Department : Forensic Science		
Academic Year : 2023-24		
Sr. No.	**Programme Code**	**Name of the Programme**
1	119	Master of Science

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A STUDY ON ANALYSIS OF WATERMARK AND SECURITY FEATURES FOR AUTHENTICATION OF STAMP PAPER

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

Master of Science

In

Forensic Science

By

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Abstract

From this study it is concluded that the observed security features in this paper could help in revealing the authentication of these Stamp Paper for its originality, as these Judicial documents are used in a various way for the collection of taxes for government of our country, India.

These security features could be easily identified by the help of direct light, transmitted light, UV light and microscopically the microprinting of tablet of Stamp Paper reveals unique style of their pattern, which further helps in the authentication of these Stamp Paper.

Having a confidential documentation of different type of movable and immovable property dealing, gift deed, wills and a various type of notary, stamping for fixed monetary value used in agreement of a particular type of work.

Being a valuable Document, its originality been in doubt of forged. The Security features revealed in this Paper will helps in Identification between such forged and original one.

As a Forensic view, result obtained in this Paper will also help in Document Division of Forensic Science in identification of such cases where there is involvement of Stamp Papers, or if the authentication of the document containing these Stamp Paper found in doubt.

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Sensitivity of four presumptive test stains over different surfaces at different temperature

A Dissertation submitted in partial fulfillment for the award of the degree of Master of Science

In

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ABSTRACT

Presumptive tests are used for on suite as well as laboratory detection of bloodstains. The purpose of this work was to conduct a comparative study of the sensitivity and specificity of Tetramethyl Benzidine ,Kastle Meyer , Benzidine, Luminol as presumptive test for blood Five surfaces were selected for testing of presumptive test of bloodstains. Surfaces were (white color cotton cloth, wood piece, stone with soil, floor tile, glass slides. are kept at different temperature 0°C,20°C ,40°C, 60°C, 80°C 100°C Comparison of all above the four presumptive test reagents sensitivity to different surface at different temperature for different dilution of blood. Benzidine test gave the result within second over the glass, tiles, stone and cloth surface immediately (within fraction of second) but speed of reaction over wood surface was observed after 10 minutes for all the dilution ranges and at every temperature.TMB test gave the result within second over the glass, tiles, stone and cloth surface immediately (within fraction of second) for all the dilution ranges and at every temperature Speed of reaction were faster over all the selected surfaces till 60° C temperature. Beyond this temperature at the dilution range of 1:10000 speed of rraction was dropped down drastically and became disappear at the dilution range of 1:1000000 over all the surfaces. The similar speed of rection were occurred for the 100 ° C temperature luminol test gave the result within second over the glass, tiles, stone and cloth surface immediately (within fraction of second) for all the dilution ranges and at every temperature.

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"EVALUATION OF CYTOKINE AS DOSE AND TIME-DEPENDENT BIOMARKER AGAINST DIAZEPAM ABUSE"

A

M.Sc. Dissertation

Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

In partial fulfillment of the requirement for the

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Master of Science

In

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ABSTRACT

Substance abuse has emerged as a significant public health challenge in India, exacerbated by the increased availability of drugs and shifting societal norms. This complex issue has garnered attention from sociologists, social workers, psychiatrists, and policymakers, highlighting the need for a comprehensive approach to address its implications. Despite regulatory efforts, psychoactive substance use remains prevalent, affecting both adults and adolescents. Substance abuse, characterized by the harmful use of psychoactive substances, often leads to dependence and withdrawal symptoms upon cessation. One of the commonly known benzodiazepines is diazepam due to its anxiolytic, sedative, muscle-relaxant, and anticonvulsant properties. However, their potential for abuse is significant, particularly among individuals with a history of substance use disorders. Chronic abuse of benzodiazepines can result in adverse physiological and psychological effects, including changes in immune function. Cytokines, such as interleukin-10 (IL-10) and interleukin-12 (IL-12) play critical roles in the immune response and inflammation, making them relevant biomarkers in assessing the impact of drug abuse. This study investigates the effects of diazepam on cytokine levels, and serum protein concentrations in Swiss albino male mice, aged 3 to 4 weeks. Mice were divided into control and experimental groups, receiving varying doses of diazepam or normal saline. Blood samples were collected, and serum was processed for cytokine analysis and protein estimation. The Bradford assay was employed for protein quantification, while cytokines were measured using an ELISA. The study aims to explore cytokines IL-10 and IL-12 as indicators of diazepam exposure duration and assess its impact on serum protein concentration. This research provides insights into the systemic effects of diazepam and the potential use of cytokines as biomarkers for substance abuse.

"COMPARATIVE EAR MORPHOMETRIC ANALYSIS OF THE POPULATION OF KOLLAM DISTRICT, KERALA AND BILASPUR DISTRICT, CHHATTISGARH"

A

M.Sc. Dissertation

submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

in partial fulfilment of the requirement for the

degree of

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In

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This is to certify that research work embodied in this thesis entitled, "Comparative Ear Morphometric Analysis Of The Population Of Kollam District, Kerala And Bilaspur District, Chhattisgarh" carried out by Mrs. Reshma Santhosh, M.Sc. IV Semester, Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G) for partial fulfilment of M.Sc. degree in Forensic Science to be awarded by Guru Ghasidas Vishwavidyalaya. This research work has been carried out under my supervision. It is further certified that the dissertation or part thereof has not formed the basis for the award of any other degree or diploma.

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ABSTRACT

Objective: To evaluate sexual dimorphism of the external ear in a cross-section of Kollam people and Bilaspur people.

Method: The current study examined 160 participants; from each district, 40 males and 40 females aged 18 to 25 were subjected to the study. In total, 320 ears were analyzed; 160 ears from the left side and 160 from the right. Data were examined using SPSS, employing one-way ANOVA to determine the most sexually significant landmark measurements. To assess sexual dimorphism, independent t-tests were performed, while paired t-tests were used to determine variations between the left and right ears within each sex. The results were systematically compared and evaluated.

Result: The results showed that males in Kollam had longer ear lobules and a symmetrical structure, except for lobule width in males. Females in Bilaspur indicated no substantial differences in ear length, except for ear length. The study also identified significant differences and similarities in ear size between Kerala and Chhattisgarh populations.

Conclusion: Ear morphology could be a useful anthropometric marker for different Indian ethnic groups, particularly in anthropology, forensics, and clinical treatment.

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Comparative study of different Brand of Lipsticks Using FTIR-ATR

M.Sc. Dissertation Submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial Fulfillment of The Requirement for The Degree of

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A PILOT STUDY TO ASSESS THE EFFECTIVENESS OF DIFFERENT CLOTH FABRICS ON THE SENSITIVITY OF STARCH IODINE TEST

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial fulfilment of the requirement for the degree of

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ABSTRACT

Saliva is a valuable biological fluid in forensic science due to its abundance and potential for yielding crucial evidence in criminal investigations. Poisoning cases, sexual assault cases, suicide cases are few cases where these saliva attestations can be set up outwhere. The Saliva contains DNA, proteins, enzymes, and other molecules that can be used. For individual identification and too provide insights into the physiological state of an individual. Inspite these progress, challenges exist, including the need for standardized collection methods, preservation techniques, and interpretation of results. This study investigates the sensitivity of such a test -Starch Iodine test on different fabrics (cotton, polyester, cotton silk, linen and satin) and at various time intervals for a period of 28 days. Saliva samples were applied to fabric swatches and subjected to standard identification procedures. Results show that linen exhibited the highest sensitivity across all time intervals, followed by cotton silk and satin. Additionally, sensitivity decreased with time, perceptivity dropped after 14 days for polyester fabric. These findings highlight importance of fabric selection and time interval considerations in forensic investigations involving saliva identification tests.

Keywords slaver, fabrics, bounce- iodine, perceptivity, incubator

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Morphological and Molecular Characterization of Anatoxin producing cyanobacterial species in different freshwater bodies of Bilaspur, Chhattisgarh

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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The Application of FTIR-ATR For The Forensic Analysis of Toner in Photocopiers & Laser Jet Printer Documents

M.Sc. Dissertation Submitted At Guru Ghasidas Vishwavidyalaya, Bilaspur In Partial Fulfillment of The Requirement For The Degree of

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CERTIFICATE

This is to certify that research work embodied in this thesis entitled,"**The Application of FTIR-ATR For The Forensic Analysis of Toner In Photocopiers & Laser Jet Printer Documents"** was carried out by **Harshita Singh** for partial fulfilment of M.Sc. degree in Forensic Science to be awarded by Guru Ghasidas Vishwavidyalaya. This research work has been carried out under my supervision. It is further certified that the work is original and the dissertation or part thereof has not formed the basis for the award of any other degree or diploma.

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I.PREFACE

In the rapidly evolving world of technology, the use of photocopying machines and laser printers has seen a substantial increase over the past two decades. This surge has brought with it both conveniences and challenges, particularly in the field of forensic science. The ease and accessibility of creating duplicates through these devices have made them a common tool in various illicit activities, including counterfeiting, fraud, and the creation of false documents. Consequently, forensic document examiners are now more frequently tasked with the complex job of analyzing and authenticating documents produced by these means.

This dissertation,"**The Application of FTIR-ATR For The Forensic Analysis of Toner In Photocopiers & Laser Jet Printer Documents"** by **Harshita Singh**, explores how forensic science can analyze toner from photocopiers and laser printers. Supervised by **Ms. Blessi N. Uikey and Dr. Sandeep Vaishnav** at Guru Ghasidas Vishwavidyalaya and State Forensic Science Laboratory Raipur, it focuses on how crucial documents are in criminal cases, like fake checks and counterfeit money.

The study highlights the need to analyze modern printer documents due to their link to crimes. Using FTIR-ATR, the study examined toner samples from different printers. The methodology involved collecting ten different printouts from ten distinct photocopiers and laser printers, and analyzing their infrared spectra using the FTIR-ATR technique. The research aims to address the challenges faced by forensic scientists in identifying the sources of photocopied and printed documents. By utilizing Fourier Transform Infrared Spectroscopy-Attenuated Total Reflectance (FTIR-ATR), a non-destructive analytical technique, this study seeks to develop a reliable method for the forensic analysis of toner used in these devices.

The analysis revealed unique spectral patterns for each toner sample, indicating different chemical compositions. These spectral differences help trace the origin of questioned documents. The research process involved directly subjecting printed documents to FTIR-ATR analysis without any sample preparation. This approach allowed for the non-destructive identification of the chemical composition of toners. The analysis provided distinct spectral patterns that facilitated the differentiation of various toner brands and types. The results of the study demonstrated that FTIR-ATR is an effective tool for distinguishing between different toners based on their unique spectral fingerprints. This method proved to be both efficient and reliable, significantly enhancing the ability to trace the origin of photocopied and printed documents in forensic investigations.

HARSHITA SINGH

Msc IVth Semester (Forensic Science)

August 2024

MALWARE ANALYSIS USING SANDBOXING ANALYSIS TECHNIQUE

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

Master of Science

In

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By

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20)Alan Mills And Phil Legg[2020] – In this research, we investigate malware anti-evasion triggers to detect malware that might try to hide when installed in a conventional sandbox context. We created a tool named MORRIGU to make our research easier. It combines automated and human-driven analysis to test anti-evasion strategies systematically utilizing dynamic sandbox reconfiguration approaches. Visualization techniques that enable comparative examination of system activities when malware is installed under various sandbox conditions further bolster this. Our analysis uncovers a range of anti-evasion characteristics that are common to many malware families, including Reverse Turing Tests (RTT) and sandbox "wear-and-tear," in addition to more complex malware samples that necessitate the deployment of additional anti-evasion checks. To support MORRIGU's exploratory research, we also conduct a comparative study utilizing the Cuckoo sandbox to show the drawbacks of relying solely on automated analysis methods. This work contributes to the advancement of evasive malware analysis research by implementing a more defined and methodical approach to identify anti-evasion malware triggers, aided by tools such as MORRIGU. This will help us better protect against similar attacks in the future.

