as well as experimental were sacrificed and cerebral ganglion were carefully dissected out from the slugs quickly as possible and were fixed in Bouins fluid. It was then dehydrated in alcohol, cleared in xylene and embedded in wax at 57.5°C Serial sections were cut at 8 µ in thickness and were stained with Gomoris chrome hematoxylene- Phloxin method (Gomari 1941). The intensity of neurosecretory material of A cell and B cell was determined by adopting a visual arbitrary scale