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DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF TAMSULOSIN HCL AND TOLTERODINE TARTRATE IN COMBINED PHARMACEUTICAL DOSAGE FORMS

Kiranmai M.*, Anusha K., Rubina Kauser and Prathyusha J.

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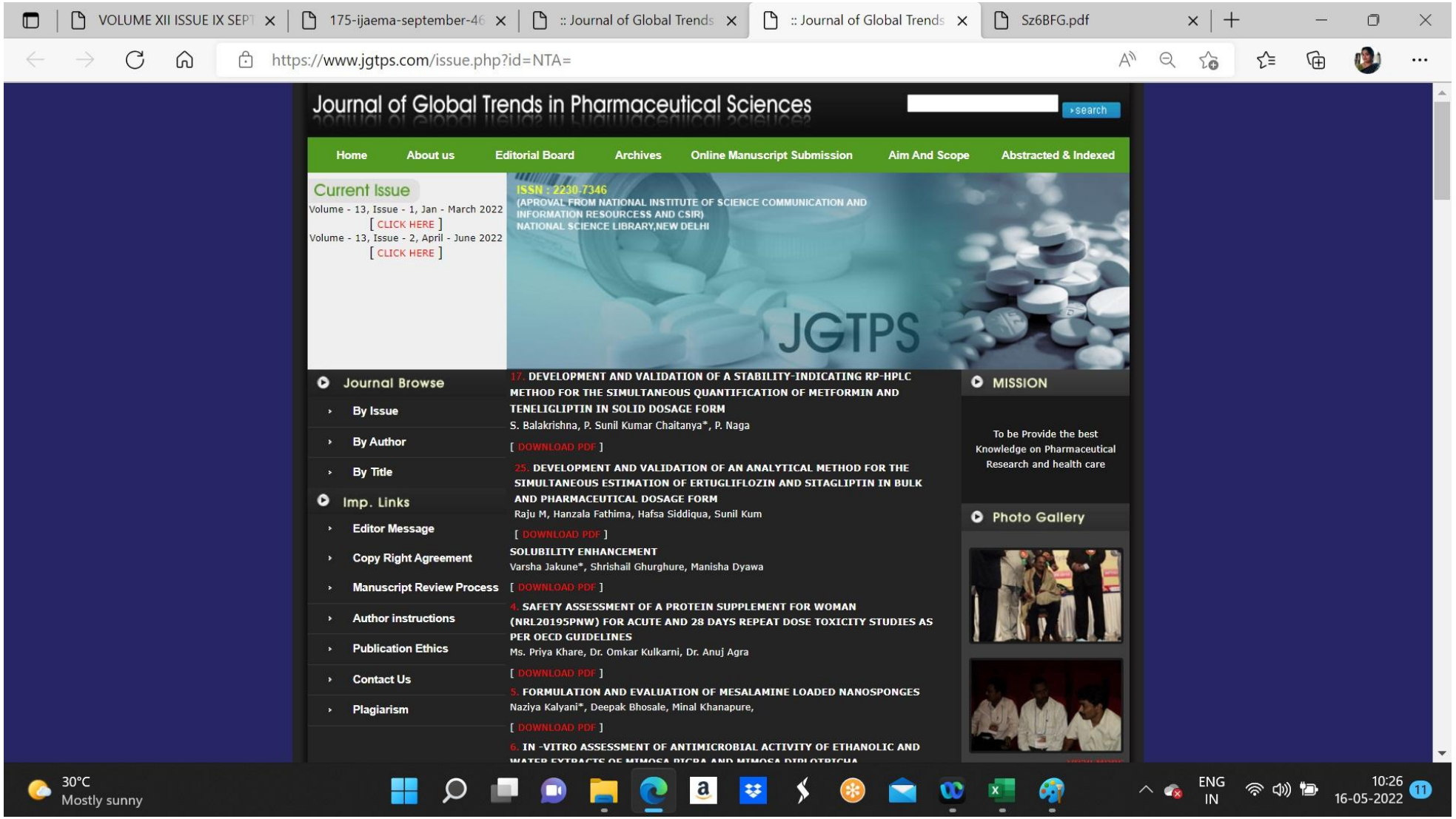


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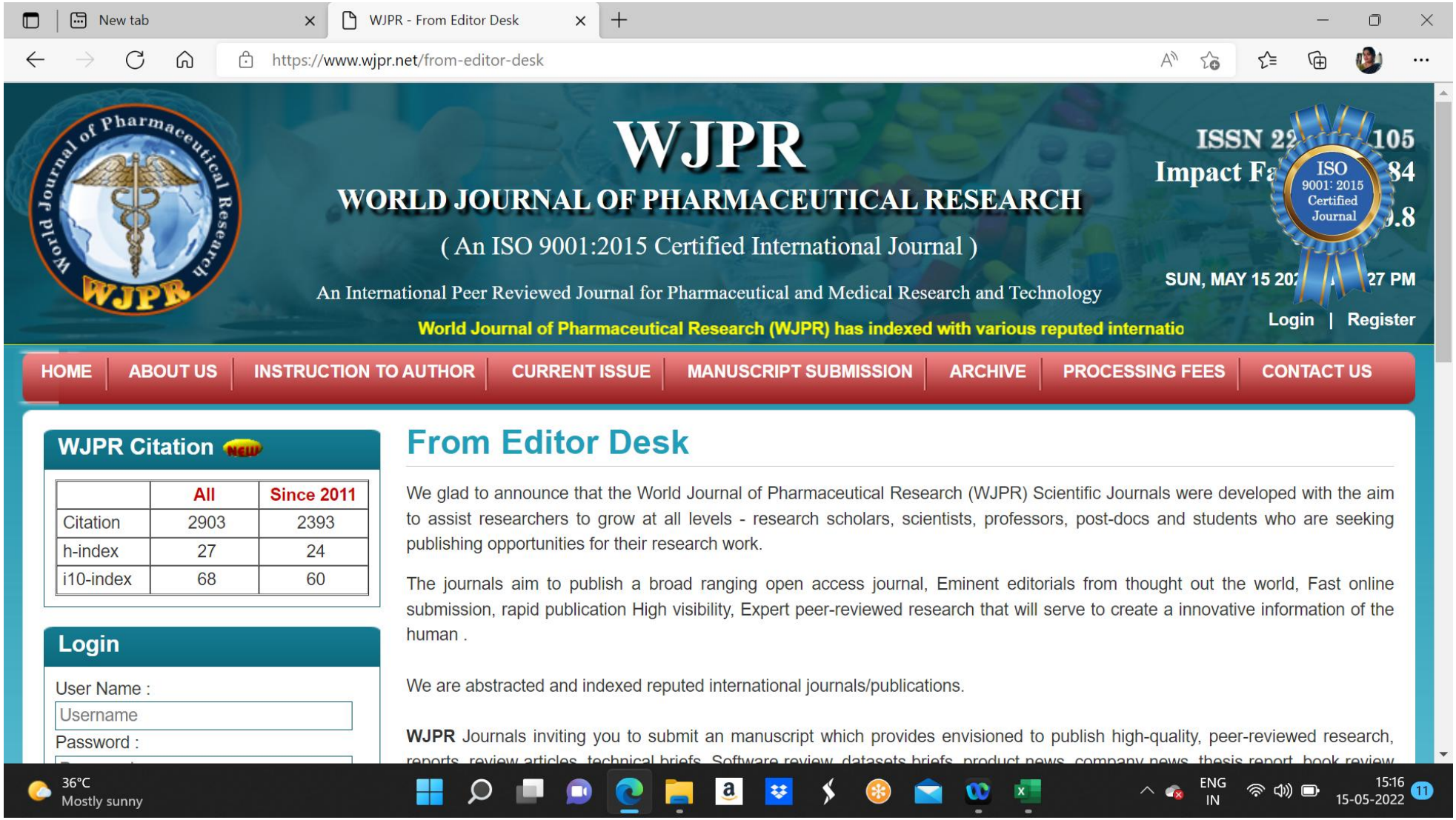