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Role of $GABA_A$ (α_6) Polymorphism in the Development of Alcohol Use Disorder (AUD)

A Dissertation Project submitted in partial fulfilment of the requirements

for the Award of The Degree of

Master of Science

In

Forensic Science

2022-2024

Submitted By

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Date: 22.08.2024

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ABSTRACT

Background: Alcohol dependency and alcohol use disorder are linked to environmental and biological factors, including personal, family, social, and medico-legal issues. The neurobiological pathway of gamma-aminobutyric acid (GABA), which is involved in the immediate and long-term behavioral effects of ethanol, is the connection between alcohol consumption and alcohol dependent. GABA receptor subtypes A and B are the most common subtypes, and studies on GABA receptors have looked at the connection between alcoholism and the GABA system. Alcohol indirectly lowers glutamate transmission via interacting with a number of neurotransmitter systems, including serotonin, nicotinic acetylcholine, and GABA. GABAARs are a family of receptors that mediate inhibitory neurotransmission throughout the CNS. These complexes are hetero pentameric in nature.

Methodology: This study involved 160 non-alcoholic and 87 alcoholic volunteers, who were collected through EDTA vacutainers. Both informed and willing volunteers were included. At Guru Ghasidas Vishwavidyalaya Bilaspur's Department of Forensic Science, the study was carried out. For the previous five years, the volunteers had to drink 60 grams of alcohol per day. In this work, DNA fragments ranging in size from 100 bp to 25 kbp were separated using agarose gel electrophoresis. UV transilluminator was used to visualize DNA, and the GABA α6 gene primer was used for PCR amplification. We utilized the Nhe1 enzyme to break down the GABA α6 gene PCR product. With Graph Pad Prism 9.5.3, statistical analysis was done.

Results: The study extracted genomic DNA and amplify it using PCR-RFLP. The GABA α6 gene polymorphism was estimated using PCR-RFLP. The study analyzed genotype and allele frequencies in control and alcoholic populations, finding no significant association between the CC allele and alcohol-use disorder development. Both groups followed the Hardey-Weinberg equilibrium, with control having a GABRGA6 CC genotype and alcoholic having a GABRGA6 CT genotype. The GABA α6 allele was not statistically significant for alcohol-use disorder development, and the GABRA6 polymorphism frequencies did not significantly differ between the control and alcoholic groups.

Conclusion: The study found no significant correlation between alcohol-use disorders and the CC allele in control and alcoholic groups. The GABRA6 polymorphism frequencies did not significantly differ between the groups, and the GABA α6 allele was not statistically relevant for alcohol-use disorders. The relationship between GABAA receptor genes and alcoholism is becoming clearer, but functional polymorphisms are still unknown. The study suggests a possible allelic relationship between dissocial alcoholism and GABRA polymorphism, but further replication studies are needed to verify the validity of these findings. Further data is needed to determine the allele frequency in the alcoholic population.

Keywords: alcohol use disorder, polymorphism, alcoholism.

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IDENTIFICATION OF MILK SPECIES BY PCR-RFLP OF THE MITOCHONDRIAL *CYTOCHROME b* GENE

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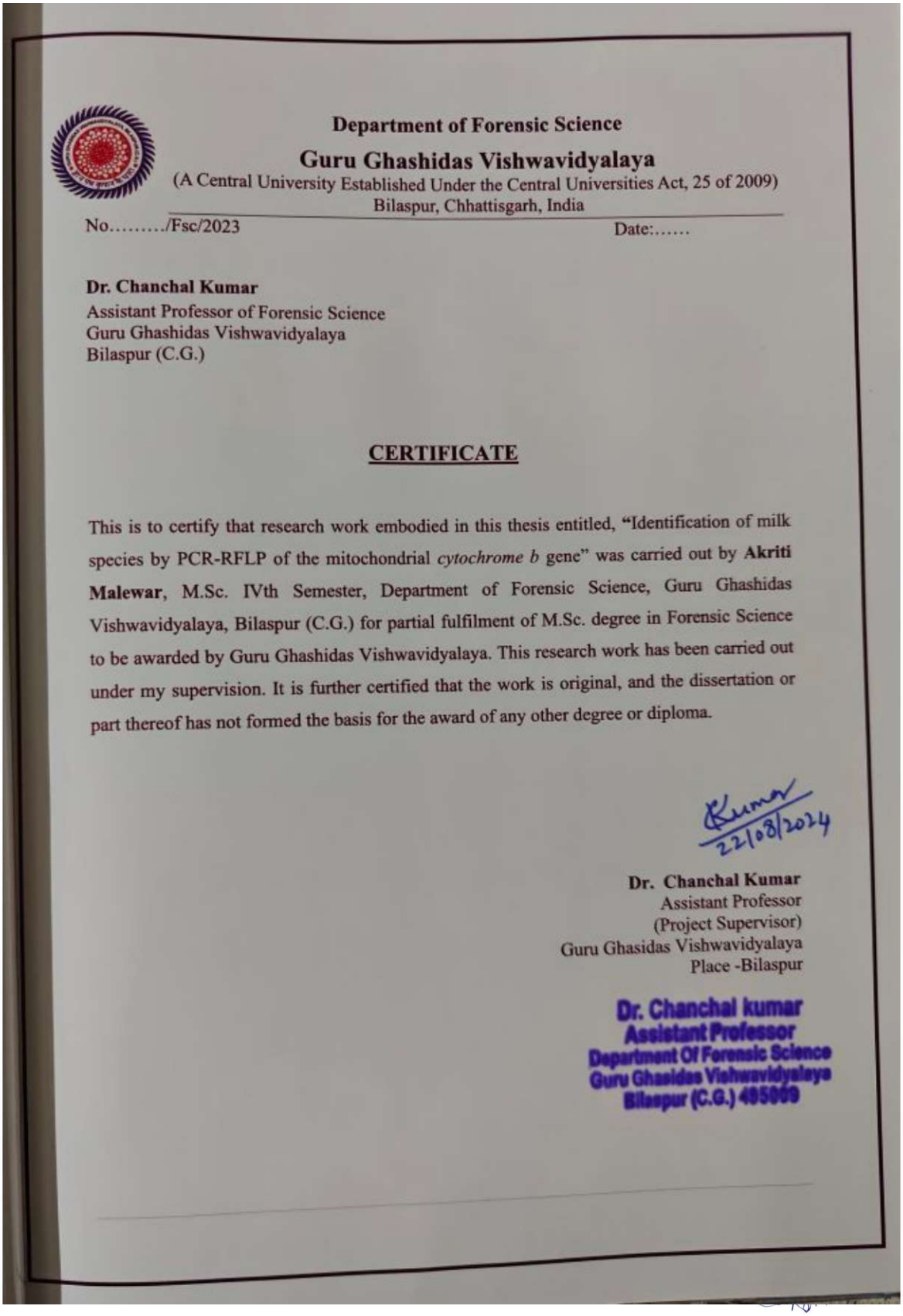

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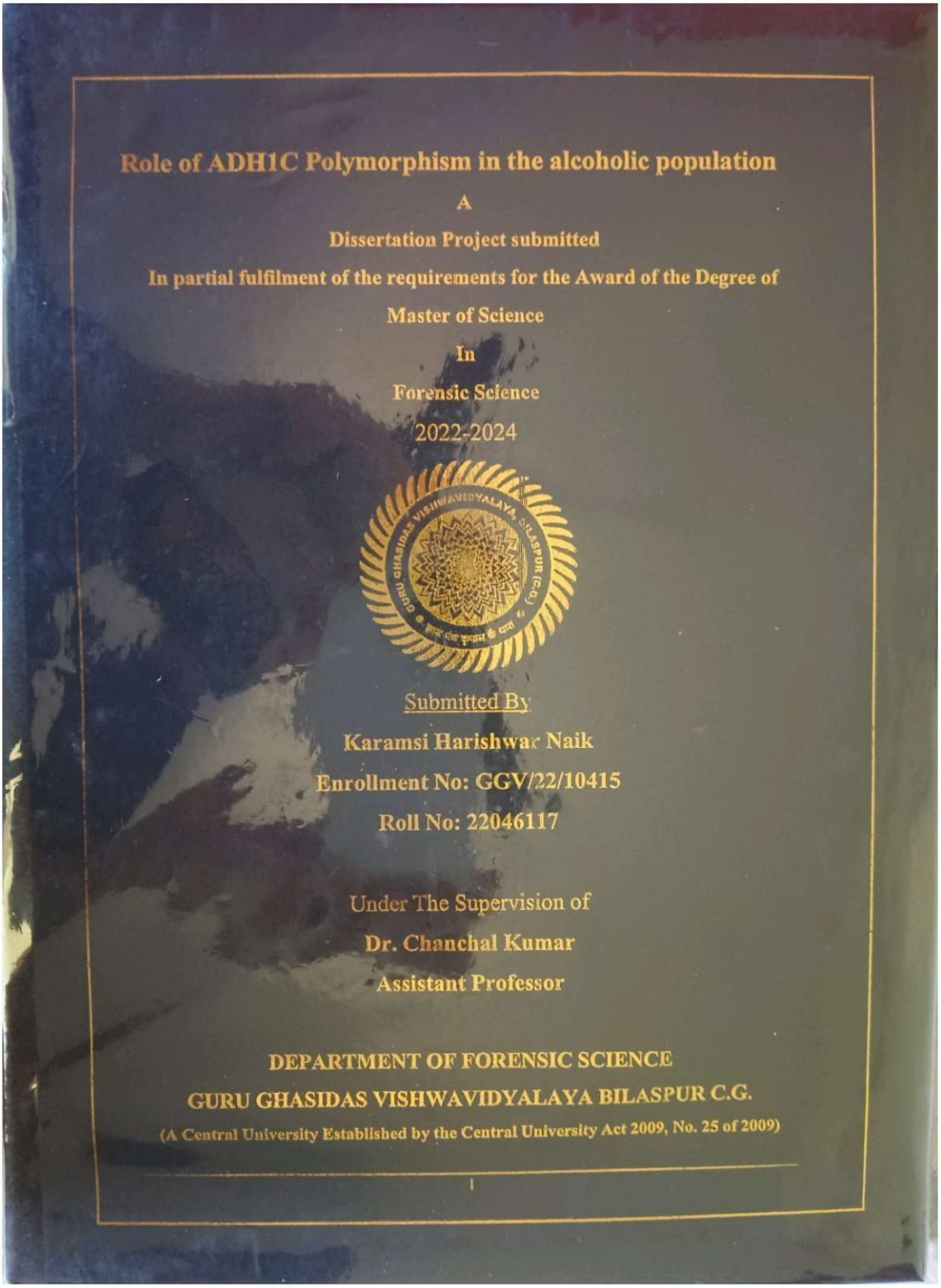

Role of ADH1C Polymorphism in the alcoholic population

A

Dissertation Project submitted

In partial fulfilment of the requirements for the Award of the Degree of

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ABSTRACT

Background: Alcohol dependence causes serious problems, which may be influenced by inherited factors connected to alcohol metabolism. The goal was to investigate the allelic and genotypic differences in the distribution of a polymorphism in the alcohol dehydrogenase 1C gene (ADH1C) between alcohol-dependent people and controls, and to determine whether these genotypes were associated with the development of AUDs and the age at which the patient became alcohol-dependent.

Methods: We carried out a case-control study with 86 alcohol-dependent patients and 160 historical controls. The genomic DNA was isolated, and alleles were identified using an RFLP.

