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**2020-21**





# Structural and Biological Investigation of Green Synthesized Silver and Zinc Oxide Nanoparticles

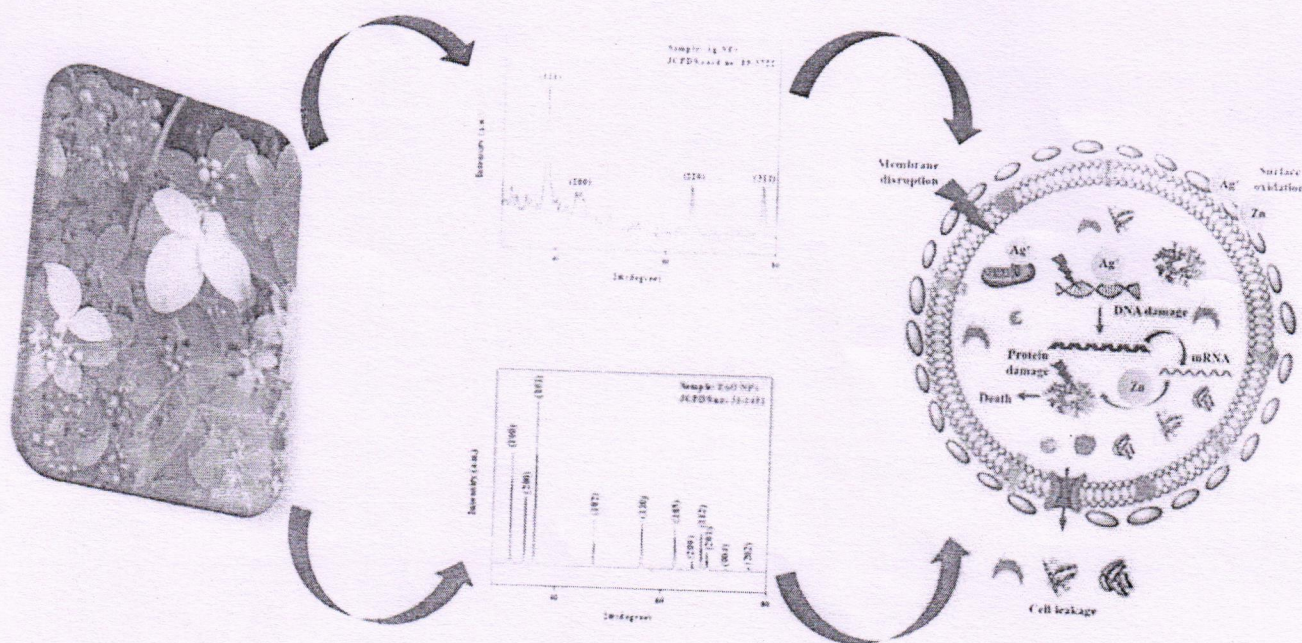
S. P. Vinay<sup>1</sup> · N. Chandrasekhar<sup>1</sup>

Received: 14 June 2020 / Accepted: 24 August 2020  
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## Abstract

Green synthesis nanoparticles are considered as an alternative effective resource instead of chemical engineered nanoparticles. Using seed extract for green synthesis, essential for the reduction and oxidation process of the metals. *Rauvolfia tetraphylla* (L.) seed extract was used to synthesize dark brown colored silver (Ag) and white colored zinc oxide (ZnO) nanoparticles. Synthesized nanoparticles were characterized by different spectroscopic analysis (XRD, XPS, and SEM with EDAX). Characterization results confirmed the particle morphology, and structure. The synthesized Ag and ZnO NPs were analyzed against two gram positive and three gram negative bacteria. Increased levels of green synthesized Ag and ZnO NPs showed increased zone of inhibition than compared with ciprofloxacin (positive control). Our study proved that the green synthesized Ag and ZnO NPs showed similar unique physical and chemical properties with composite/doped metal oxide nanoparticles but less toxic while their discharge into the ecosystem.

