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(Autonomous), Ujire-574 240, Dakshina Kannada, Karnataka State

3.1.1. Additional information

Student publications



Sri Dharmasthala Manjunatheshwara College
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Sl No	Authors	Title	Journal	Year	Volume, Page number	ISSN/ DOI
1	Aishwarya N P, (M.Sc., Biotechnology)	Enumeration of Microbial Load in Used Mask	International Clinical and Medical Case Reports Journal	2023	Volume:2(17), pages:1-23	2832-5788 / https://doi.org/10.5281/zenodo.10207658
2	Ms. Swathi Nayak (M.Sc., Chemistry)	New voltammetric sensing technique for determination of paracetamol by l-phenylalanine based carbon paste electrode	Monatshefte für Chemie - Chemical Monthly	2024	Volume: 155, pages: 155-163	1434-4475 / https://doi.org/10.1007/s00706-024-03172-w .
3	Ms. Lavanya Shetty (M.Sc., Chemistry)	Electrochemical sensing of lactochrome in pharmaceutical sample using L-asparagine layered carbon based sensor	Journal of Food Measurement and Characterization	2024	Volume: 18, pages: 5004-5013	2193-4134 / https://doi.org/10.1007/s11694-024-02551-5 .
4	Ms. Vanishree A L (M.Sc., Chemistry)	Synthesis and biological evaluation of novel hybrid compounds bearing pyrazine and 1,2,4-triazole analogues as potent antitubercular agents	RSC Pharmaceutics	2024	Volume:1, pages:283-295	2976-8713 / https://doi.org/10.1039/d3pm00054k
5	Ms. Nova K (M.Sc., Psychology)	Impact of life style on psychological strain and motivation among student athletes	International Journal of Research and Analytical Reviews	2024	Volume: 11(2), pages: 428-435	2349-5138 /



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International Clinical and Medical Case Reports Journal
Research Article (ISSN: 2832-5788)



Enumeration of Microbial Load in Used Mask

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ABSTRACT

Masks provide a simple barrier to prevent respiratory droplets spreading in the air. Respiratory infections can be transmitted through droplets of different sizes: when the droplets particles are $>5-10\mu\text{m}$ in diameter referred to as respiratory droplets, and when the droplet particles are $<5\mu\text{m}$ in diameter called as droplet nuclei. Masks can also be made of polystyrene, polycarbonate, polyethylene, polyester, cotton, wool, silk, linen or rayon. It creates humidity, thereby stops droplet from turning into droplet nuclei. The study was based on the survey carried out in two domains, i) mask wearing profile, ii) and mask wearing related knowledge and behavior. From survey respondents random samples of different mask were collected for enumeration of microorganisms. Survey questionnaire revealed that 86% of participants prefer reuse of masks, 16% participants used the same mask more than 6 hours in a day, out of which 44% of participants used surgical masks, 78% fabric masks and 54% N95 respirators. Statistical analysis using Pearson's correlation between duration and the mean CFU/ml of fabric mask and surgical mask shows weak positive correlation ($r=0.33088$ and 0.02580 respectively) with duration and N95 shows strong negative correlation ($r=0.55882$), which means N95 respirators possess high filtration efficiency compared to others.

Keywords: Masks; Respiratory; infection

INTRODUCTION

The science around the use of masks by the general public to impede communicable disease transmission is advancing rapidly. The primary route of transmission of communicable diseases is likely via small respiratory droplets, and is known to be transmissible from pre-symptomatic and asymptomatic individuals^[1,2]. Reducing disease spread requires two things: first, limit contacts of infected individuals via physical distancing and second, reduce the transmission by wearing masks in public. Virus have been identified as the most common cause of diseases acquired within indoor environments, in particular those causing respiratory and gastrointestinal infection. Among the most common types causing respiratory infections are influenza viruses, rhinoviruses, coronaviruses, respiratory syncytial viruses and parainfluenza viruses; while those responsible for gastrointestinal infections include rotavirus, astrovirus, Norwalk-like viruses and other caliciviruses. Some of these infections are very widely spread but are not severe, such as common cold, while others are relatively more severe,