Results The frequency of the ADH1C*1 allele was 53.41 in controls and 61.05 in alcohol-dependent people. A research on the Chattisgarh community discovered a relationship between a certain gene mutation (ADH1C*1) and alcohol abuse. It was shown that the non-alcohol dependent people with AUD development had a greater frequency of the ADH1C*1 allele than dependent ones. The genotype frequency of ADH1C*1/*2 genotype was more frequent in non-dependent persons (60) than in alcohol-dependent individuals (43.02), however the ADH1C*2/*2 genotype was less common in non-dependent individuals (16.87) than in alcohol-dependent individuals (17.44).

Conclusion: Age did not affect the distribution of ADH1C genotypes. The study concludes that the ADH1C*1 allele is not linked to an elevated risk of alcohol dependency and the development of AUDs in the CG community. More study is needed to validate this link and look into other associated genetic variables. In plain terms, this study discovered that a certain genetic variation (ADH1C*1) is less frequent in patients with alcohol dependency, indicating a less probable genetic relationship to alcohol-related diseases.

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Time Based Study on Commercially Available Inhalants (Drugs Of Abuse) By HS-GC-MSMS

M.Sc. Dissertation Submitted At Guru Ghasidas Vishwavidyalaya, Bilaspur In Partial Fulfillment Of The Requirement For The Degree Of

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ABSTRACT

The study explores the issue of inhalant abuse, focusing on the analysis of commercially available inhalants using HS-GC-MSMS (Headspace Gas Chromatography-Tandem Mass Spectrometry). Inhalant abuse involves the use of volatile substances to achieve psychoactive effects, posing significant health risks. This investigation utilized cotton cloth as a medium for depositing inhalants through capillaries to simulate user behavior. Samples were subjected to various environmental conditions: room temperature, direct sunlight, and shade. The study's aim was to identify the persistence and integrity of inhalant components over a six-day period. Initial results from the first day were compared to those obtained on the fourth and sixth days to observe any changes. The persistence of the components over several days, even under varying environmental conditions, indicates the stability of the inhalants on the cotton cloth. The study emphasises the necessity of using strong analytical methods to comprehend inhalant behaviour in various contexts, which will improve forensic and public health treatments. These findings highlight the resilience of inhalant components on cotton cloth, suggesting that evidence of abuse can be detected several days after exposure, regardless of environmental conditions. This has important ramifications for forensic investigations, as it extends the window of time for detecting inhalant abuse in various scenarios.

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"EVALUATION OF THE IMPACT OF WOOD SURFACE CHARACTERISTICS ON PRESUMPTIVE BLOOD DETECTION"

A

M.Sc. Dissertation

submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

in partial fulfillment of the requirement for the

degree of

Master of Science

In

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By

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(En. No.: GGV/22/10413; Roll No.: 22046115)

Under the Guidance of

Dr. Ajay Amit

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No. ..... /F. Sc./2024 Bilaspur

Date: 22/08/2024

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This is to certify that the thesis entitled, **"Evaluation Of The Impact Of Wood Surface Characteristics On Presumptive Blood Test"** has been submitted by **Ms. Jisna K Jose** (M.Sc. IV Semester) Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G) under the supervision of Dr Ajay Amit towards partial fulfillment of requirements for the award of Master's degree in Forensic science

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ABSTRACT

The study evaluates the impact of various wood surface characteristics on the efficacy of luminol, a chemiluminescent reagent commonly used for presumptive blood tests. Blood samples were applied to five different wood surfaces: plywood, polished wood, barked wood, debarked wood, and heartwood. The samples were then tested with luminol at multiple time intervals—immediately after application, and at 6 hours, 12 hours, 24 hours, 48 hours, 5 days, and 10 days post-application. The study focused on observing the persistence and intensity of the chemiluminescent reaction at each interval, assessing how different wood textures and compositions influence luminol's effectiveness over time. Initial results indicate that the surface characteristics of the wood significantly affect the luminol reaction, with variances in chemiluminescence persistence and intensity across the different substrates and time intervals. This research underscores the importance of considering substrate properties when interpreting luminol test results in forensic investigations involving blood detection on wooden surfaces.

Keywords: forensic science, Blood, Luminol, Chemiluminescence, Presumptive blood test, Wood substrates, Incubation period.

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BEYOND THE SHELVES: LEVERAGING EVERYDAY HOUSEHOLD ITEMS TO BOOST BLOOD DETECTION ACCURACY IN FORENSIC TESTS

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial fulfilment of the requirement for the degree of

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By

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CERTIFICATE

This is to certify that the research work embodied in this thesis entitled, "**Beyond the Shelves: Leveraging Everyday Household Items To Boost Blood Detection Forensic Science**" was carried out by **Josephine Elizabeth Joy**, M.Sc. 4th Semester, Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) for partial fulfilment of M.Sc. degree in Forensic Science to be awarded by Guru Ghasidas Vishwavidyalaya. This research work has been carried out under my supervision. It is further certified that the work is original and the dissertation or part thereof has not formed the basis for the award of any other degree or diploma.

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ABSTRACT

Blood, which is the fluid that gives life to all living things, plays an unquestionable decisive role in the complex world of forensic science and the process of accusing criminals for their acts. Its presence at a crime scene is not only a brutal reminder of violence or tragedy; it's a silent witness, a depository of crucial information that can shed light on what happened, pinpoint the wrongdoer, and clear the innocent. The Significance of Household Products in Blood Detection Tests .Household products plays a crucial role in blood detection tests such as the Kastle-Meyer and luminol tests. The presence of these products can enhance the detection of blood through a change in pH and increased chemiluminescence intensity. Different concentrations of household products have varying effects on the test results, with higher concentrations generally resulting in more intense reactions. It is important to avoid the use of certain substances in these tests to ensure accurate and reliable results.

Keywords: Blood, household products, kastle Meyer, luminol.

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Study on the Aging of Lipid Composition of Groomed Finger Marks by Using GC/MS.

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial fulfillment of the requirement for the degree of

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Abstract

Fingerprints are one of the most crucial forms of forensic evidence used in criminal investigations. Among the various types of fingerprints, groomed finger marks-formed by natural secretions such as sebum-are particularly informative due to their rich lipid composition. However, the composition of these lipids changes over time, potentially affecting the reliability of fingerprint evidence. This study investigates the aging process of lipid compositions in groomed fingerprints under different environmental conditions, employing Gas Chromatography-Mass Spectrometry (GC/MS) for detailed analysis.

The research begins with the identification of the primary lipid components present in freshly groomed fingermarks collected from volunteers. The fingermarks were then subjected to different storage conditions-room temperature, shaded environments, and direct sunlight-to simulate real-world scenarios where forensic evidence might be found. Over a period of nine days, the lipid compositions were periodically analyzed using GC-MS to observe the degradation patterns and chemical transformations.

The findings reveal that environmental conditions play a significant role in the degradation of lipid components. Under room temperature, lipid degradation occurs steadily, with a gradual transformation of complex lipids into simpler hydrocarbons. In shaded environments, the degradation is slower, preserving a more diverse lipid profile for a longer duration. Conversely, direct sunlight exposure accelerates the breakdown of lipids, with UV radiation and heat leading to rapid degradation into hydrocarbons and esters. This rapid change could be critical in forensic investigations, as it might lead to incorrect estimations of the time since the deposition of the fingerprint.

The study concludes that the environmental context in which fingerprints are found must be carefully considered during forensic analysis. By understanding the specific ways in which lipids in groomed fingermarks degrade under different conditions, forensic scientists can improve the accuracy of time-of-deposition estimates, thereby enhancing the reliability of fingerprint evidence in criminal investigations.

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FORENSIC ANALYSIS OF ILLICIT LIQUOR AND ITS ASSOCIATION WITH HEALTH EFFECT AMONG THE POPULATION OF MEGHALAYA

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial fulfillment of the requirement for the degree of

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ABSTRACT

Illicit liquor or Illegal liquor, often known as unrecorded alcohol production. Alcohol can lead to nutritional deficits and addictions, which can exacerbate physical or mental health issues. Alcohol can impair our mental decision-making, sensory coordination, focus reduction, and grasping abilities. Illegal liquor is made locally with poor product quality and safety, devoid of any standardization, in order to meet demand. When created outside of these restrictions, alcohol is regarded as illegal and can have negative effects such nauseous vomiting, abdominal discomfort, liver and kidney problems, and in rare instances, even coma or death. Our health is put at risk by illicit alcohol, particularly when it contains adulterants. Worldwide, alcohol is the substance that is abused the most. It interferes with and weakens the immune system. Using a procedure, often known as a hemogram, we may determine the number of cells there are in the blood, as well as their percentages and some of their properties. Alcohol-related liver disease, which is brought on by extreme and chronic alcohol intake, is a global health concern that results in pathological alterations and clinical sickness. The LFT examinations provide information regarding the patient's liver while as RFT test are the test that may be carried out to evaluate kidney function. The aim is to forensic analysis of illicit liquor and its association with health effect among the population of Meghalaya. To detect specific substances (such as methyl alcohol or ethyl alcohol) in all the twenty illicit liquor sample and to identify any adulterants or contaminants present in the illicit liquor samples of different geographic location area. An first examination that we employ to detect methyl alcohol and ethyl alcohol is the colour test and GC equipment for the confirmatory test in order to get reliable results. Using a GC instrument, the ethanol-methanol combination, and methanol were found in all twenty of the illicit liquor samples. Evaluate and compare the haematological parameter, liver function, and renal function levels between the non-alcoholic and alcoholic values. We also contrast the LFT, RFT, and CBC levels between the alcoholics and non-alcoholics of both males and females. All twenty samples had positive findings for the colour tests which indicates the presence of methanol and ethanol. Compared to the non-alcoholic group, the alcoholic group had a greater level in LFT, RFT and CBC (WBC count) except Haemoglobin and RBC count (CBC). This leads to the conclusion that the suspected illicit liquor sample contains a variety of contamination types and the findings indicate that the liquor is not fit for human consumption. As a result, this experiment demonstrates how various adulterants are used to alter the quantity of alcoholic beverages, this could result in serious health problems.

Keywords: Illicit liquor, analysis of illicit liquor, effects of illicit liquor on human health.

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ABSTRACT

This pilot study investigates the impact of different fabric types on the adherence capability of diatoms from a water body in Bilaspur district, Chhattisgarh, India. Diatoms are microscopic algae with unique silica cell walls, which can be sensitive to different environmental and material conditions. The study aimed to assess how fabrics such as cotton, silk, and chiffon affect diatom retention and identify the diatom genera present on these materials. Water samples were collected from six locations within a pond, divided into peripheral and central sites. Three fabric types' cotton, silk, and chiffon—were cleaned with distilled water and immersed at these sampling sites. After immersion, fabrics were processed to extract diatoms, and water samples were similarly treated using concentrated nitric acid for acid digestion followed by centrifugation. Diatoms from both fabric and water samples were analyzed under a microscope. The control water sample contained twelve diatom genera, including Aldafia, Cymbella, and Nitzschia. Cotton fabrics yielded seven genera, including Navicula and Aldafia. Silk samples showed three genera, notably Fragilaria and Achanthes. Chiffon fabrics yielded four genera, such as Aldafia and Pseudonitzschia. Cotton was found to retain the highest diversity and quantity of diatoms, likely due to its porous and absorbent nature. In contrast, silk and chiffon, with their smoother and less absorbent surfaces, retained fewer diatoms. The study highlights that fabric type significantly influences diatom adherence, with cotton being the most effective at retaining diatoms due to its natural fiber structure. Silk and chiffon, being less absorbent, showed lower diatom yields. This has implications for ecological studies and environmental monitoring where diatom sampling using different materials might be employed. Future research could explore further material types and environmental conditions to refine diatom collection and analysis techniques.