## Graphic Abstract



**Keywords** Silver · Zinc oxide · Green synthesis · SEM · EDAX · Antibacterial studies

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Published online: 03 September 2020

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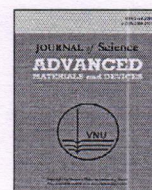
Springer





Contents lists available at ScienceDirect

Journal of Science: Advanced Materials and Devices

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Original Article

# In-vitro antibacterial, antioxidant and cytotoxic potential of gold nanoparticles synthesized using novel *Elaeocarpus ganitrus* seeds extract



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## ARTICLE INFO

## Article history:

Received 1 April 2020

Received in revised form

5 September 2020

Accepted 8 September 2020

Available online 22 September 2020

## Keywords:

*Elaeocarpus ganitrus*

Hydrothermal synthesis

Gold nanoparticles

Prostate cancer

Cancer nanomedicine

## ABSTRACT

In the present study, we have followed the hydrothermal path for the synthesis of gold nanoparticles (Au NPs) from the biomaterial *Elaeocarpus ganitrus* seeds extract, which is a rapid, eco-friendly, non-chemical way. The prepared NPs were thoroughly analysed by powder x-ray diffraction and high resolution transmission electron microscopy studies and were also tested for anticancer studies. Besides, the antioxidant, antibacterial and anticancer properties of Au NPs were studied. *In vitro* studies revealed the dose-dependent cytotoxic effect of Au NPs. The prepared nanoparticles showed good cytotoxic impact against a prostate cancer (PC-3) cells line. The evidences of the current study lead to the synthesis of novel and cost-effective drugs from *Elaeocarpus ganitrus* seeds extract by using the bio approach.

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## 1. Introduction

The research on nanotechnology is an auspicious area for cancerous therapy and diagnostics in the biomedical approach. Cancer is a dangerous and threatening disease in the world and does increases the morbidity and mortality of human life. Malignancy treatment incorporates chemotherapy, radiotherapy and medical procedure and is an incredibly factor in its introduction, improvement and result, since now and again these treatments fizzle or cause the reoccurrence of tumor cells [1]. Likewise, greater parts of the disease drugs kill both harmful and ordinary cells in an irregular way [2]. Many degenerative diseases of aging such as brain malfunction, cataracts, cardiovascular diseases and cancer, are generated by the over production of free radicals inside the body which is caused by oxidative stress. The free radicals and receptive oxygen species are to be deactivated before they harm cells. Further, by the unexpected increment in the bacterial obstruction against numerous anti-toxins [3], researchers have

looked into techniques to grow new successful antimicrobial operators that beat protections of these microorganisms and that are likewise cost effective [4]. Subsequently, selective medications, which are less lethal, eco-accommodating and cheap, should be investigated. The present work deals with Au NPs that exhibit effective cytotoxicity against prostate cancer (PC-3) cells. The level of cell was essentially diminished by expanding the concentration from 20 to 100 µg/mL.

A tree, called *Elaeocarpus ganitrus*, is an enormous evergreen expansively leaved tree whose seeds are customarily utilized for petition globules in Hinduism. The seeds are called Rudraksha, or Rudraksh [5]. *E. ganitrus* seeds are usually found in the foothills of icy Himalayan Mountains in South-East Asia, the Australian part of New Guinea, Indonesia, Nepal, Hawaii, and Guam. *E. ganitrus* trees are rarely found in South India [6]. Even if found, they usually do not yield *E. ganitrus* seeds. However, two *E. ganitrus* trees in Udupi Kakkunje Garodi yield *E. ganitrus* seeds during the whole year. The seeds are secured by an external husk of blue shading when they are completely ready, and, therefore, are otherwise called blueberry dots [7,8].

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# Enhanced security-aware technique and ontology data access control in cloud computing

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## Summary

Nowadays, security and data access control are some of the major concerns in the cloud storage unit, especially in the medical field. Therefore, a security-aware mechanism and ontology-based data access control (SA-ODAC) has been developed to improve security and access control in cloud computing. The model proposed in this research work is based on two operational methods, namely, secure awareness technique (SAT) and ontology-based data access control (ODAC), to improve security and data access control in cloud computing. The SAT technique is developed to provide security for medical data in cloud computing, based on encryption, splitting and adding files, and decryption. The ODAC ontology is launched to control unauthorized persons accessing data from storage and create owner and administrator rules to allow access to data and is proposed to improve security and restrict access to data. To manage the key of the SAT technique, the secret sharing scheme is introduced in the proposed framework. The implementation of the algorithm is performed by MATLAB, and its performance is verified in terms of delay, encryption time, decryption time, and ontology processing time and is compared with role-based access control (RBAC), context-aware RBAC and context-aware task RBAC, and security analysis of advanced encryption standard and data encryption standard. Ultimately, the proposed data access control and security scheme in SA-ODAC have achieved better performance and outperform the conventional technique.