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New voltammetric sensing technique for determination of paracetamol by L-phenylalanine based carbon paste electrode

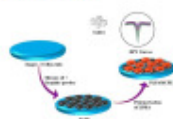
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Abstract

In this work, the carbon paste electrode was electro-polymerized using L-phenylalanine in 0.2 M phosphate buffer solution of pH 8.0. This L-phenylalanine modified carbon paste electrode (PLPAMCPE) was used for the study of paracetamol (PCL). The modified electrode was characterized by cyclic voltammetry, differential pulse voltammetry (DPV), scanning electron microscopy, and electrochemical impedance spectroscopy. The PLPAMCPE showed an excellent current response towards the oxidation of PCL. During the pH study ranging from 5.0 to 8.0 pH, pH 6.0 showed high peak current hence considered as the optimum pH. The scan rate study showed that the reaction was adsorption-controlled reaction. Further study i.e., by varying concentration of PCL, in the linear range of 1.2 μM to 12 μM , the current increases linearly. The limit of quantification of 18.2 μM and the limit of detection of 5.4 μM was obtained for the DPV method. The study also showed that the presence of different metal ions did not hinder the PCL analysis. The developed electrode showed good repeatability, stability, and reproducibility. Simultaneous study of PCL with dopamine shows good selectivity for PCL. This method is desirable due to its quickness, low cost, ease of handling, and its applicability to real sample.

Graphical abstract



Keywords Voltammetry · Paracetamol · L-Phenylalanine · Dopamine · Carbon paste electrode

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Introduction

A drug is a chemical substance which is having a known structure and which when taken by a living organism, produces a biological effect. Nowadays, drugs are used worldwide for every simple and simple biological problem. Paracetamol (PCL, acetaminophen, 4-acetamidophenol, *N*-acetyl-*p*-aminophenol) is an aromatic amide that is used as an analgesic and antipyretic drug [1, 2]. It is non-carcinogenic and used by patients who are sensitive to aspirin [3]. PCL is a drug that after acetylsalicylic acid which is used as a replacement for phenacetin and aspirin [4]. It is not an anti-inflammatory drug [2]. PCL is also

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Electrochemical sensing of lactochrome in pharmaceutical sample using L-asparagine layered carbon based sensor

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Abstract

The electrochemical behavior of Lactochrome (LC) was investigated using Poly (L-asparagine) modified carbon paste sensor (PAMCPS) via Differential Pulse Voltammetry (DPV) and Cyclic Voltammetry (CV). PAMCPS was fabricated from the bare carbon paste sensor (BCPS) and both the bare and the modified sensors were characterized via Scanning Electron Microscope (SEM), Cyclic Voltammetry (CV) and Electrochemical Impedance Spectroscopy (EIS) and the surface behavior and conductivity was studied. The modified sensor portrayed greater efficiency in the detection of LC in comparison with the BCPS. PAMCPS showed a noticeable electrocatalytic action for the electrochemical behavior of LC in a phosphate buffer solution (PBS) of pH 6.5 exhibiting a maximum oxidation peak current of 7.98 μ A. PAMCPS showed enhanced active surface area with an appreciable rate of electron transfer when compared to BCPS resulting in a low limit of detection (LOD) of 0.25 μ M in the linear range of 0.6 μ M – 1.0 μ M. Simultaneous analysis of LC and dopamine (DA) was made to verify the efficiency of the proposed sensor. The impact of common interferences like metal ions, inorganic ions and bio molecules were examined and no effect on the peak current of LC was observed. The newly modified sensor was employed for the detection of LC in pharmaceutical sample with a convincing recovery rate. The modified sensor portrayed outstanding stability, repeatability along with reproducibility proving it to be a stable and a well-constructed sensor for LC analysis.