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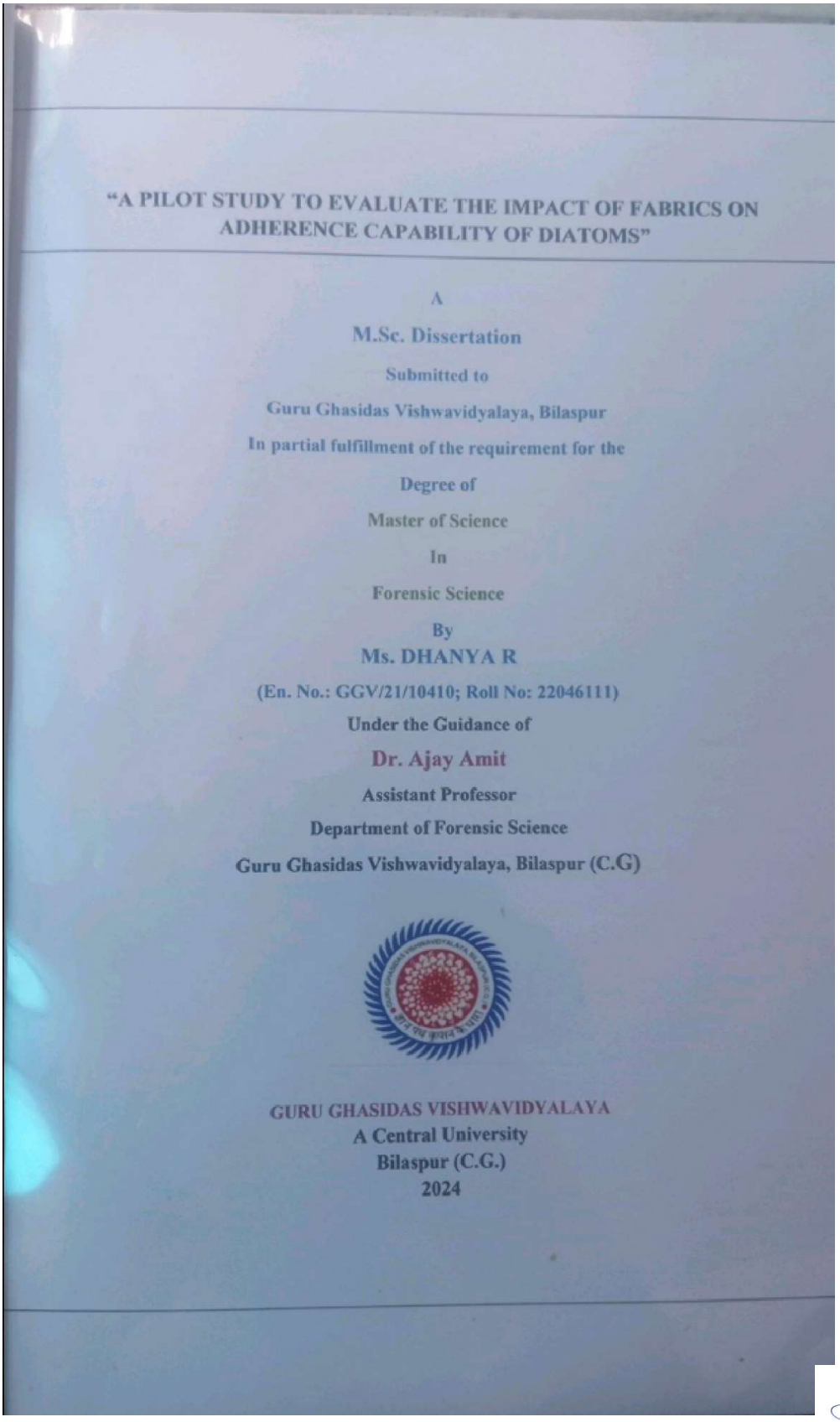

"A PILOT STUDY TO EVALUATE THE IMPACT OF FABRICS ON ADHERENCE CAPABILITY OF DIATOMS"

A

M.Sc. Dissertation

Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

In partial fulfillment of the requirement for the

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In

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This is to certify that the thesis entitled, **"A Pilot Study to Evaluate the Impact of Fabrics on Adherence Capability of Diatoms"** has been submitted by **Ms. DHANYA R** (MSc IV Semester) Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G) under the Supervision of **Dr. Ajay Amit** towards partial fulfillment of requirements for the award of Master's degree in Forensic Science.

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A

M.Sc. DISSERTATION

ON

"IMPACT OF DEVELOPMENT OF PASSIVE BLOOD PATTERN ANALYSIS ON DIFFERENT TYPES OF FABRIC"

submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE

IN

FORENSIC SCIENCE

Submitted By

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This is to certify that the dissertation entitled **"Impact of Development of Passive Blood Pattern Analysis on Different Types of Fabric"**, submitted by **Nikita Verma** Department of Forensic Science Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) for the award of M.Sc. degree in Forensic Science. This is certifying that it is original research work done by her under my able guidance. I further certify that the work is original and the dissertation or part thereof has not formed the basis for the award of any other degree.

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ABSTRACT

The examination explores the correlation between bloodstains and textile surfaces through the analysis of blood drop stain pattern on thirteen different kinds of fabrics. This investigation is aimed at contributing to the field of forensic analysis, where comprehending the behavior of blood on diverse materials can offer crucial insights in crime scene investigation. The fabrics chosen for this research exhibit variations in weave, fiber composition, and texture, encompassing both natural and synthetic materials commonly encountered in forensic scenarios. Controlled blood drop stains were administered to each type of fabric under standardized environmental circumstances. The examination witnessed the dispersion, absorption, and drying tendencies of the bloodstains over time, utilizing both qualitative and quantitative methodologies to evaluate distinctions. Furthermore, the impact of fabric characteristics on the morphological attributes of the bloodstains was assessed through microscopic examination and digital imaging methods.

The outcomes reveal notable discrepancies in bloodstain formations based on the fabric category. Elements such as fiber composition, thread count, and fabric density were identified to impact the form, dimension, and absorption pace of the bloodstains. These results emphasize the significance of incorporating fabric type in forensic investigations, as they can profoundly influence the analysis of bloodstain proof. The investigation culminates with suggestions for forensic professionals regarding the importance of fabric attributes in reconstructing incidents involving bloodshed.

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Morphological and Molecular Characterization of Anatoxin producing cyanobacterial species in different freshwater bodies of Bilaspur, Chhattisgarh

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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In

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Monitoring of Particulate Matter Pollution in Bilaspur city

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

Master of Science

In

Forensic Science

By

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(Enrollment No. – GGV/22/10424 Roll No- 22046127)

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Acknowledgment

It is always a pleasure to remind the fine people in the Guru Ghasidas University for their Sincere Guidance I received to complete my dissertation work. I would like to express my sincere gratitude towards my head of the department professor **Dr. Naveen Kumar Vishwakarma** sir for his continuous guidance and support.

I would like to express my sincere gratitude to my supervisors **Dr. SUDHIR YADAV** for providing his invaluable guidance, positive comments, and suggestions on my topic.

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Last but not the least, my parents and friends are also an important inspiration for me, they always supported me so with due regard I express my gratitude to them.

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An Extensive Study on The Forensic Challenges of Cryptocurrency and Its Awareness Among the Different Age Groups

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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ANALYSIS OF INTER SCRIPT IN THREE DIFFERENT LANGUAGES

A Dissertation project submitted in partial fulfilment of the requirement for the Award of The Degree of

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In

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2022 - 2024

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This is to certify that the project report entitled "**analysis of inter script in three different languages**" submitted by Ms. Gadi Pratyusha is her individual work and has been done at the Department of Forensic Science, Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.). It is recommended that this project be presented to the examiner for evaluation in partial fulfilment of the Master's Degree in Forensic Science.

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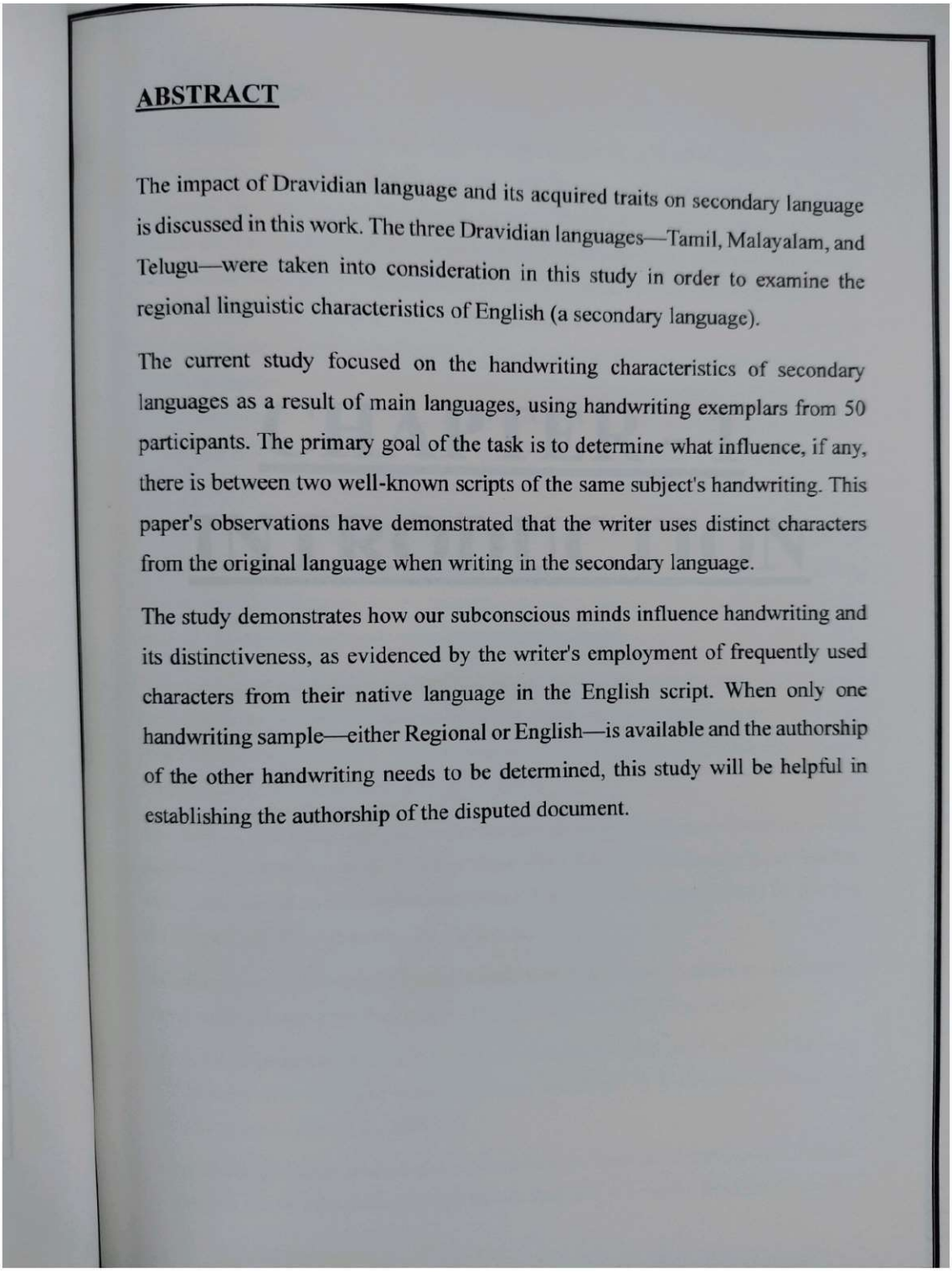

ABSTRACT

The impact of Dravidian language and its acquired traits on secondary language is discussed in this work. The three Dravidian languages—Tamil, Malayalam, and Telugu—were taken into consideration in this study in order to examine the regional linguistic characteristics of English (a secondary language).

The current study focused on the handwriting characteristics of secondary languages as a result of main languages, using handwriting exemplars from 50 participants. The primary goal of the task is to determine what influence, if any, there is between two well-known scripts of the same subject's handwriting. This paper's observations have demonstrated that the writer uses distinct characters from the original language when writing in the secondary language.