## KEYWORDS

advanced encryption standard, cloud computing, data encryption standard and security-aware ontology access control, ontology data access control

## 1 | INTRODUCTION

Cloud computing technology is an advanced paradigm ID network, and its fast growth demands on numerous applications and services in the networking field.<sup>1</sup> The advantage of this technology is that it can be accessed from any location in the work at any time. Infrastructure as a service model elaborates the cloud model to provide services such as online storage and data servers.<sup>2</sup> Involvement of cloud computing in the business sector promotes the business to make economic benefits and market demands of the products.<sup>3</sup> Ontology is another set of paradigm in cloud computing that has the specified features such as a representation of knowledge as a form of formal and structured. It is an optimal tool that provides potential logical interfaces that are purely based on a well distinct set of data and knowledge.<sup>4</sup> The tool



# A STUDY ON DIGITAL MARKETING IMPACT OF CONSUMER BUYING BEHAVIOR AT DECATHLON, BANGLORE

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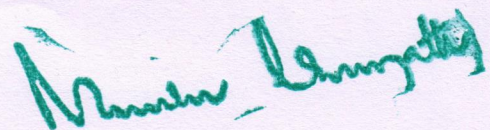
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## ABSTRACT

The purchasing behavior of buyer is changing at a quicker rate in the clients situated market condition. Purchases conduct contrast when it's gone to the items, value , place , advancements, highlight, bundling, purchasing conduct, status , age , age of the client and so forth not with standing. Youth is the most confounding gathering to compare with the changing indications of the current day youth influences the purchasing behavior since their fore the most part follows the beat by design and the taste as indicated by the



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**ISSN : 2320-2882**



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RESEARCH THOUGHTS (IJCRT)**

An International Open Access, Peer-reviewed, Refereed Journal

## **A Study “ON EMPLOYEE ENGAGEMENT ACTIVITIES AT H & R JOHNSON (INDIA) A DIVISION OF PRISM CEMENTS”**

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### **Abstract:**

The study is a resourcefulness which bridges the gap between the knowledge and its application through a series of interventions which enables the learners to obtain awareness and experience to the business. The program extends for a period of 10 weeks which provides a good opportunity to experience the practicality in terms of subjects studied. It also gives practical exposures.

### **INTRODUCTION**

H & R Johnson (India) a division of prism cement limited manufacturers of exclusive brand of white body wall and floor tiles and fully vitrified tiles, is the trailblazer in the tile industry with a dominant presence all over the globe for over 100 year the brand has gained the trust of over four generations. H & R Johnson (India) a private limited company was established in 195 which currently owns and operates tile manufacturing plants at Pen (Maharashtra), Kunial (Karnataka), Karako

*Manish Kumar*

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# “A STUDY ON EFFECTIVENESS OF DIGITAL MARKETING AT MYSTICGOLDZ Pvt Ltd ”.

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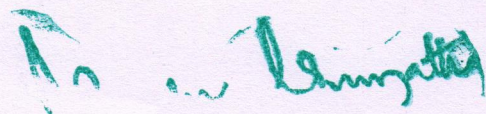
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## INTRODUCTION

Marketing is about expanding an organization's target markets, building long-term relationships with customers, ensuring target profitability and maximizing competitive advantage. Although marketing is a well-known topic in industry and service sectors, it is still misunderstood in the construction business. This is reflected in the lack of scientific research and literature on the subject. In the construction industry, the



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# Study on Customer Satisfaction Towards The Hindu Newspaper

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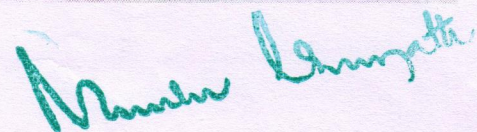
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## **Abstract**

Customer Satisfaction a term frequently used in marketing is a measure of how products and services supplied by a company meet or surpass customer expectation. So, the every manufacturer has must needed to satisfy their customers. The manufactures cannot easily to satisfying their customers. So, the manufacturer must understand of the customer needs, they need have fulfilled the customer, so the researcher has chosen the interesting topic for measuring the customer satisfaction towards newspapers.