Keywords Lactochrome · Cyclic voltammetry · Differential pulse voltammetry · L- asparagine · Carbon paste sensor

Introduction

Vitamins are organic compounds that people require in small quantities. Each vitamin has a different role in maintaining health and bodily functions. LC is a water soluble B-group vitamin which is naturally present in some edible products, added to some food products, and available

as a dietary supplement [1]. All forms of Vitamin B help the body in the conversion of carbohydrates into glucose which produces energy. The daily intake of LC for a normal person is about 1.10 mg to 1.10 mg/day. Pregnant women should have a daily intake of 1.4 mg and essential quantity for breastfeeding mothers is about 1.6 mg/day [2]. LC is naturally found in milk, meat, eggs, vegetables and fruits [3] and insufficient consumption of LC can lead to eye and skin disorders, anaemia, mouth ulcers and some hereditary disabilities during pregnancy. There were a variety of analytical techniques previously reported for the detection of LC such as High-Performance Liquid Chromatography (HPLC) [4], Reversed Phase Liquid Chromatography (RPLC) [5], Mass Spectrometry [6], Fluorescence Spectrometry [7], Chemiluminescence and Flow Injection Method [8], Capillary Zone Electrophoresis and Laser Induced Fluorescence [9]. However, these analytical techniques involve complicated procedures, require expensive instrumentation and are time-consuming as well. Several research works have

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Synthesis and biological evaluation of novel hybrid compounds bearing pyrazine and 1,2,4-triazole analogues as potent antitubercular agents†

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In this study, we elucidate the conceptualization and synthesis of hybrid compounds (**T1–T10**) amalgamating pyrazine and 1,2,4-triazole scaffolds. A total of eighteen compounds were screened *in vitro* for their efficacy against the *Mycobacterium tuberculosis* H37Rv strain via the MABA assay. The results revealed that eight compounds (**T4**, **T5**, **T6**, **T11**, **T14**, **T15**, **T16** and **T18**) manifested noteworthy activity against *Mtb*, with minimum inhibitory concentration (MIC) values of ≤ 21.25 μ M. Furthermore, we also examined these compounds for their antibacterial and antifungal properties against various strains. Compounds **T4**, **T9**, **T10**, **T16** and **T18** displayed significant antibacterial activity, while compounds **T12** and **T14** demonstrated significant antifungal activity. Subsequently, the most potent compounds were evaluated for their potential cytotoxicity to the Vero cell line via the MTT assay, revealing IC_{50} values surpassing 375 μ M, indicative of minimal cytotoxicity. Additionally, we conducted *in silico* studies on these target molecules to better understand their action mechanisms. The *in silico* investigations suggest that the target enzyme involved in the action of the compounds may be DprG1. However, further experimental validation is necessary to ascertain the target responsible for the whole cell activity. All the target compounds are docked within the active site of the DprG1 enzyme, demonstrating favorable binding interactions. Furthermore, we predicted the ADME properties, physicochemical characteristics, and drug-like qualities of the target compounds using *in silico* methods. We also performed DFT studies to examine their electronic properties. These findings collectively indicate that the active compounds hold substantial promise as prospective contenders for the development of novel antitubercular agents.

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Introduction

Tuberculosis (TB), an infectious disease caused by *Mycobacterium tuberculosis*, persists as a formidable global health challenge. With millions of new cases and deaths recorded annually, it endures as a predominant source of morbidity and mortality worldwide.¹ The advent of drug-resistant variants, notably multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB), has intensified the exigency for the formulation of groundbreaking and more efficacious antitubercular agents.² The current treatment regimens for TB are often lengthy, costly, and associated

with adverse side effects, underscoring the critical need for innovative therapies.³ Over the preceding decades, notable advancements have transpired in the exploration of novel antimicrobial agents characterized by heightened efficacy and diminished toxicity. In this context, hybrid compounds have emerged as a compelling strategy to address the growing threat of drug-resistant TB.^{4,5} Hybrid compounds are designed by combining distinct pharmacophores in a single molecule, leveraging the unique properties of each component to enhance biological activity. Pyrazine and 1,2,4-triazole analogues, well-known for their diverse pharmacological properties, have garnered substantial attention as potential building blocks for such hybrid compounds.^{5,6}