The study demonstrates how our subconscious minds influence handwriting and its distinctiveness, as evidenced by the writer's employment of frequently used characters from their native language in the English script. When only one handwriting sample—either Regional or English—is available and the authorship of the other handwriting needs to be determined, this study will be helpful in establishing the authorship of the disputed document.

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OPTIMIZATION OF SOLVENT SYSTEMS FOR THE EFFICIENT SEPARATION OF BALLPOINT PEN INK COMPONENTS IN THIN LAYER CHROMATOGRAPHY

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial fulfillment of the requirement for the degree of

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In

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By

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ABSTRACT

Forensic analysis of ink plays a crucial role in document authentication, especially in detecting forgeries and identifying discrepancies in handwritten documents. Thin Layer Chromatography (TLC) is a crucial method for analyzing ballpoint pen ink dyes, aiding in the identification of fraudulent documents. TLC allows for the comparison of writing inks from different pens, studying variations in color, tint, fluidity, and retention factor over time, which can be instrumental in detecting forgery and conducting comparative analyses. There is a limited amount of ink available for analysis, so knowledgeable experts carefully choose the solvent solution to enable easy component separation. The primary goal of the research is to optimize the solvent system for effective separation in thin-layer chromatography. The aim of the study is to examine each element of ink, determines whether ink has been adulterated, and identifies any ink-related alterations made to documents. The findings highlight the validity of TLC as a non-destructive method for ink comparison in legal circumstances, promoting a stronger legal system that depends on scientific evidence.

Keywords: Thin Layer Chromatography, Ballpoint pen, Solvent system, Ink Analysis, Forensic science

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DECIPHERMENT OF DIFFERENT TYPES OF CHEMICAL ERASURES ON VARIOUS PAPER SURFACES

M.Sc. Dissertation Submitted Guru Ghasidas Vishwavidyalaya Bilaspur Partial Fulfillment of the Requirement for the Degree Of

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In
Forensic Science

By

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ABSTRACT

The study focuses on ink decipherment through various chemical erasure methods commonly found in household products(Acetone ,Ethanol, Hydrogen peroxide, Sodium hypochlorite) applied to diverse paper surfaces. This forensic technique serves to either modify documents or unveil concealed, modified, or covert writing. Given the rising instances of document alterations and tampering, many individuals fall victim to forgery and deception by criminals. The primary objective of the study was to detect any alterations or tampering using a range of forensic tools and techniques. Moreover, documents altered using chemical erasure can be visually identified even without specialized instruments. This research underscores the efficacy of ink analysis in forensic investigations. The study also emphasizes the importance of training forensic examiners to recognize the subtle signs of chemical erasure. Techniques such as ultraviolet light examination, infrared spectroscopy, and digital enhancement can further aid in uncovering tampered documents. These methods not only confirm the presence of alterations but also provide crucial evidence in legal proceedings .The research offers invaluable insights into the world of document forensics, empowering individuals and professionals alike to combat forgery and uphold the integrity of written communication. By understanding the mechanisms behind ink and chemical interactions, we can better protect against fraudulent activities and ensure justice is served.

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HEMATOLOGICAL AND BIOCHEMICAL EFFECT OF INDUSTRIAL POLLUTION ON VULNERABLE POPULATIONS IN RAIGARH: A COMPREHENSIVE STUDY

A Dissertation submitted in partial fulfillment for the award of the degree of Master of Science

In

Forensic Science (2022-2024)

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ABSTRACT-

Industrial pollution has become a major concern in India, particularly in the newly formed state of Chhattisgarh, where the rapid growth of unregulated industries has led to a significant increase in toxic substances and hazardous waste. This has resulted in severe consequences, including various health problems and diseases, environmental degradation, and risks to wildlife. The rapid industrialization of cities like Raigarh has exacerbated the issue, releasing harmful emissions, heavy metals, and particulate matter into the air, water, and soil. As a result, there is an urgent need for sustainable practices, effective pollution control measures, and prompt action to address these critical issues and mitigate the devastating impact on human wellbeing and the environment. This study was aimed to analyze and examine the detrimental effects of prolonged exposure to industrial pollution on the hematological and biochemical parameters of individuals residing in close proximity to the Raigarh industrial area, who are consequently exposed to a myriad of harmful industrial pollutants, and to compare these findings with a control group comprising individuals from Kharsia, a region situated far from the industrial area, who are not exposed to such pollutants, thereby providing a comprehensive understanding of the impact of industrial pollution on human health. A total of 100 individual participated in this study which consisting of two equal groups (each group: n =50). with random selection allowing for a balanced and unbiased comparison of the effects of industrial pollution on the study population. The first group consist of exposed population of Raigarh (n=50) and the second group consist of unexposed population of kharsia population. Using the method of descriptive statistical measures, specifically calculating the mean and standard deviation and a paired t-test was conducted to compare with a strict significance level set at ($p < 0.05$). The results of blood picture, liver enzymes and kidney functions were compared between the groups. the results show some significant changes in parameters. Firstly, the blood picture shows notable changes in the mean of red blood cell counts (decrease in count), hemoglobin levels(decreases) and hematocrit percentage(increases) and other parameters are insignificant. (P=<0.05). secondly the liver function parameters show common markers such as SPOT and serum protein highly increased and others are insignificant. (P=<0.05). lastly the kidney function parameters have not significantly influenced the kidney parameters(P=<0.05). A study in Raigarh also found that forests help mitigate industrial pollution's effects on the environment and human health. Exposure to pollution leads to changes in blood and liver markers, increasing the risk of related disorders. The study urges prompt action to reduce exposure to industrial pollutants, especially for nearby communities vulnerable to health risks.

Key words: **-** industrial pollution, hematological parameters, biochemical parameters, exposed, unexposed, Raighar, kharsia, liver, kidney, blood.

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Identification and Molecular Characterization of Microcystin toxin producing Cyanobacterial species in Fresh Waterbodies

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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in

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By

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Abstract

As toxin from cyanobacteria in aquatic life is very major threat of concern. Hepatotoxic microcystins detected in bilaspur freshwater waterbodies pose a risk to human health, particularly for rural communities that may come into contact with untreated contaminated water. Because they are using this water from lakes directly for day to day needs like drinking and bathing and because of less knowledge abot this cyanotoxins in water bodies, it is going into their food chain and shows adverse harmful effect on body like, liver damage, respiratory desease, skin desease or even can cause tumor after long exposer to body. In this study we used PCR based method for detection of microcystin (mcyA-cd gene) with the help of mcyA gene (responsible for toxin production), from the collected samples of various lakes in bilaspur. Techniques should be introduce for lake restoration that reduce the level of cyanobacterial bloom in the water which could be effective in lowering the abundance of Microcystis in these lakes (water bodies). MCY analysis can be performed at 1°, 2°, 3° and 4° level, in **1° level** microscopy is done which will tell the diversity and species composition. **2° level** bioassay should be carry out which will tell the amount of toxicity. **3° level** is done with the help of TLC, HPLC, PPIA, to detect qualitative and quantitative toxic sample value. **4° level** is achieved with the help PCR based method by using specific primer of microcystin toxin producing gene. In future, if we wanted to restore the lake after complete distruction of toxic producing microcystin then this primer based PCR technique is use to check potential changes in cyanobacterial communities before, during, and after the process. The primer based PCR method outlined in this study also enables research into the environmental conditions that support the in situ growth of cyanobacterial cyanotoxin toxicity of Microcystis, as well as investigations into the development of harmful toxic producing algal blooms in environment. We can use this technique to find presence of other cyanotoxins (ANA, NOD, CYN, SXT) by designing there compatible gene specific primer to find the presence. This method is very helpful while investigating cause of death. In many crimes dead body found on teristrial surface but the crime is commited in water, then we can use this technique to confirm the presence of microcystin in nose, mouth, stomach and give conclusion in forensic report. Aquatic animals like (fish, crocodile, tourtle) eat cyobacterial bloom as food then toxin enter into there stomach, and this toxin can infect these aquatic animal and if they eat bloom in lage quantity can cause death. Through this PCR technique we can find the cause of death and eradicate the effect of toxin from water bodies. By using this PCR based method we can invent various new colourimetic test which we can use on the spot without using lage and compicated machinery.

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COMPARATIVE ANALYSIS OF EAR MEASUREMENTS BETWEEN NON-TRIBE AND TRIBAL POPULATION

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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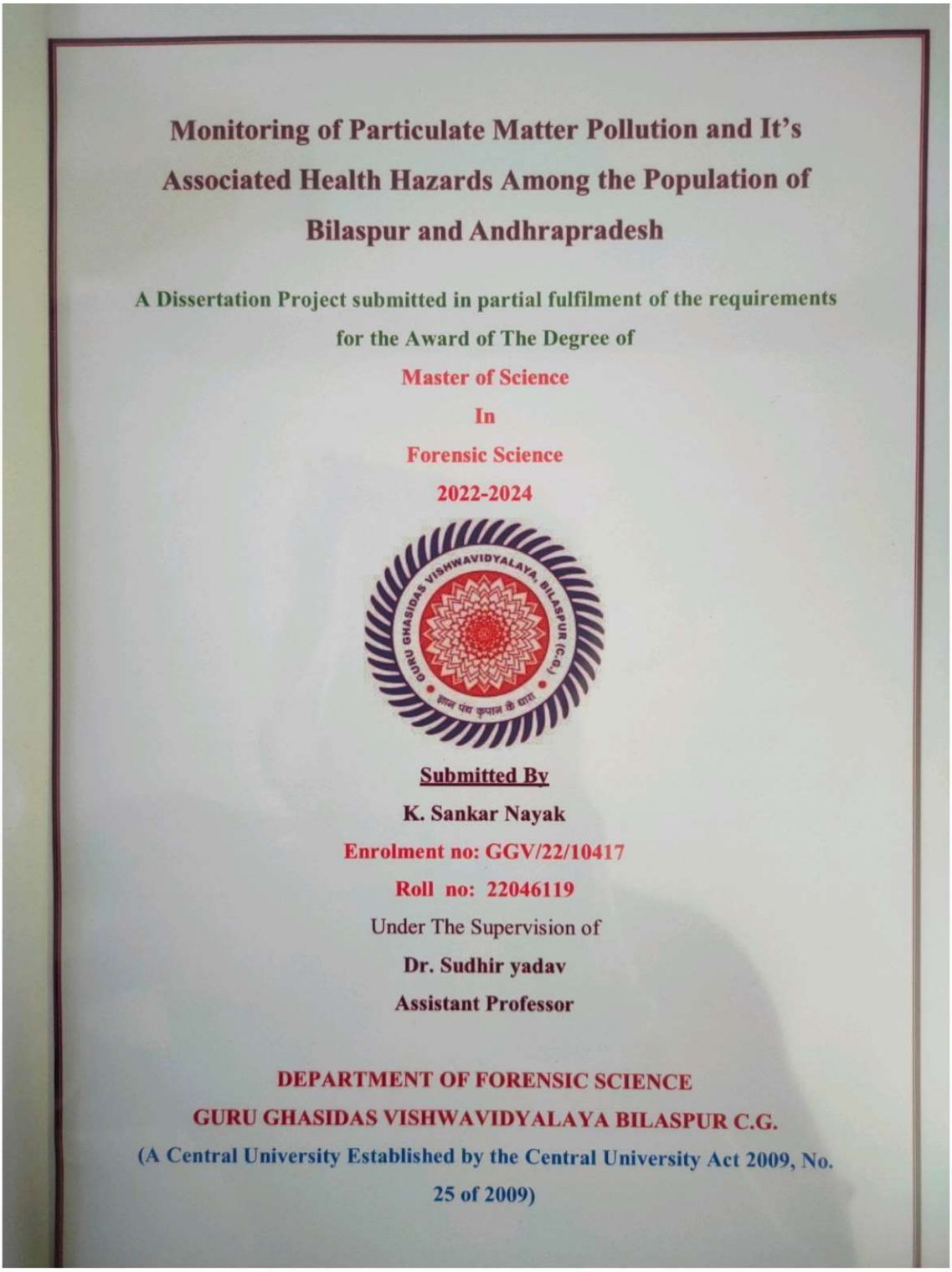

Monitoring of Particulate Matter Pollution and It's Associated Health Hazards Among the Population of Bilaspur and Andhrapradesh

A Dissertation Project submitted in partial fulfilment of the requirements for the Award of The Degree of

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In

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PREFACE

Background: One of the main causes of the world's air pollution is particulate matter, or PM2.5, which is released into the atmosphere both directly from sources and through chemical reactions with other pollutant species. Particles of in size from 0.1 µm to 1 µm are mostly responsible for its mass concentration. The measured mass concentration is further influenced by secondary particulate matter, which is produced from precursor gases. PM2.5 has more microscopic particles, which means that it can absorb more toxic compounds and penetrate the lungs more deeply, causing more severe effects.