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# DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF TAMSULOSIN HCL AND TOLTERODINE TARTRATE IN COMBINED PHARMACEUTICAL DOSAGE FORMS

**Kiranmai M.[1*], Anusha K.[2], Rubina Kauser[3] and Prathyusha J.[4]**

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Department of Pharmaceutical Chemistry, St. Pauls College of Pharmacy, Turka Yamjal, Hyderabad, Telangana – 501510.

**ABSTRACT**

A simple and selective RP-HPLC method was developed for the simultaneous determination of Tamsulosin hydrochloride and Tolterodine tartrate tablet dosage forms. Chromatographic separation was achieved on an Inertsil ODS C18 column (4.6 mm × 250 mm, 5 µm) using mobile phase consisting of a mixture of phosphate buffer ($KH_2PO_4$) and Acetonitrile ($CH_3CN$) in the ratio 50:50 v/v, with detection of 214 nm. Retention time was estimated to be 2.81 min and 4.28 min for Tamsulosin Hydrochloride & Tolterodine tartrate respectively. Accuracy was found to be 100.46% and 99.6% for Tamsulosin HCL and Tolterodine tartrate respectively. The linearity was observed over a range of 0.25-0.75µg/ml for Tamsulosin HCl and 2.5-7.5µg/ml for Tolterodine tartrate. In precision relative standard deviation values for both was found to be less than 2.0%. The designed method was found to be simple, specific, accurate, linear and precise. It can be used for regular analysis for the simultaneous estimation of Tamsulosin hydrochloride and Tolterodine tartrate tablet dosage forms.

**KEYWORDS:** Tamsulosin HCl, Tolterodine tartrate, RP-HPLC, Method development, Validation.





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GREEN NANOTECHNOLOGY AND NANOPARTICLES: AN ECO-FRIENDLY APPROACH

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**GREEN NANOTECHNOLOGY AND NANOPARTICLES: AN ECO-FRIENDLY APPROACH**

Hema Kumari and Kiranmai Mandava *

Department of Pharmaceutical Chemistry, St Pauls College of Pharmacy, RR (Dist.), Turkayamjal , Telangana, India.

**ABSTRACT:** The field of nanotechnology is one of the notable active analysis areas in modern material science. Recent advances in Nanoscience and nanotechnology have led to the development of nanoparticles, which ultimately decrease potential health and environment hazards. Interest in developing environmentally friendly procedures for the synthesis of metallic nanoparticles has been increased. The purpose is to minimize the negative impact of synthetic procedures, their accompanying chemicals, and derivative compounds. Nanoparticles produced by green technology are more superior when compared to those manufactured with physical and chemical methods based on it eliminates the use of most expensive chemicals and also use less energy along with formation of environmental byproducts. In the synthesis of metallic nanoparticles, natural resources have been used. The exploitation of different biomaterials for the synthesis of nanoparticles is considered a valuable approach in green nanotechnology. This review provides an overview of the mechanisms of green synthesis of metallic nanoparticles and their application.