Pyrazinamide serves as a primary pharmacotherapeutic agent in the treatment of tuberculosis, commonly employed in conjunction with other anti-TB medications. Its robust anti-TB efficacy plays a pivotal role in abbreviating the duration of tuberculosis therapy.⁷ Various modified versions of pyrazinamide have been explored as effective antitubercular agents. For instance, Reddyrajula *et al.* investigated bioisosteric modifications of pyrazinamide derivatives, resulting in the develop-

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IMPACT OF LIFE STYLE ON PSYCHOLOGICAL STRAIN AND MOTIVATION AMONG STUDENT ATHLETES

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Abstract: Student-athletes face unique challenges in balancing academic demands with the rigors of athletic training. This can lead to psychological strain, impacting their motivation towards academics and overall lifestyle. This study aims to investigate the impact of life style on psychological strain and motivation towards academic among student athletes. The study was conducted on a sample of 60 student athletes consisting of 46 male and 34 females aged 18-25. Psychological Strain was assessed using Psychological Strain Questionnaire, Motivation was assessed using Student athletes' motivation towards academics and sports. The scale comprises 3 dimensions: career athletic motivation, academic motivation, student athletic motivation and lifestyle was assessed using Lifestyle questionnaire. Obtained data was analysed using Multivariate analysis of covariance (MANCOVA) test, Karl Pearsons coefficient of correlation and simple linear regression analysis with the help of SPSS version 22 and it was found that there is no significant difference in, psychological strain and motivation towards sports & academics among athletes across lifestyle and domicile. There is no significant relationship between student athletic motivation, psychological strain and lifestyle across domicile. There is a significant difference in, career athletic motivation across lifestyle. There is no significant prediction of lifestyle on motivation and psychological strain among athletes. This research has the potential to improve the lives of student athletes by guiding the establishment of more effective support systems and resources that promote academic performance and general wellbeing.

Index Terms - Psychological Strain, Motivation, Lifestyle, Student Athletes

1. INTRODUCTION

1.2 Psychological Strain among student athletes

Athlete mental health is gaining more recognition within the sports medicine field due to the potential for competition to either trigger, amplify, or reveal psychological issues among athletes, despite the numerous advantages of participating in sports. Although certain personality traits contribute to athletic achievement, they can also be linked to mental health disorders. Additionally, the culture within sports can influence both performance and psychological well-being by shaping these pre-existing personality traits and mental health conditions. Athletes frequently undergo significant physical stresses, but the psychological strain they face is not solely due to physical injuries. It also arises from the intense pressures of competition and the profound sense of loss upon retiring from the sport they are passionate about. Post-retirement, athletes may grapple with feelings of identity crisis and a loss of purpose, often compounded by new financial challenges and difficulties transitioning to a new career. Accustomed to being part of a team, they may struggle with feelings of isolation. After years of accolades and adulation, athletes confront an uncertain and unfamiliar path forward. (Firestone 2012). Motivation can be influenced by various internal and external factors, such as one's personality, values, interests, abilities, goals, expectations, feedback, rewards, and environment. There are lot of findings show the relationship between motivation on athletes towards academics and it reported as female showing higher levels of motivation than males in academics, athletic and career. Also, sports participants can have positive effects on the academic effort, persistence, and motivation; student athletes with a strong academic identification reported high academic motivation regardless of the level of obsessive passion for sport. They enhance their time management skills, increasing their motivation to complete their degree.