Reading Newspapers and journals has become a part and parcel of everydaylife of human beings. There are people who cannot begin this day without a newspaper. The reading habit helps people to make use of the leisure time usefully. Because of the interest shown in the reading of newspaper and magazines, the journals and newspapers and getting multiplied every day.

Normally, the Hindu Newspaper has ranked one of the top Newspapers in India and they are maintaining the good publicity in the midst of the public. But it need some support from customer for maintaining the good marketing in future. So the researcher thinks these research will be used to suggest the firm for the upgrading



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# A STUDY ON SOCIAL MEDIA MARKETING

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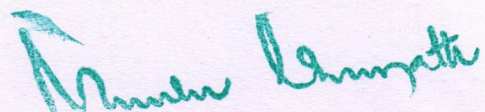
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## ABSTRACT

The latest developments in the field of marketing, communication and information are leading to new innovative business and consumption models, in which users are gaining a leading role and are increasingly important. Social media is rapidly emerging as the next big frontier for customer engagement and interactions. There are millions of customer interactions taking place every day on social media sites such as facebook, Twitter, Youtube, etc. as well as a vast number of customer support forums and online communities. Social media emerged and continues to be as a cultural phenomenon. It is also quickly becoming a business phenomenon. Increasingly, current and prospective customers are using social media to communicate about the products and services they buy or intend to buy. Leading enterprises have recognized the importance of tapping such communications. Social media are new innovative tools that collect millions of users all around the globe and they offer several possibilities and opportunities to companies that want to develop communication and marketing strategies while gaining competitive advantage on their competitors. This paper presents the definition of social media marketing with its strategies; it also attempts to identify the challenge and opportunities facing by social media sector and find out the current and future trend in the area of social media marketing.



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# Study on investors Perception towards mutual funds

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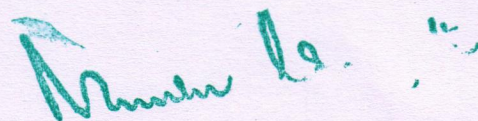
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## **Abstract**

The mutual fund sectors are one of the fastest growing sectors in Indian Economy and have awesome potential for sustained future growth. Mutual funds make saving and investing simple, accessible, and affordable. The advantages of mutual funds include professional management, diversification, variety, liquidity, affordability, convenience, and ease of recordkeeping—as well as strict government regulation and full disclosure. Financial markets are becoming more extensive with wide-ranging financial products trying innovations in designing mutual funds portfolio but these changes need unification in correspondence with investor's expectations. Thus, it has become imperative to study mutual funds from a different angle, which is to focus on investor's perception and expectations. This research paper focused attention on number of factors that highlights



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# A study on comparative analysis of Yamaha Fascino with TVS ZEST

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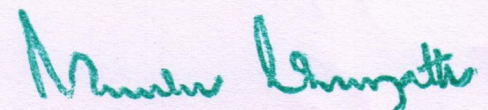
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## INTRODUCTION ABOUT COMPARITIVE ANALYSIS:

Comparative analysis is one of the Method to analysis the performance of the organization by comparing the product or services or something. In this project study I took Yamaha fascino as my project product to comparing with TVS ZEST in Tumakuru city. This method will clearly explain about the product performance.

Focused study/research, basically put, is the gesture for analyzing two or additional things with a see to finding something around particular case alternately constantly on of the



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# A STUDY ON WORKING CAPITAL MANAGEMENT AND CONTROL AT MYSTICGOLDZ PRIVATE LIMITED

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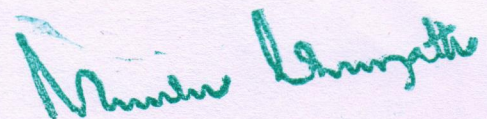
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## ABSTRACT

*Working capital management* is a very essential job which all departments in an enterprise take a lot of time and effort. Furthermore, precise forecasts of working capital requirements are essential to the effective running and administration of a company. In order to accomplish this, it is necessary to manage existing assets and obligations.