Methodology: To track and record air pollutants and meteorological characteristics, the Central Pollution Control Board (CPCB) of India has set up 136 continuous ambient air quality monitoring stations in key cities. The majority of stations only provide PM10 or PM2.5 data, and the data is available for weeks or months at a time. Two sample locations with more than 75% of daily data were the focus of a study carried out at Chhattisgarh's Guru Ghasidas Central University. 50 questionnaires were gathered for the study from each of 50 sites in Visakhapatnam and 50 in Bilaspur. An Excel spreadsheet was used to evaluate the data.

Results: The Visakhapatnam district of Andhrapradesh has high concentrations of PM2.5, PM10, NO, NO2, and NOx, while the Bilaspur area in Chattisgarh has significant amounts of SO2 and CO. The coal mining sector in Bilaspur affects the majority of residents, with high levels of metals, black carbon, and sulphur dioxide in coal-derived PM2.5. High exposure to SO2 and CO pollution can lead to cancer, heart disease, lung conditions, diabetes, obesity, and reproductive, neurological, and immune system problems. The poor air quality index in the area is attributed to industry stack emissions, poor road alignment, traffic rule violations, and poor vehicle maintenance.

Conclusions: The research shows that average PM assessments over time underestimate the health risks associated with high PM values, even for short intervals. It suggests the need for new models and technologies to monitor PM on an ad hoc basis. Despite Bilaspur's low pollution levels, the health effects of the coal industry's SO2 and CO deposition are high due to factors like low literacy rates, inadequate medical facilities, lack of preventive measures, poor hygiene, and inadequate healthcare.

Keywords: central pollution control board, particulate matter, air quality index, meteorological characteristics.

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TRENDS OF ROAD TRAFFIC ACCIDENT CASES IN KERALA & CHHATTISGARH (2021-2023) : A COMPARATIVE STUDY

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ABSTRACT

This paper has been carried out to analyse the road accident trend and district wise comparison of Road accident in Kerala and Chhattisgarh State, India. The main analysis of this paper reveals the trends of road accidents, death, and injured person by vehicles in both states in accordance with district collected during 2021-2023. From the database analysis of Kerala, According to month, area & time, different types of vehicles, roads, and area wise. November, December & January are marked for the most accidental, death, and injured during the year 2021-2023. The area and time of road accidents shown at night time from 6-9 PM is the maximum most of the accidents occurred in rural area because 52.3% of the people live in rural areas. At the evening time the most of people have faced low visibility problems and the mainly in cold winter season. Accordance with the analysis of vehicles wise, the two-wheeler is the highest road accident then four-wheelers show at because maximum people traveling from one place to another place through these vehicles. When considering the various causes of accidents, the majority of reported accidents are attributed to driver error in motor vehicles, with the highest number resulting in serious injuries.

The district wise accident severity indexes have been shown the maximum cases in Kondagoan, Sukma, Dantewada, and Jaspur district, and the high fatal accidents are reported in Raipur. Raipur, Bilaspur and Durg district shows the maximum road accident in Chhattisgarh state.

The district wise accident severity indexes have been shown the maximum cases in Palakkad for 3 consecutive years and the high fatal accidents and the maximum road accident cases are reported in Thiruvananthapuram and Ernakulam. Chhattisgarh state exhibited a notably elevated Accident Severity Index of 45.78 in 2023. In contrast, Kerala state recorded a significantly lower Accident Severity Index of 8.07 in the same year. This discrepancy is particularly noteworthy considering Kerala's high population density and smaller geographic area compared to Chhattisgarh state. The government urgently takes appropriate action and needs to improve road safety for this worsening situation.

KEYWORDS:

Road accident trends, District wise comparison, Accident Severity Index (ASI)

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Identification of Cow, Buffalo, Goat and Chicken meat by Species Specific markers of mitochondrial Origin

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These days, meat adulteration is a problem, and developing specific authentication methods for determining species origin is quite difficult. DNA-based techniques, such as PCR analysis, are recommended to determine the species origin in adulteration and meat substitution since DNA is abundant, stable, temperature resistant, and more informative than protein. Multiplex PCR assay developed in this study was found to be helpful for screening of Chicken, cow, buffalo and goat meat species from diverse meat types like cooked, uncooked, boiled, minced and cooked frozen .This method is very sensitive and reliable. Simplex PCR was designed to identify single species and check the sensitivity of designed primers. In summary, we have developed a systematic optimized multiplex PCR protocol for simultaneous detection of adulterated components including chicken, goat, cow and buffalo. In this work, cooked meat is utilized to identify and detect species using mitochondrial DNA. Because mitochondrial DNA has a higher copy number and is more thermostable, it is favored because it enhances the likelihood of positive results even in samples with degraded DNA . Multiplex PCR designed to identify species of cow, goat ,buffalo and chicken to check the sensitivity of designed primers ,showed successful results except in chicken and that needs to be standardized .Although this is helpful in the identification of meat adulteration in meat mixtures .The identification of meat adulteration in meat combinations by simple and multiplex PCR is deemed to have benefited from this work. PCR is a faster method that yields real results and can identify even minute amount of DNA. This study findings are promising. This study had a limited sample size and was conducted on a small scale. Findings may vary depending on a business level; thus, this should also be verified extensively using a big number of samples.

Future aspect of Multiplex PCR- Future developments in multiplex PCR will likely focus on creating portable and high-throughput systems tailored for meat adulteration detection. Current multiplex PCR platforms are often large and require specialized laboratory settings. However, the advent of microfluidic technologies and lab-on-a-chip devices promises to revolutionize this field by enabling on-site testing and rapid analysis. Portable multiplex PCR systems could be deployed at food processing facilities, markets, and import/export points to provide immediate results, enhancing the ability to monitor and ensure meat quality in real-time. Additionally, high-throughput multiplex PCR systems will facilitate the analysis of large volumes of samples efficiently, making it possible to screen numerous products simultaneously and more effectively. Future developments in multiplex PCR will also focus on improving data analysis and interpretation. The integration of machine learning and artificial intelligence (AI) into multiplex PCR workflows will enhance pattern

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HEMATOLOGICAL AND BIOCHEMICAL EFFECT OF INDUSTRIAL POLLUTION ON VULNERABLE POPULATIONS IN SILTARA, RAIPUR: A COMPREHENSIVE STUDY

A Dissertation submitted in Partial fulfilment for the award of the degree of
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Abstract

Industrial Pollution rePresents a major threat to human health and the environment due to the unchecked exPansion of industrial activities. The emission of toxic substances into the air, water, and soil is linked to a range of health issues and diseases, highlighting the urgent need for action to address this critical Problem. In raPidly industrializing countries like India, hazardous waste Production has surged, causing severe environmental damage and health risks. Chhattisgarh, India's newest state, has seen swift industrial growth since 2000, driven by its rich natural resources. However, the develoPment of Siltara RaiPur, a major industrial city, has led to environmental and health challenges due to unregulated industrial Practices.

This study aimed to investigate the negative effects of long-term exPosure to industrial Pollution on the blood and biochemical health of individuals living near the Siltara industrial area, who are exPosed to various harmful Pollutants, and to comPare these effects with those of a control grouP from Pathariya, a region distant from industrial activities. A total of 100 ParticiPants were involved, divided into two equal grouPs (each n = 50), with one grouP from the exPosed Siltara area and the other from the unexPosed Pathariya region. DescriPtive statistical measures, including mean and standard deviation, and a Paired t-test with a significance level set at $P < 0.05$, were used for comParison.

The results revealed significant changes in several Parameters. In the blood Picture, there was a notable increase in haemoglobin and eosinoPhils, while lymPhocytes decreased, though the changes were not statistically significant ($P > 0.05$). Liver function tests showed significant increases in markers like alkaline PhosPhatase and bilirubin indicating Potential liver dysfunction while other markers were not significant ($P > 0.05$). Kidney function tests also showed significant changes in blood urea nitrogen, serum creatinine, and urea suggesting imPaired renal function.($P < 0.05$).

Forests Play a crucial role in buffering the imPacts of industrial Pollution on the environment and human health. The study's findings suggest that exPosure to industrial Pollution causes substantial alterations in hematological and biochemical markers, indicating that individuals in Polluted areas are at higher risk for blood, liver, and kidney disorders. This underscores the urgent need for effective measures to reduce exPosure to industrial Pollutants, Particularly for communities near industrial zones who face greater health risks from environmental contamination.

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An Exhaustive Study on Malware Crime and Its Awareness Among the Different Age Groups

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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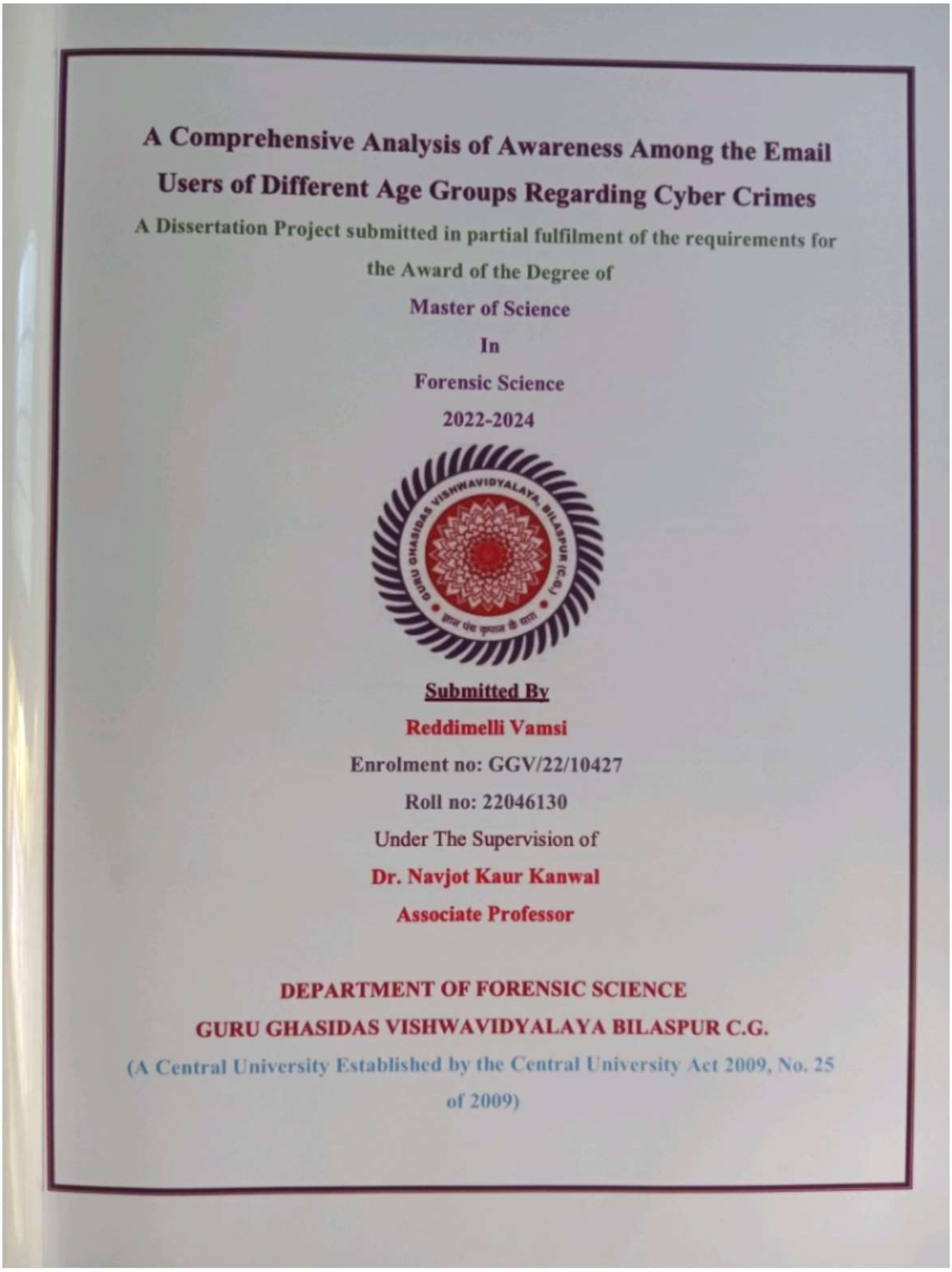