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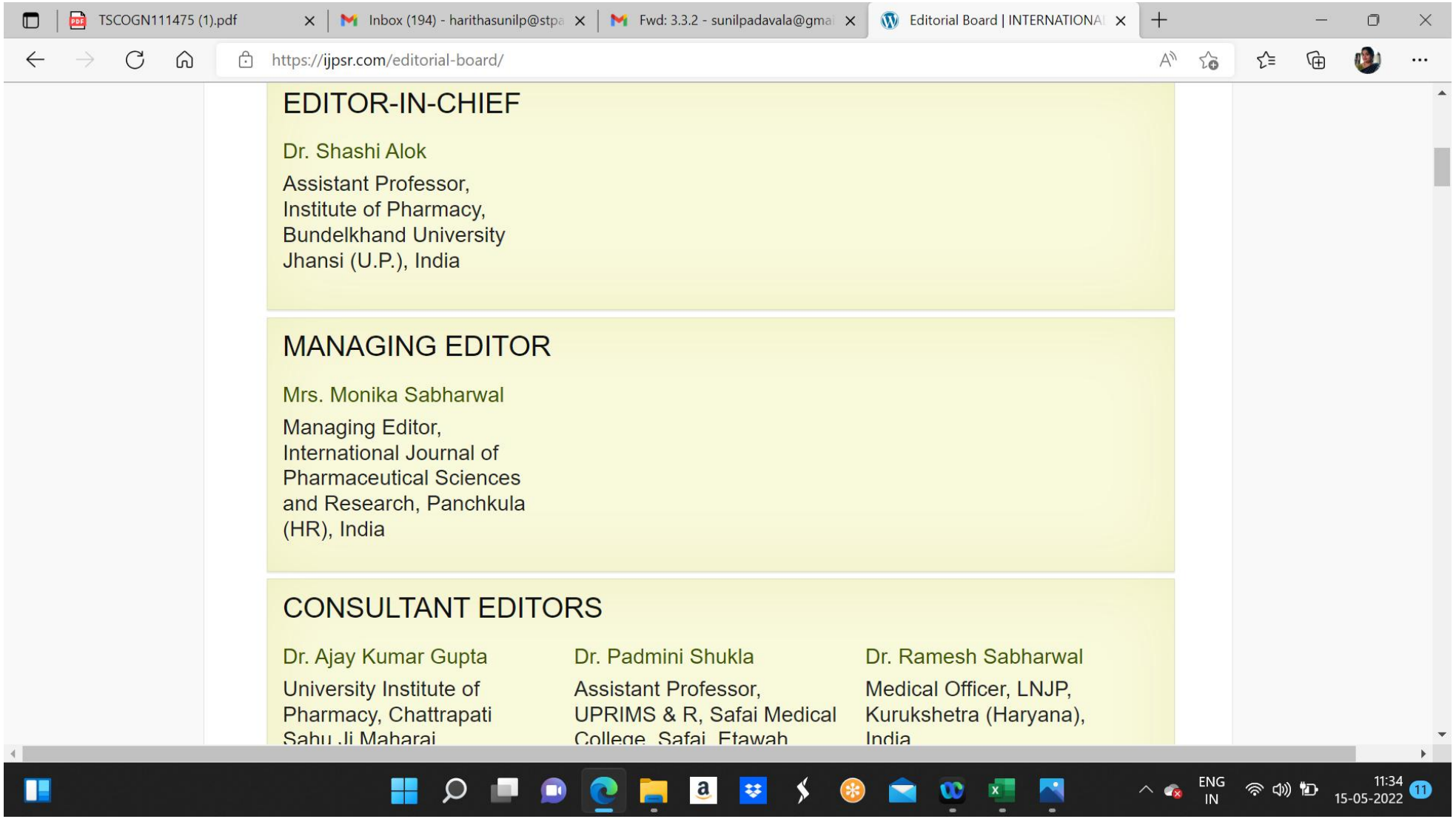


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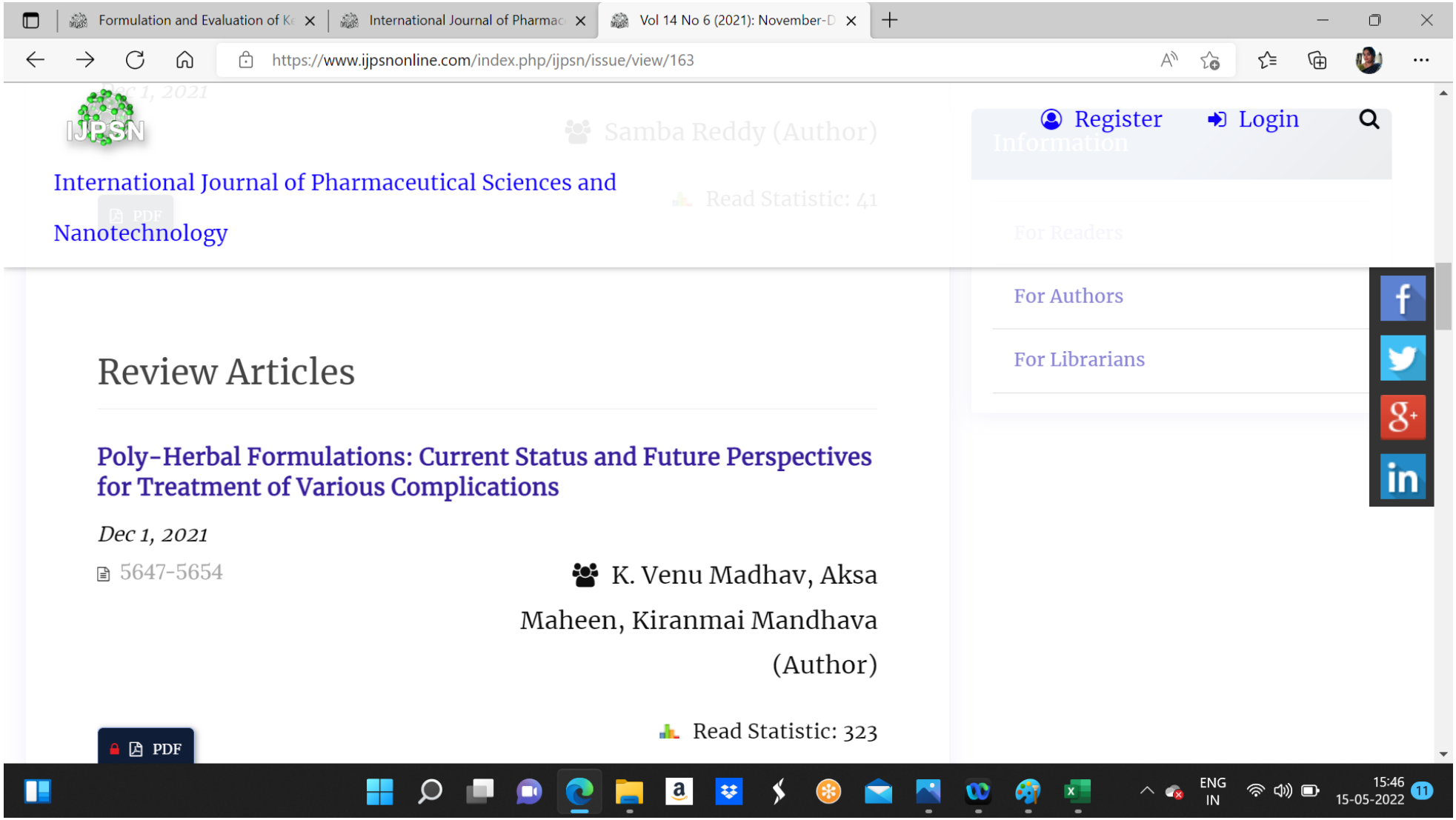


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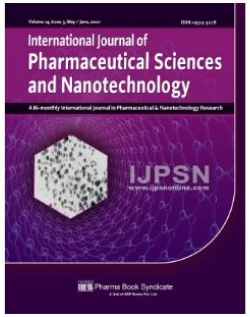


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**Kiranmai Mandava**
gchaitra.kiran@gmail.com