All key aspects related to working capital management at MysticGoldz, including the management of various working capital components, such as stock, receivables, payable and cash, have been tackled throughout the research. This report includes a range of financial assessments and other statistics about MysticGoldz's performance over the last two years. It involves analysing their financial resources such as financing sources and how they use their resources. A variety of ratios are calculated, each revealing the most significant financial indicators of the company. We were able to establish the operations cycle of the business, comparing the raw materials, work in progress, finished output and receivable turnover to industry standards (and to assess how far MysticGoldz can fulfil those requirements).



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Science and Engineering Journal

ISSN: 0103-944X

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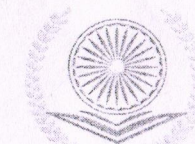
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Published a paper entitled

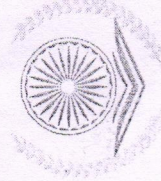
**A Study on Brand Preference and Comparative Analysis of Different Brands  
of Ready to Eat Products With Reference to Mtr Food Ltd**

*Jose Roberto Camacho*

**Jose Roberto Camacho**

Editor - in - Chief

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# A Study On Brand Awareness With Reference To Maruti Suzuki Ciaz In Tumkur

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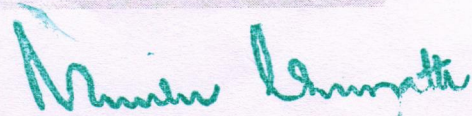
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## INTRODUCTION OF THE STUDY

According to Aakar, "Brand awareness is a process from where the brand is just known to a level when the consumers have put the brand on a higher rank, the brand has become the top of mind ". Every firm has to adopt strategies to keep its brand in consumer's memory. It is related to



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## **A Study On Performance Evaluation of Selected Equity Diversified Mutual Fund Schemes in India**

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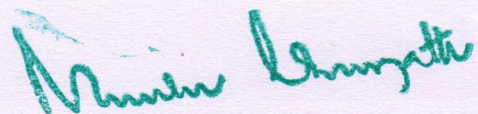
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### **INTRODUCTION**

The Mutual fund industry is among the most successful recent financial innovations. A Mutual fund signifies vehicle for combined investment. When you partake in system of mutual fund you become part owner of the investment held under that scheme. A mutual fund will buying & selling securities one the basis of deliveries. It can't make short sales or engage in carry forward transaction. The mutual fund holder unit acquires a relational portion of the



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## A Study On Customer Satisfaction towards Bharat Benz Products”

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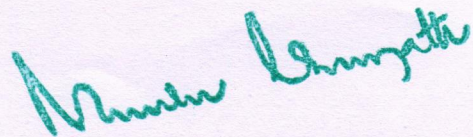
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### Introduction

Customer satisfaction, a term frequently used in marketing, is a measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals." It is seen as a key performance indicator within business and is often part of a Balanced Scorecard. In a competitive marketplace where businesses compete for customers, customer satisfaction is seen as a key differentiator and increasingly has become a key element of business strategy.

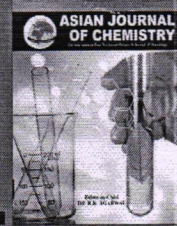
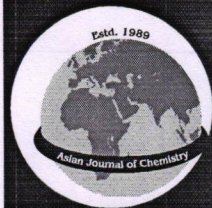
"Within organizations, customer satisfaction ratings can have powerful effects. They

focus employees on the importance of fulfilling customers' expectations. Furthermore



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## GC-FID Technique for the Quantitative Evaluation of Multiple Residual Organic Solvent Impurities in Fosaprepitant Dimeglumine Drug

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Received: 21 April 2021;

Accepted: 25 May 2021;

Published online: 26 June 2021;

AJC-20408

A proficient and distinct methodology is established for the quantification of multiple residual organic solvent impurities in fosaprepitant dimeglumine drug substance by gas chromatography with headspace sampler (HS-GC) and flame ionization detector (FID). Chromatographic separation was executed on a fused silica dimethylpolysiloxane capillary column (HP-1; USP G2 phase having dimensions, 60 m length × 0.53 mm dia & 5 μm film thickness). The validation of optimized method was carried out in accordance with relevant validation principles. The authenticated procedure was noticed to be specific, precise, linear, accurate, robust and rugged with concentration ranging from lowest quantification level (LQL) to 200% specification level for each residual organic solvent impurities (methanol, ethanol, acetone, isopropyl alcohol, dichloromethane, methyl *tert*-butyl ether, ethyl acetate, tetrahydrofuran, cyclohexane and toluene). The established technique was productively useful to determine the residual solvent impurities in fosaprepitant dimeglumine.