A Comprehensive Analysis of Awareness Among the Email Users of Different Age Groups Regarding Cyber Crimes

A Dissertation Project submitted in partial fulfilment of the requirements for the Award of the Degree of

Master of Science

In

Forensic Science

2022-2024

Submitted By

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Enrolment no: GGV/22/10427

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Under The Supervision of

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This is to certify that the project report entitled **"A Comprehensive Analysis of Awareness Among the email users of different age groups regarding cybercrimes"** submitted by Mr. Reddimelli Vamsi is his individual work and has been done at the Department of Forensic Science, Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.). It is recommended that this project be presented to the examiner for evaluation in partial fulfilment of the Master's Degree in Forensic Science.

Place: Bilaspur
Date: 22-08-2024

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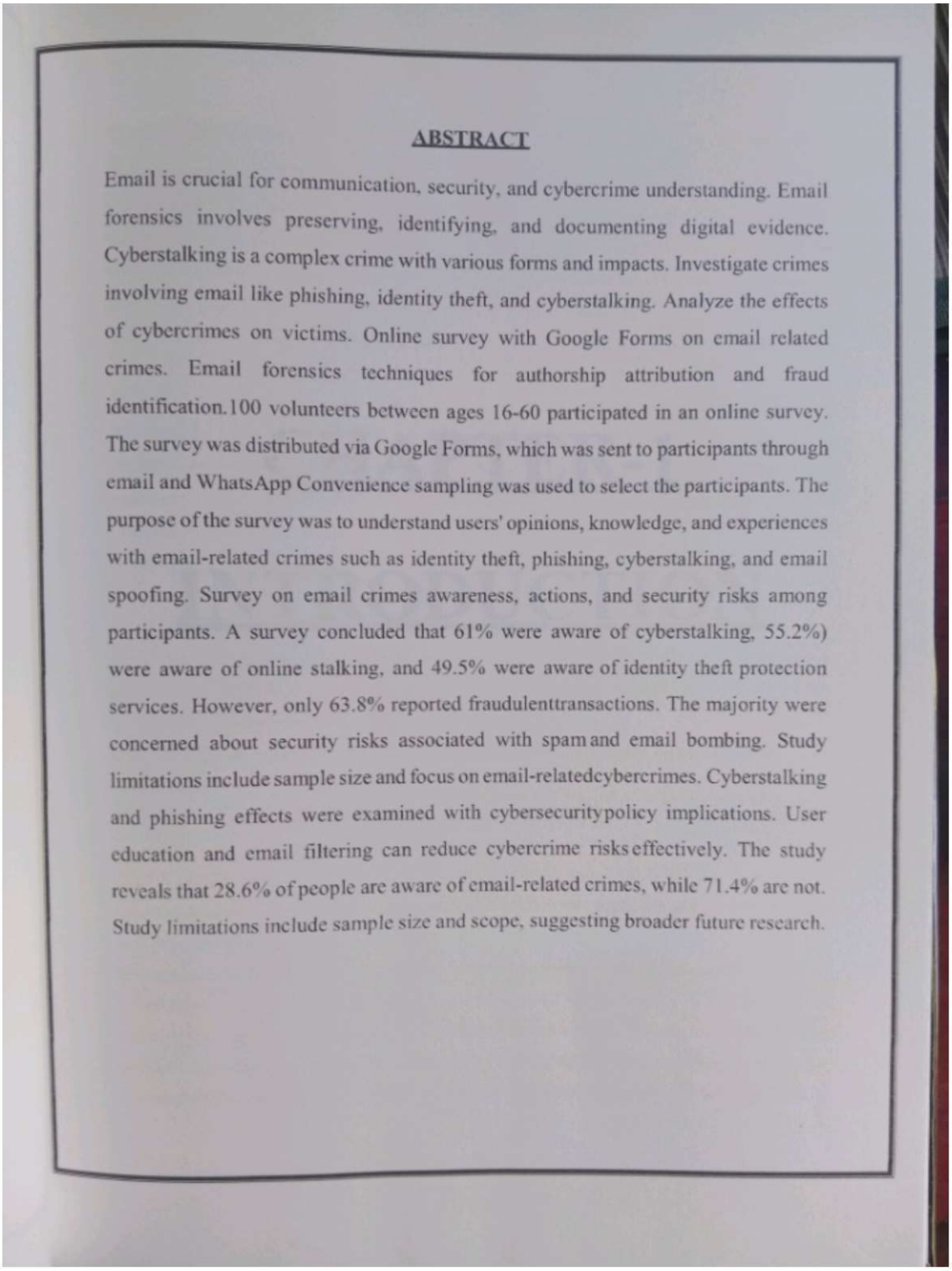

ABSTRACT

Email is crucial for communication, security, and cybercrime understanding. Email forensics involves preserving, identifying, and documenting digital evidence. Cyberstalking is a complex crime with various forms and impacts. Investigate crimes involving email like phishing, identity theft, and cyberstalking. Analyze the effects of cybercrimes on victims. Online survey with Google Forms on email related crimes. Email forensics techniques for authorship attribution and fraud identification.100 volunteers between ages 16-60 participated in an online survey. The survey was distributed via Google Forms, which was sent to participants through email and WhatsApp Convenience sampling was used to select the participants. The purpose of the survey was to understand users' opinions, knowledge, and experiences with email-related crimes such as identity theft, phishing, cyberstalking, and email spoofing. Survey on email crimes awareness, actions, and security risks among participants. A survey concluded that 61% were aware of cyberstalking, 55.2%) were aware of online stalking, and 49.5% were aware of identity theft protection services. However, only 63.8% reported fraudulenttransactions. The majority were concerned about security risks associated with spam and email bombing. Study limitations include sample size and focus on email-relatedcybercrimes. Cyberstalking and phishing effects were examined with cybersecuritypolicy implications. User education and email filtering can reduce cybercrime risks effectively. The study reveals that 28.6% of people are aware of email-related crimes, while 71.4% are not. Study limitations include sample size and scope, suggesting broader future research.

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Comparative Studies of Deleted Data Extraction Capabilities of various Mobile Forensic Tools

M.Sc. Dissertation Submitted At Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial Fulfillment of the Requirement for the Degree of

Master of Science
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By

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PREFACE

The extraction and recovery of deleted data from mobile devices play a crucial role in digital forensic investigations, enabling the retrieval of valuable evidence that may have been intentionally or accidentally deleted by users. This research work presents a comparative study focusing on the capabilities of various forensic tools in extracting deleted data from mobile devices. The study evaluates leading forensic software tools such as Cellebrite UFED, and XRY. It examines their effectiveness in recovering deleted data types including text messages, call logs, photos, videos, and application data from both iOS and Android devices. The study also explores the secure deletion methods, and device-specific limitations on the success rates of deleted data recovery. Empirical testing and reviews from forensic experts provide insights into the reliability, accuracy, and completeness of data extraction across various tools. This comparative study aims to enhance the understanding of forensic capabilities in recovering deleted data from mobile devices, assisting investigators and digital forensic professionals in making informed decisions regarding tool selection and optimizing their investigative processes.

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MICROSCOPIC STUDY OF SPUTUM TO DETERMINE THE PRESENCE OF ENVIRONMENTAL POLLUTANTS AMONG INDIVIDUALS CAUSING POTENTIAL RESPIRATORY ISSUES

M.Sc. Dissertation submitted at Guru Ghasidas Vishwavidyalaya, Bilaspur in Partial fulfillment of the requirement for the degree of

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In
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CERTIFICATE

This is to certify that the research work embodied in this thesis entitled, "**Microscopic study of sputum to determine the presence of environmental pollutants among individuals causing potential respiratory issues**," was carried out by **P. Vishnupriya**, M.Sc. IVth Semester, Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) for partial fulfillment of M.Sc. degree in Forensic Science to be awarded by Guru Ghasidas Vishwavidyalaya. This research work has been carried out under my supervision. It is further certified that the work is original and the dissertation or part thereof has not formed the basis for the award of any other degree or diploma.

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Assistant Professor

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(Project Supervisor)

Place: Bilaspur

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ABSTRACT

This study intends to determine how microscopic sputum analysis could potentially aid in identifying environmental toxins associated with breathing issues in order to develop better management approaches for lowering pollution's impact on the lungs. This project used a mixed method technique, which included both quantitative and qualitative research. The study included 50 participants aged 21 to 55 from various socioeconomic backgrounds. A structured questionnaire was created to collect various data from participants. The sputum specimens were examined under a bright field microscope. The findings indicated the presence of foreign particles within the material. Microscopic investigation of the material using Giemsa stain yielded correct results regarding the presence of external pollutants in the sample. It is clear that microscopic analysis is an effective technique for investigating the intricate interactions between environmental contaminants and respiratory hazards. Furthermore, microscopy provides a cost-effective and efficient method of assessing respiratory health in people exposed to pollutants, allowing for early identification and intervention to prevent the development of significant respiratory disorders. Thus, this study seeks to establish how microscopic sputum analysis could potentially aid in pinning down environmental toxins linked with breathing difficulties so as to come up with better management approaches towards reducing pollution impacts on lungs.

Keywords: sputum analysis, air pollution, respiratory risks.

Development of Submerged latent fingerprint on both porous and non-porous substrates using traditional method

Dissertation submitted to Guru Ghasidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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"ANALYSIS OF USER PERCEPTION TOWARDS THE VULNERABILITIES OF PRIVACY POLICY LEADING TO CYBERCRIME OF SOCIAL MEDIA PLATFORMS LIKE WHATSAPP AND TELEGRAM AMONG YOUTH"

A

M.Sc Dissertation

Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

in partial fulfillment of the requirement for the

degree of

Master of Science

In

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This is to certify that the research work embodied in these theses entitled, **"Analysis of users perception towards the vulnerabilities of privacy policy leading to cybercrime of Social media platforms like WhatsApp and Telegram among youth"** carried out by **Arya S.S**, M.Sc. IV Semester Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C. G) for the partial fulfillment of M.Sc. degree in Forensic Science to be awarded by Guru Ghasidas Vishwavidyalaya. This research work has been carried out under by supervision. It is further certified that the dissertation or part thereof has not formed the basis for the award of any other degree or diploma.