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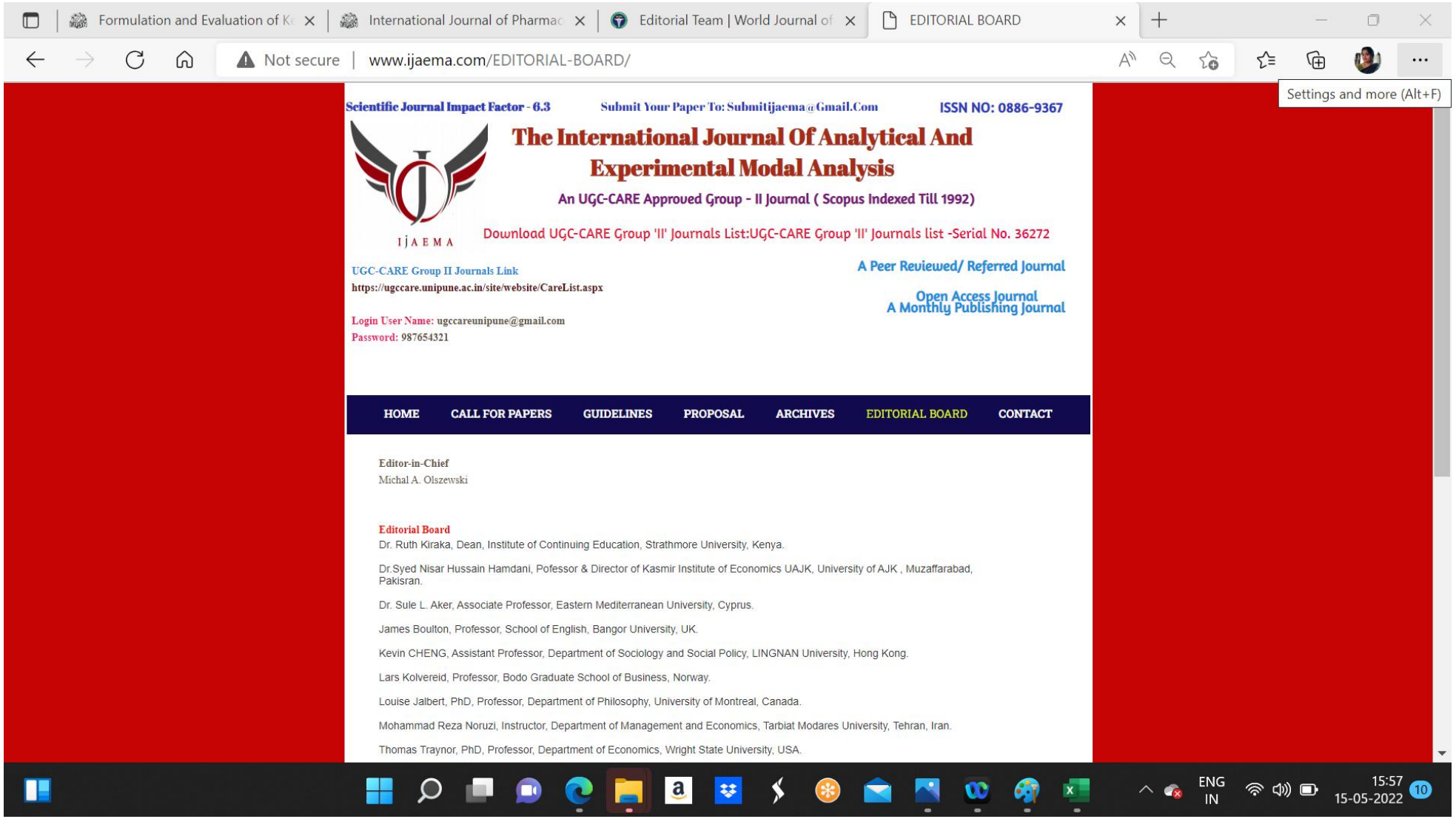

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Chaitanya Sagar Madanu, Sunil Kumar Chaitanya Padavala, Rubina Kauser, Hafsa Siddiqua;St. Pauls's College of College,Turkhyamzal -501510, Abdullapurmet mandal, Ranga Reddy district,Telangana .

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**Review Article**
May 2021 Vol.:21, Issue:2


# A Review on Polyherbal Shampoo Powder

**P Naga Haritha*[1], Pabba Supraja[2], Shaista Samreen[2], Hrudayanjali[2], Munawar Qureshi[2], P. sandya[2], T. swetha[2]**

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**ABSTRACT**

The shampoo sector is probably the largest unit among the hair care products. Shampoos are one of the cosmetic products used daily as the hair is a special and cherished feature of human being which beautifies the look of every individual. Day by day dependency of people is raising on herbal formulations not only for a chronic ailment but also for several acute problems. The assurance therapy with minimal side effects has been proven with ayurvedic formulations. In the scenario of changing food habits, stress, and dependent environment conditions, several hairs and skin disorders are encountered. In case of hair disorders like dandruff, hair fall, dull hair, split ends, etc, a proper selection of ayurvedic ingredients with the required amount, the dosage form can be formulated to fight against hair problems. This polyherbal shampoo was formulated by using natural ingredients like Aloe vera (*Barbadensis miller*), Neem leaves (*Azadirachta indica*), Reetha fruit (*Sapindusmukurossi*), Shikakai (*Acacia concinna*), Amla fruit (*Emblica officinalis*), Hibiscus leaves (Hibiscus *rosa- sinensis*) with proven efficacy. The combination of such ingredients has made it possible to secure highly effective dry powder shampoo. The formulation at laboratory scale was evaluated for several organoleptic properties, general powder characteristics and physicochemical evaluation to ensure the safety and efficacy of the formulation.

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# A REVIEW ON NOVEL DRUG DELIVERY SYSTEM – TRANSDERMAL DRUG DELIVERY SYSTEM AND ITS STATISTICS

**Ayesha Sultana*, Vidya Birajdar, K. Venu Madhav, M. Kiranmai, Sravanthi**

St. Pauls College of Pharmacy,Turkayamjal, Hyderabad, Telangana, India.

***Corresponding Author E-mail: vidyabirajdar0608@gmail.com**

**ARTICLE INFO**

**Key words:**
Application, Evaluation, Global market, Transdermal patches, Transdermal drug delivery system.

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**ABSTRACT**

The transdermal route has numerous advantages over the drug delivery routes. TDDS was presented to overcome the difficulties of drug delivery especially oral route. Transdermal drugs are self-contained, discrete dosage form. Advantage of transdermal delivery route over other types of delivery system such as oral, topical, intravenous etc., is that it provides controlled release of the medication into the patches. This review article covers brief outline of advantages, disadvantages, skin pathways for transdermal drug delivery system, types of transdermal patches, components of transdermal patches, preparation and evaluation of transdermal patches and its applications, future of transdermal drug delivery system are also described. The global market size for the Transdermal patch was estimated at $22 billion in 2010 and the market expanded to $32 billion by 2015. From 2017 to 2022 is expected to increase by 4.2%.