**Keywords:** Fosaprepitant dimeglumine, Residual solvent impurities, Gas chromatography.

### INTRODUCTION

Fosaprepitant dimeglumine (Fig. 1) is an antiemetic drug for intravenous operations. It is distributed as a sterile, lyophilized powder in a sealed vial under the brand name 'EMEND' for injection by Merck and Co., Inc. When fosaprepitant for injection is administered intravenously this quickly converted to aprepitant in the human body. Aprepitant is antagonist (selective) of mankind substance P/neurokinin-1 (NK<sub>1</sub>) receptors. Fosaprepitant for injection, blended with various antiemetic agents, is identified in adults for the control of acute plus delayed nausea as well as vomiting concerned with initial/repetitive courses of high emetogenic cancer chemotherapy (HEC) associated with high-dose cisplatin and for avoiding delayed nausea plus vomiting related with initial and repeat courses of moderate emetogenic cancerous chemotherapy (MEC) [1,2].

In the synthesis, aprepitant is used as the initial raw material, which reacts with tetrabenzyl pyrophosphate in anhydrous tetrahydrofuran with sodium hexamethyldisilazide as a base

to obtain dibenzyl ester intermediate. A benzyl group of dibenzyl ester is removed in anhydrous methanol to generate a single-benzyl ester intermediate, which is hydrogenated to remove a remaining benzyl group and salfified with meglumine to obtain fosaprepitant dimeglumine. Fosaprepitant dimeglumine is highly hygroscopic and strenuous for purification. Hence, multiple organic solvents belong to ICH Class II and Class III (methanol, ethanol, acetone, isopropyl alcohol, dichloromethane, methyl *tert*-butyl ether, ethyl acetate, tetrahydrofuran, cyclohexane and toluene) have been used in the purification process of the drug substance [3,4].

These processes related to organic solvents which cannot be removed and controlled completely during the synthesis. Thus, monitoring of these residual organic solvent impurities in the drug substance is mandatory according to regulatory requirements to ensure human safety [5-7]. From the literature survey, it reveals thus far, there is no specific methodology reported to determine these residual organic solvent impurities in fosaprepitant dimeglumine drug substance. Generally, in

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Article

# A Novel Liquid Chromatographic Method for the Quantitative Determination of Degradation Products in Remdesivir Injectable Drug product

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Received 14 December 2020; Editorial Decision 30 March 2021

## Abstract

An effectual and stability signifying technique has been validated for the quantitative verification of degradation products in Remdesivir Injectable pharmaceutical products by employing high-performance liquid chromatography with ultraviolet detector. The process was optimized by using an octyldecylsilane chemically bonded column (Kromasil KR100-5 C18; USP L1 phase) with dimensions; 250 mm length × 4.5 mm inner diameter and 5-µm particle size. The method was validated as per International Conference on Harmonization and other current regulatory guidelines for analytical method validation. The anticipated process was found to be robust, accurate, specific, linear, precise, stable and rugged in the concentration ranging from quantification level to 200% of the specification level of specified and unknown degradation impurities. The technique was effectively applied to analyze degradation products in Remdesivir Injectable drug products.

## Introduction

Remdesivir is a white to an off-white crystalline powder, having molecular formula and weight C<sub>27</sub>H<sub>35</sub>N<sub>6</sub>O<sub>8</sub>P and 602.58 g/mol correspondingly (Figure 1).

Remdesivir is an adenosine triphosphate analog by impending antiviral activity versus a diversity of RNA virus/s. Remdesivir is a carboxylic ester ensuing from the condensation of the carboxy group of N-[(S)-{[(2R,3S,4R,5R)-5-(4-aminopyrrolo [2,1-f] [1,2,4] triazin-7-yl)-5-cyano-3,4-dihydroxytetrahydrofuran-2-yl]methoxy} (phenoxy)phosphoryl]-L-alanine with the hydroxy group of 2-ethylbutan-1-ol. Upon administration, Remdesivir, being a prodrug, is metabolized into its active form GS-441524 (1). Remdesivir is an antiviral drug discovered by Gilead Sciences in the brand name Veklury to combat the West African Ebola viral pandemic in 2010. Also, it exhibits activity against the hemorrhagic fever Marburg virus (MARV), the Middle East respiratory syndrome-related coronavirus