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ABSTRACT

The present study aims to classify user's perception of vulnerabilities of privacy policy of social media platforms like WhatsApp and Telegram that leads to cybercrime. A total of 100 respondents were taken ageing between 18-29, all the respondents are mainly pursuing graduation /post graduation who responded to a set of questionnaire through online mode. Convenient sampling method is done for the survey study with a slightly female majority. In addition to this for better understanding about recent trends of cyber crime cyber cell data of the year 2022 and 2023 are collected and filtered out the cybercrime concerning WhatsApp and Telegram. With increasing reliance on these platforms for communication, young users are becoming more aware of potential privacy issues, especially concerning data sharing and third-party access on WhatsApp platform and the potential risk of cyber crime on Telegram platform. This research explores the level of trust young users place in these platforms, the influence of media on their awareness, and their overall understanding of privacy policy implications. The findings reveal a complex relationship between perceived security, actual knowledge of privacy policies, and the potential for exploitation by cybercriminals, highlighting the need for enhanced user education and stricter privacy protections.

Key words: WhatsApp, Telegram, Privacy policy, Vulnerability, Cyber crime

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Signature verification using gimp software

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This is to certify that research work embodied in this thesis entitled, **SIGNATURE VERIFICATION USING GIMP SOFTWARE,** wa[illegible]d out by **SANJIVANI MES[illegible]HRAM,** M.Sc. IVth Semester, Department of [illegible] Science, Guru Ghasidas Vish[illegible]avidyalaya, Bilaspur (C.G.) for partial fulfillment of M.Sc. degree in Forensic Science to b[illegible]awarded by Guru Ghasidas Vishwavidyalaya. This research work has been carried out under my supervision. It is further certified that the work is original and the dissertation or part thereof has not formed the basis for the award of any other degree or diploma.

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ABSTRACT

The significance of signature verification in forensic science cannot be overstated. It serves as a cornerstone in the fight against forgery and fraud, ensuring the authenticity of critical documents. By leveraging both traditional and modern techniques, forensic experts can provide reliable evidence in legal disputes, financial investigations, and criminal cases.

Moreover, the integration of technology in signature verification has opened new avenues for research and development. Machine learning algorithms, digital forensics, and advanced imaging techniques continue to evolve, enhancing the accuracy and efficiency of verification processes. As these technologies mature, they hold the potential to revolutionize the field of forensic science, providing robust tools to combat forgery and uphold the integrity of legal and financial systems.

Signature verification is a vital aspect of forensic science, playing a crucial role in identifying and preventing forgery. Through a combination of manual expertise and automated systems, forensic experts can analyze and authenticate signatures with a high degree of accuracy. Despite the challenges posed by intra-personal variability and skillful forgeries, ongoing advancements in technology and forensic methodologies continue to improve the reliability of signature verification. As a cornerstone of forensic identification, signature verification remains indispensable in upholding the integrity of legal, financial, and personal documents, ensuring justice and security in society.

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Analyzing the Effectiveness of Various Software Tools for Detecting the Tampering of Document Images: A Comparative Study

M.Sc. Dissertation submitted at Guru Ghashidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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In

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By

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This is to certify that the thesis entitled **"ANALYZING THE EFFECTIVENESS OF VARIOUS SOFTWARE TOOLS FOR DETECTING THE TAMPERING OF DOCUMENT IMAGES: A COMPARATIVE STUDY"**, has been submitted by **MUNAGANTI NANDA KUMAR** (M.Sc. – IVth Semester) Department of Forensic Science, Guru Ghashidas Vishwavidyalaya, Bilaspur (C.G.) under the guidance of **Ms. Garima Bais** (Supervisor), towards partial fulfillment of the requirements for the award of Master's Degree in Forensic Science.

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"USES OF HAIR DYE POWDER AS A NON-CONVENTIONAL ALTERNATIVE IN THE PLACE OF COMMERCIAL LATENT FINGERPRINT POWDER ON DIFFERENT SURFACE"

A

M.Sc. Dissertation

submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

in partial fulfillment of the requirement for the

degree of

Master of Science

In

Forensic Science

By

Leesha Ranade

(En. No. : GGV/18/3127; Roll No. : 21046118)

Under the Guidance of

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This is to certify that the thesis entitled **"Uses of Hair Dye Powder As A Non-Conventional Alternative In The Place Of Commercial Latent Fingerprint Powder On Different Surface"** has been submitted by **MISS LEESHA RANADE** (MSc IV Semester) Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G) under the Supervision **of Dr. Ajay Amit** towards partial fulfilment of requirements for the award of Master's degree in Forensic Science.

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ABSTRACT

Fingerprints serve as an essential piece of evidence when it comes to identifying a person, and they are widely used in criminal investigations. In the current situation, fingerprints are quite significant. The majority will develop latent prints using the chemical and physical powder methods. We attempted to create the prints using unconventional herbal powders methods (Heena Natural dye) because conventional fingerprint black powder due to their hazardous nature, limited availability, and expensive cost. So it's simple to find these unconventional home substances. Natural dyes are extracted from natural sources like from plants, leaves, flower shoots seeds, invertebrates, or minerals etc. most common household natural dye is henna powder,its botanical name is *Lawsonia inermis*. It's a flowering and non-toxic plant. In this study a new easily available and less expensive powder for development of latent fingerprints thatis hair dye powder. It is easily available in the market and is comparatively very cheap from latent fingerprint powders to develop latent fingerprints. The hair dye powder has an also similar Particle size to fingerprint powder. In the presented work a comparative study has been performed by usinghair dyes powder which is compared with fingerprint powder on both porous and nonporoussurfaces. This resulted better enhancement in nonporous surface by using natural brown hair dye powder.

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"ANALYSIS OF URINE CREATININE OF DIABETIC PATIENTS UNDER DIFFERENT AGE GROUPS"

A

M.Sc. Dissertation

submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur

in partial fulfillment of the requirement for the

degree of

Master of Science

In

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By

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This is to certify that the thesis entitled, **"Analysis Of Urine Creatinine Of Diabetic Patients Under Different Age Groups"** has been submitted by **Ms. Ramsiya P S** (MSc IV Semester) Department of Forensic Science, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G) under the guidance of **Dr . Ajay Amit** towards partial fulfilment of requirements for the award of Master's degree in Forensic Science.

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IV

ABSTRACT

This project entitled to "Comparative study of urine creatinine level of different age groups of diabetic patients". The main objective of the study is to collect list of diabetic patients and creatinine values from five different laboratories and to take survey of those patients having sugar level (above 200). It is the process of identifying the sugar levels, education, living background (Municipal, corporation, panchayat) food habits, any renal diseases etc. Collect the list of urine creatinine values and sugar level above 200 (after fasting). Categorise the list of patients according to different age groups. Prepare a consent form and have to take consent from each individual. The details regarding to analyse the creatinine levels of human urine under different age groups like three categories (30-40, 40-50, 50-60, above 60) and to check whether if they have same sugar levels and creatinine levels. Then, compare the assessed data with rate of creatinine levels of urine samples and to take statistical analysis of collected data.

Key words: Creatinine, Diabetic, Renal diseases

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Analysis of handwriting effected by age .

M.Sc. Dissertation Submitted At Guru Ghasidas Vishwavidyalaya, Bilaspur
In Partial Fulfillment Of The Requirement For The Degree Of

Master of Science
In
Forensic Science

By

AISHWARIYA CHACHANE
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Under The Guidance Of

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RETROSPECTIVE STUD,Y OF MODOUS OPERANDI OF HOMICIDAL CASES IN JANJGIR-CHAMPA DISTRICT

A Dissertation submitted in partial fulfillment for the award of

the degree of Master of Science

In

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Submitted By:

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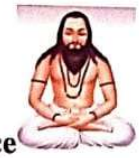

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Forwarding Certificate

This is to certify that **Miss Isha Chandra** of M.Sc. IV Semester, Department of Forensic Science has completed her dissertation entitled, **"The Retrospective Study Of Modus Operandi Of Homicidal Cases In Janjgir Champa District"** under the supervision of **Dr. Ajay Amit.** I wish her all the success.

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3

Abstract

Homicide is a pressing public health issue in India, with distinct regional patterns. Janjgir Champa district has seen a significant number of murders, The aim of this paper is to conduct a retrospective study on the modus operandi of homicidal cases in the Janjgir-Champa district of Chhattisgarh, India. By analyzing police records, and judicial documents from the past decade, this research seeks to uncover patterns in criminal behavior, methods of execution, and the socio-economic factors influencing homicide in the region. The study also explores the relationship between the type of homicide and the profiles of both perpetrators and victims. Through statistical analysis and case studies, the dissertation highlights key trends, such as the prevalence of certain weapons, the frequency of crimes committed in domestic settings, and the role of alcohol and substance abuse. This research aims to contribute to a better understanding of crime in semi-urban and rural settings, offering insights that may assist law enforcement in developing more effective strategies for prevention and investigation. The findings of this study are intended to provide a foundation for further research and policy-making, contributing to the broader field of criminology and public safety in India.

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EVALUATION OF CYTOKINE AS BIOMARKER AGAINST TIME AND DOSE DEPENDENT USE OF ZOLPIDEM

A Dissertation submitted in partial fulfilment for the award of the degree of Master of Science

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ABSTRACT

Drugs are classified based on their use and effects. They include prescribed medications, illicit substances, and herbal supplements. The Controlled Substances Act of 1970 categorizes drugs into five schedules based on their potential for abuse and medical utility. Schedule I drugs, such as heroin and LSD, have the highest abuse potential and no accepted medical use, whereas Schedule V drugs, including cough medicines with codeine, have the lowest potential for misuse. On-benzodiazepines, or "Z" drugs like Zolpidem, are a recent class of hypnotics used primarily for treating insomnia. These drugs act selectively on the α1 subunit of the GABAA receptor, offering benefits such as reduced risk of dependency compared to benzodiazepines. Zolpidem, a common non-benzodiazepine, is known for its rapid onset and short half-life. It enhances sleep quality with minimal side effects and is metabolized mainly by CYP3A4, with inactive metabolites primarily excreted via the kidneys. Cytokines are crucial proteins that regulate immune responses, inflammation, and cell communication. They include interleukins, interferon, tumor necrosis factors, transforming growth factors, colony-stimulating factors, and chemokines, each playing distinct roles in immune system function and cell signaling. Cytokine receptors, located on cell surfaces, mediate these effects by triggering specific intracellular responses. This study investigate the effects of Zolpidem administration in Swiss albino mice. Male and female mice (3-4 weeks old, 25-30 g) were grouped into five categories with five mice each: a control group and groups receiving 2, 4, 6, or 8 doses of Zolpidem (10 mg/kg intraperitoneally). Blood samples were collected from the tail for serum extraction, following a protocol involving clotting, centrifugation, and storage at -20°C or -80°C. Protein concentration in serum was measured using the Bradford assay, and ELISA was employed to analyze levels of IL-12 and IL-10. The Bradford assay involved preparing serial dilutions of BSA, mixing with Bradford reagent, and measuring absorbance at 620 nm. The ELISA protocols for IL-12 and IL-10 included coating plates with capture antibodies, incubating with assay diluents and standards, and detecting using substrate solutions and Avidin-HRP, with absorbance read at 450 nm and 570 nm. This methodology adheres to CPCSEA guidelines and ensures reliable assessment of Zolpidem impact on protein markers in mice.

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"Monitoring the Antioxidant status in population exposed to Environmental Toxicant"

M.Sc. Dissertation Submitted at Guru Ghashidas Vishwavidyalaya, Bilaspur
in partial fulfillment of the Requirement for the Degree of
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"Antioxidant Status in Pesticide Exposed Population of Bilaspur Region"

M.Sc. Dissertation submitted at Guru Ghashidas Vishwavidyalaya, Bilaspur in partial fulfillment of the requirement for the degree of

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