## 1. INTRODUCTION

Oral route is the most popular route of drug delivery system but it has some disadvantages including first pass metabolism, drug degradation etc in gastrointestinal tract due to enzymes, pH etc. To overcome theseproblems, a novel drug delivery system was developed by chien in, 1992, Banker in 1990, Guy in 1996. It was transdermal patches or transdermal delivery system. [1] Transdermal drug delivery is defined as self contained, discrete dosage forms which, when applied to the intact skin, deliver the drug, through the skin at controlled rate to the systemic circulation.[2] They are available in different sizes and having more than one ingredient. Once they apply on unbroken skin they deliver active ingredients into systemic circulation passing via skin barriers. A transdermal patch Containing high dose of drug inside which is retained on the skin for prolonged period of time, which get enters into blood flow via diffusion process. Drug can penetrate through skin via three pathways-

A] Through hair follicles. b] Through sebaceous glands. c] Through sweat duct.

Transdermal drug delivery systems are used in various skin disorders, also in the management of angina pectoris, pains, smoking cessation and neurological disorders such as Parkinson's disease. [3, 4]

**Advantages:**

- Avoids vagaries, associated with gastro-intestinal absorption due to pH, enzymatic activity and rug food interaction.
- Avoid first pass effect.

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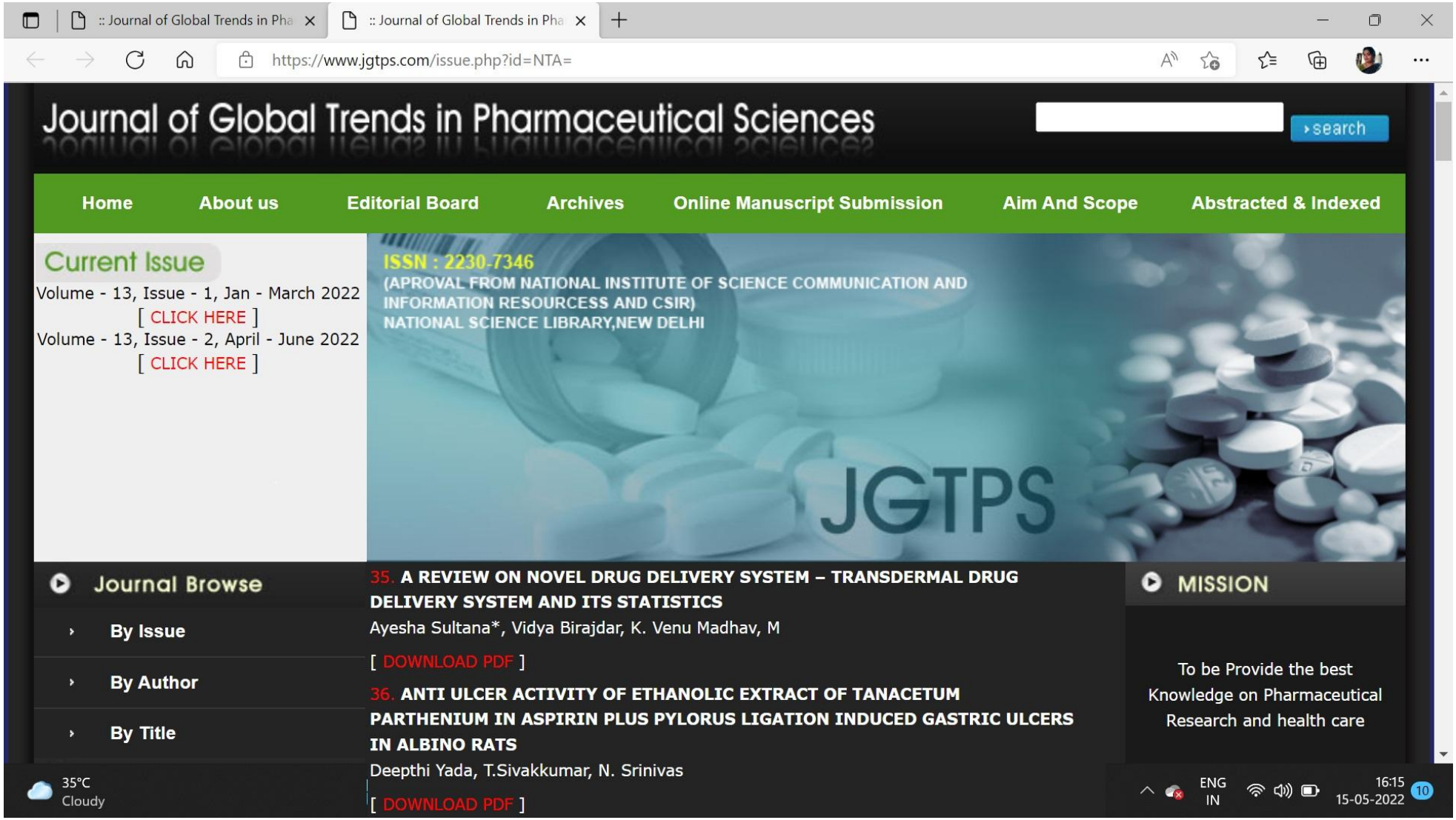