(MERS-CoV). Remdesivir is also being examined as a potential treatment to (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]) for COVID-19 (2–8). Remdesivir was granted a Food and Drug Administration disaster utility authorization on 1 May 2020 (9). The literature survey reveals that thus far Avataneo and companions examined the analysis of Remdesivir (its metabolite GS-441524) by employing the UHPLC–MS–MS technique (10). Hence, there is a noteworthy requirement for a specific methodology for the quantitative estimation of Remdesivir and its degradation products in Remdesivir Injectable products.

Some of the articles referred in which the authors worked on complex degradation products of different antiviral drug products using liquid chromatographic techniques (11–13).

This paper outlines a typical permanence demonstrating reverse phase high-performance liquid chromatography (RP-HPLC) technique to quantify Remdesivir degradation products in Remdesivir Injectable drug products. The proposed technique was validated in

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## A SIMPLE GAS CHROMATOGRAPHY METHOD FOR THE QUANTITATIVE DETERMINATION OF RELATED IMPURITY (1,4-BUTANEDIOL) IN BUSULFAN DRUG

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### ABSTRACT

A competent and significant technique has been established for the quantification of related impurity (1,4- Butanediol) in Busulfan Drug by employing Gas Chromatography furnished through Flame Ionization Detector (FID), and auto liquid sampler. Chromatographic separation accomplished on a capillary column with specifications; DB-1 phase having 30 m length, 0.53 mm i.d. and 2.65  $\mu$ m thickness of the film. The methodology was validated following relevant regulatory guidances. The technique proposed was noticed to be accurate, specific, robust, stable, linear, precise, and rugged with concentration ranging from Lowest Limit of Quantitation (LLQ) level to 200% of the specification limit for 1,4-Butanediol.

**Keywords:** Busulfan, 1,4-Butanediol, Related Impurity, Gas Chromatography, Capillary Column.

RASĀYAN J. Chem., Vol. 14, No.2, 2021

### INTRODUCTION

Busulfan is formed by the reaction of Butanediol and Methane sulfonyl chloride in the presence of a suitable alkalizing agent and a solvent. It is a crystalline white powder, having  $\text{CH}_3\text{SO}_2\text{O}(\text{CH}_2)_4\text{OSO}_2\text{CH}_3$  as molecular formula and MW of 246. Busulfan is used for the medical treatments of chronic myeloid leukemia as well as a potent alkylating agent.<sup>1</sup> Presently, Busulfan drug formulations are available in the market as 'Myleran', a white film-coated oral tablet having 2mg of Busulfan, and 'Busulfex' an intravenous injectable solution having 6mg/mL of Busulfan in 10 mL single vial.<sup>2</sup> To meet the pharmaceutical regulatory body's guidelines, it is obligatory to monitor 1,4-Butanediol impurity in Busulfan products.<sup>3-4</sup> 1,4-Butanediol is a related compound of Busulfan and is considered as one of the hydrolytic degradants as per the available literature.<sup>5</sup> Literature survey reveals thus far, there is no specific method for the quantification of 1,4-Butanediol in Busulfan drug products and it is not available in any of the pharmacopoeia official monographs.<sup>6-11</sup>

Hence, the easiest and specific technique by Gas chromatography with Flame Ionization Detector to determine 1,4-Butanediol in Busulfan drug was developed and validated.

### EXPERIMENTAL

#### Chemicals and Standards

GC grade 1,4 Butanediol, Acetonitrile and Acetone with purity of almost 99.9% were procured from Merck.

#### Instrumentation and Chromatographic Conditions

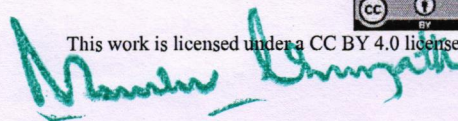
The analysis was executed by adopting Gas Chromatography fitted with a Flame Ionization Detector (Agilent make 7890A). Introduction of Samples via Split less/Split injection port and detected by FID. For

Rasayan J. Chem., 14(2), 914-919(2021)

<http://dx.doi.org/10.31788/RJC.2021.1426267>



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