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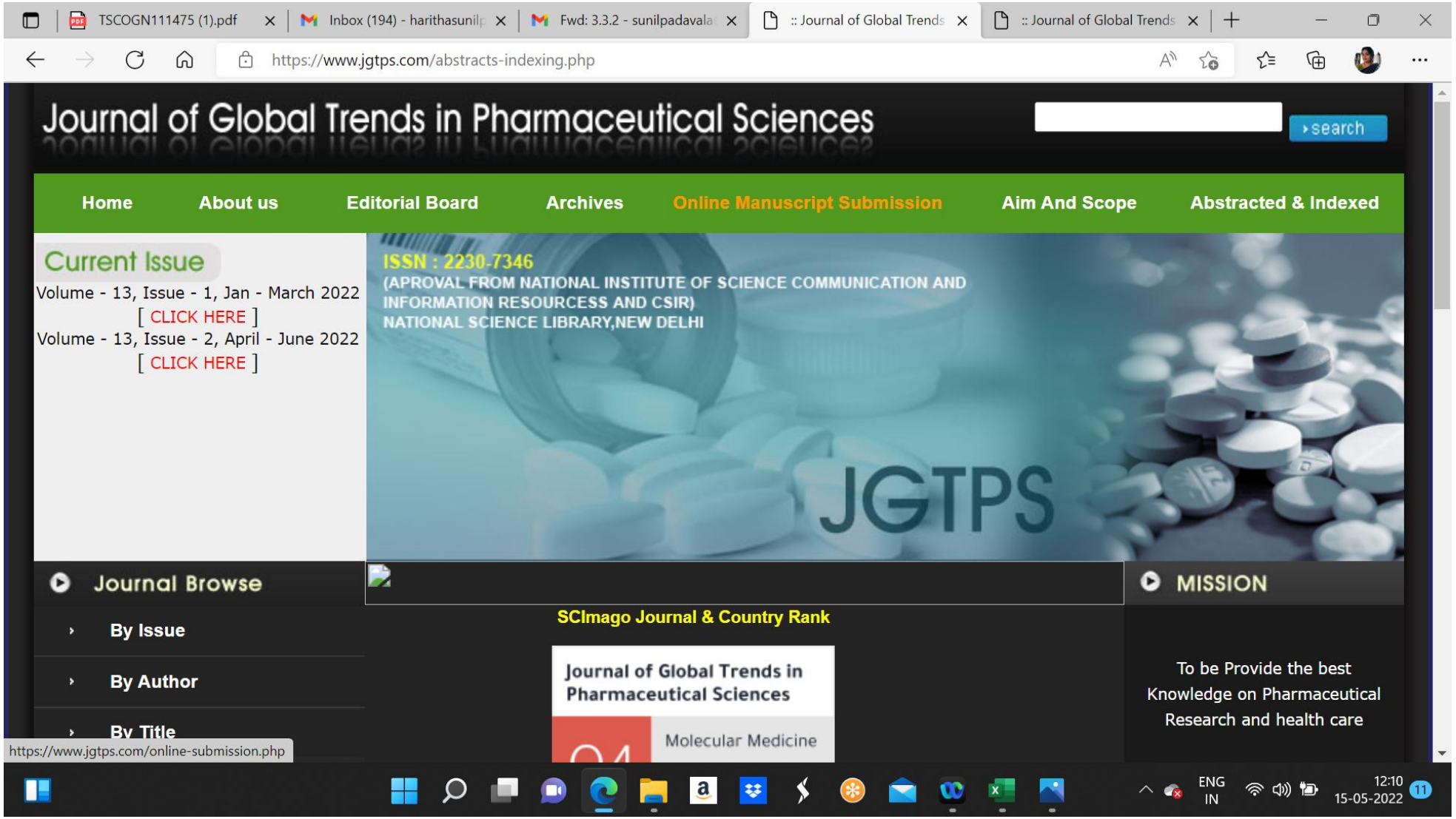


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# A REVIEW ON POTASSIUM NITRATE, CHLORHEXIDINE GLUOCONATE AND HYDROGEN PEROXIDE TOOTHPASTE FORMULATION TO TREATSENSITIVITY, BLEEDING GUMS & WHITENING OF TEETH

**Ayesha Sultana*, Rishav Joysuwal, A. Nikhita, R. Rajeshwari, Asfa Fathima, Avinash Kadam**

St. Paul's college of Pharmacy, Hyderabad, Telangana, India.

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**ARTICLE INFO**

**Key Words**
Aesthetics, Bleeding gums, Chlorhexidine gluconate, Hydrogen peroxide, Dentifrice, Potassium nitrate, Sensitivity, Whitening

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**ABSTRACT**

Toothpasteis the paste or gel dentifrice used with a tooth-brush to clean and maintain aesthetics and health of teeth. It is used to maintain or promote oral hygiene, since last ten years there has been a booming demand for aesthetic dentistry, consequently the bleaching and whitening products have made effective augmenting cosmetic,so a routinely used product and its efficiency in whitening play a major role in aesthetics.Toothpastes are complex mixtures of abrasives, surfactants, anti-carrier agents such as fluorides, tartar control ingredients, pH buffers, humectants to prevent drying out and increase the pleasant feeling in the mouth, binders to provide consistency and shape. Tooth sensitivity is a common problem that effects many people commonly, it involves experiencing pain or discomfort to teeth from hot drinks, cold drinks or ice creams,andalso from sweets. Bleeding gums is a sign that plaque has buildup where the teeth meet the gums, a condition that can leads to gingivitis and periodontitis.Potassium nitrate in toothpaste works by calming the nerves in the teeth.They desensitize nerves in tooth pulp. Formulations containing 5% potassium nitrate ($KNO_3$) is clinically proven to reduce dentin hypersensitivity. Potassium ions travel into exposed dentin tubules from the tooth surface to reach internal nerves.

## INTRODUCTION

Toothpaste has been used since the ancient past and one of main irreplaceable components of oral health care. The design of toothpaste formulation began in china and India, during 300 to 500 BC period. Squashed bone, pulverized egg and shells were utilized as abrasive as a part of tooth cleaning. Modern toothpaste formulation was developed in the 19th century. Later onchalk and soap was incorporated to those formulations. After 1945 several formulation advancements of different detergent had begun. Sodium laurel sulphate has been used emulsifying agent. In recent years the focus has shifted towards the use of active ingredients during formulation development to prevent and or treat oral illness.The objective behind the use of tooth paste is its ability to deliver preventive and therapeutically active agents such as fluoride, metal salts and pyrophosphates. Active pharmaceutical ingredients, abrasives, humectants, detergents, binders, sweetners, preservatives, antioxidants and flavors are the most commonly used ingredients of toothpaste. There are number ofmaterialsand their combinations used in the formulation of tooth paste today.







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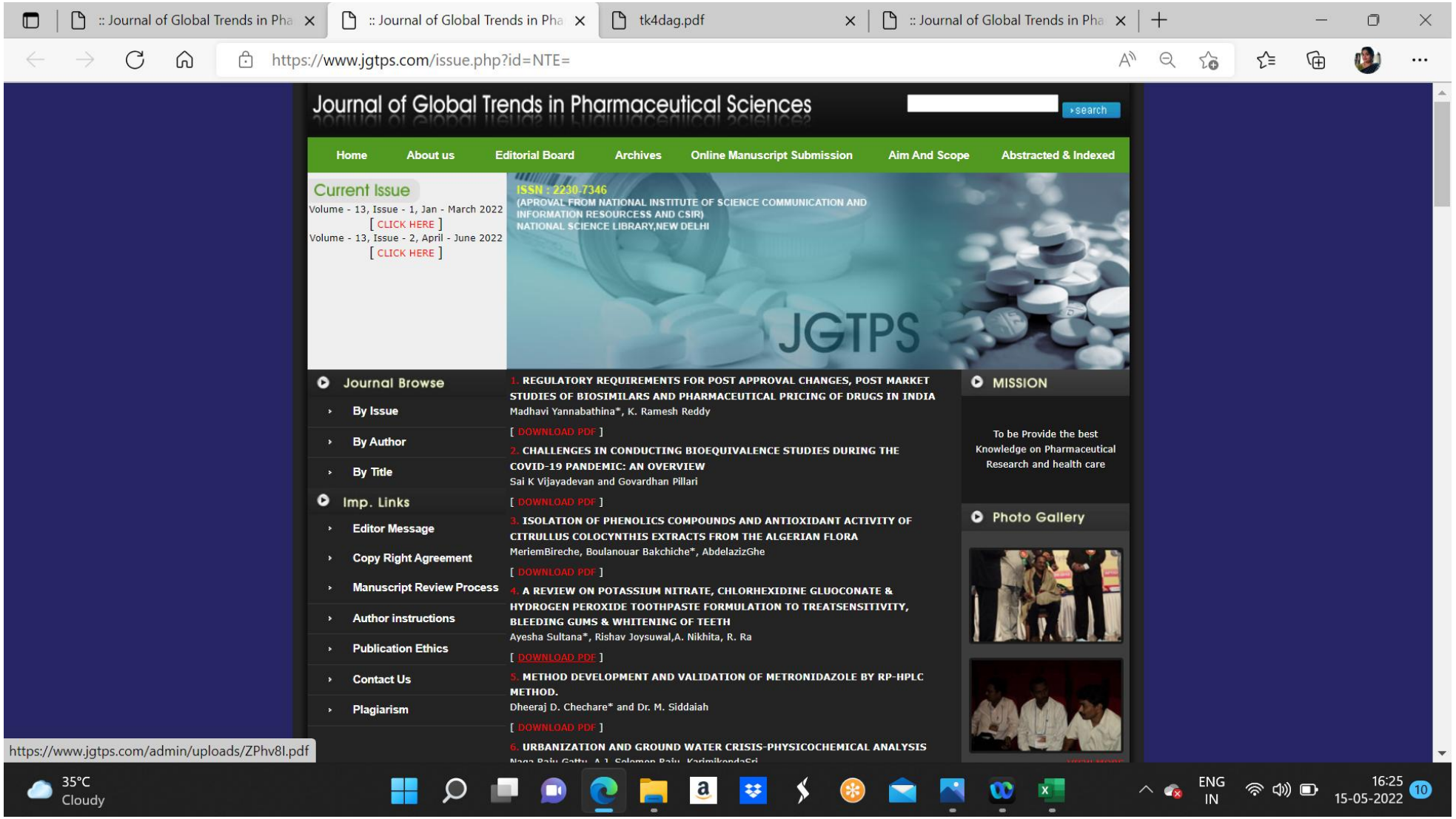


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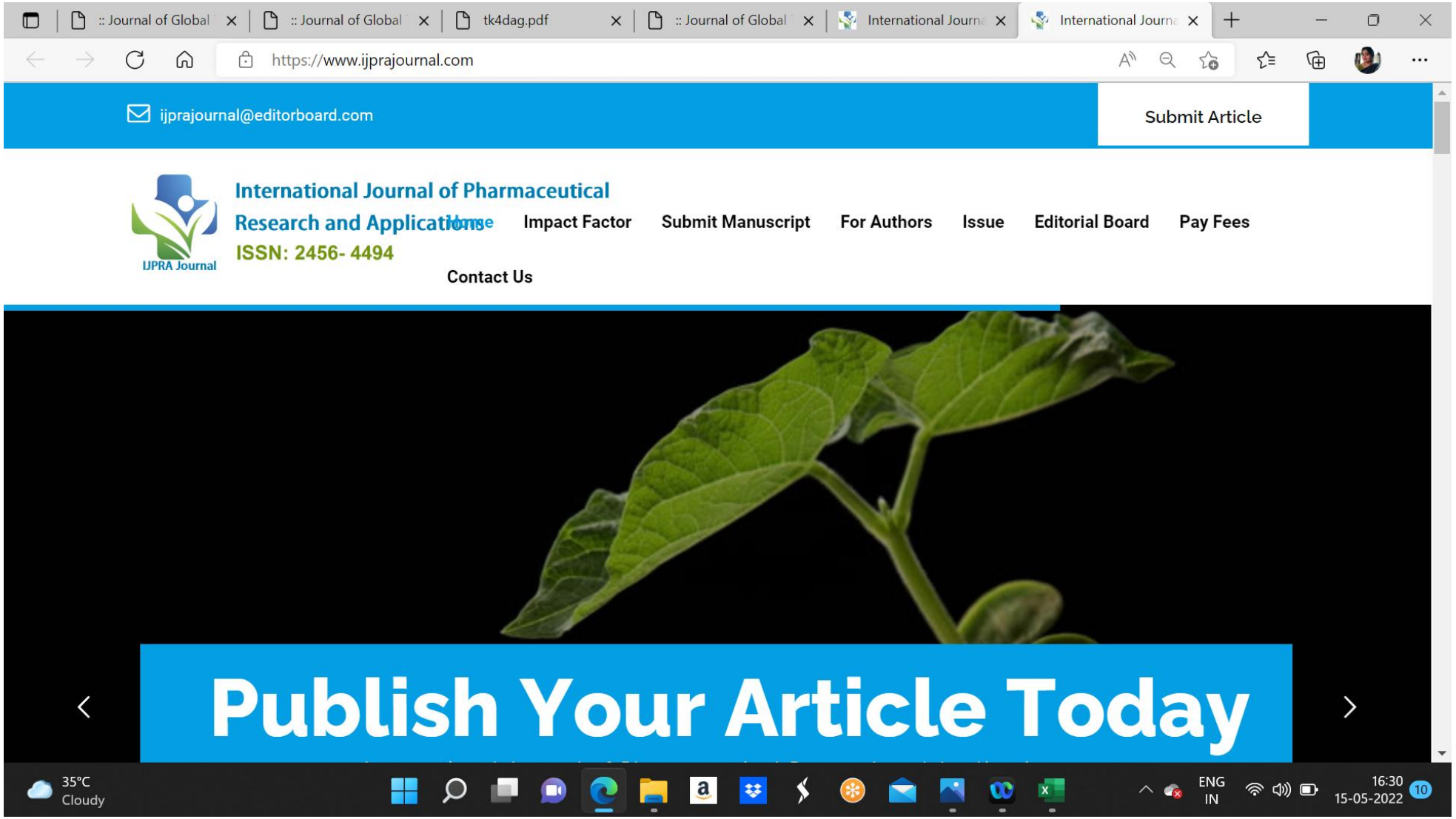


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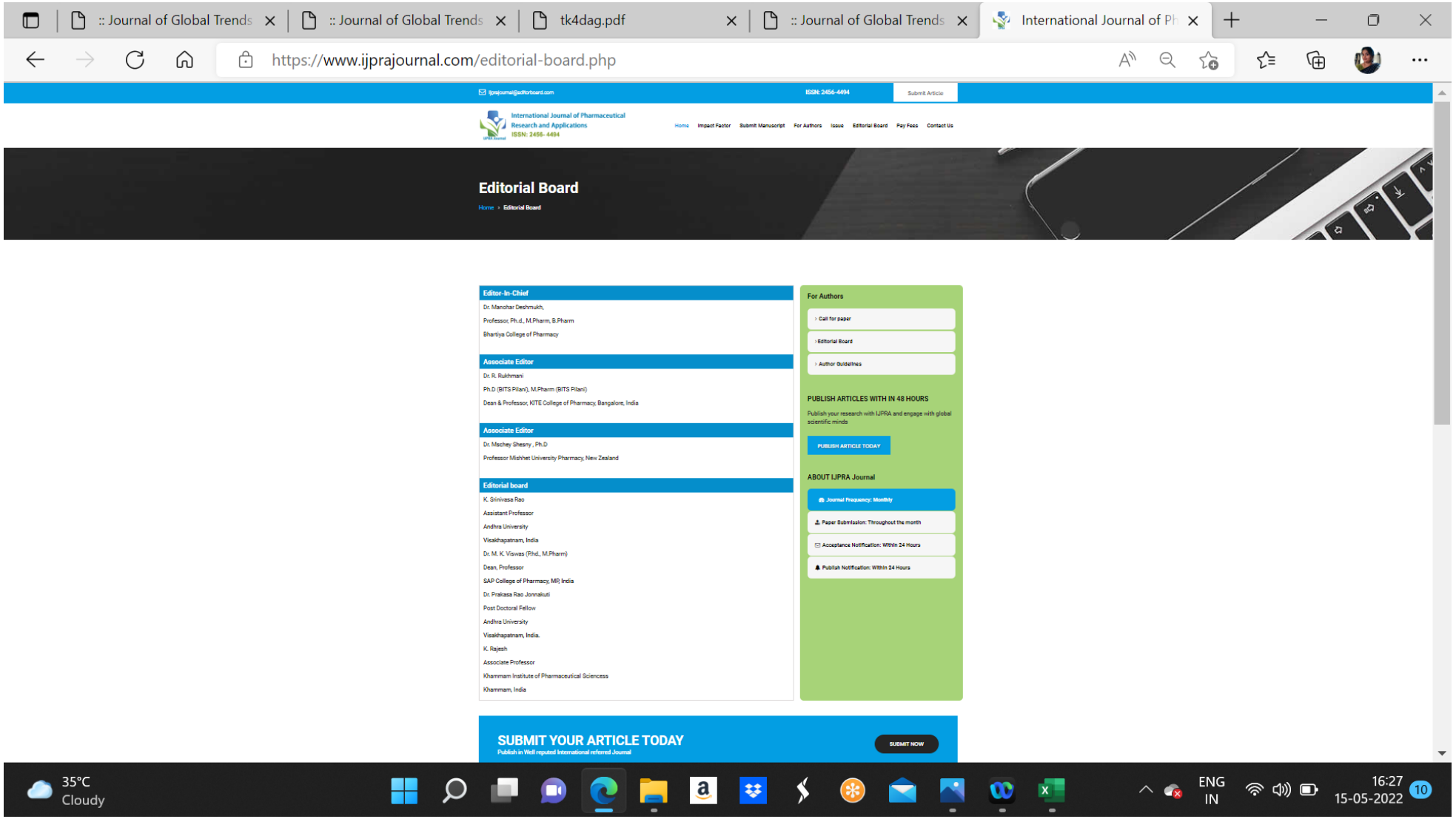


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WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
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Volume 10, Issue 7, 1565-1574 Research Article ISSN 2278 – 4357

# DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPIC METHOD FOR THE SIMULTANEOUS ESTIMATION OF CETRIZINE AND CHLORPHENIRAMINE IN TABLET DOSAGE FORM

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**ABSTRACT**

The present research work is focused towards development and validation of a simple, sensitive, rapid, accurate, precise and economical UV electro photometric method for the estimation of cetirizine and chlorpheniramine in tablet dosage form. This experiment is done based on the measurement of absorption maxima of cetirizine and chlorpheniramine at 230 nm and 262 nm respectively in 0.1N NaOH. The linearity range of cetirizine and chlorpheniramine was found to be 5-30microgm/ml and 10-60micro gm/ml respectively. The proposed method was statistically validated for its accuracy, precision and specificity.

**KEYWORDS**: Cetirizine, Chlorpheniramine, 0.1N NaOH, UV spectroscopy.

## INTRODUCTION

Cetirizine is the second generation H1 receptor antagonist used in the symptomatic treatment of various immediate hypersensitivity reactions and allergic diseases. It is administered orally for treatment of hypersensitivity conditions. Cetirizine is the major metabolite of hydroxyzine which can be considered as a prodrug for cetirizine.

Cetirizine possesses greater affinity towards H1 Receptors and blocks them by inhibiting the activity of histamine. It also inhibits the release of cytotoxic mediators like leukotrienes from eosinophils and platelets.





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### DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPIC METHOD FOR THE SIMULTANEOUS ESTIMATION OF CETRIZINE AND CHLORPHENIRAMINE IN TABLET DOSAGE FORM


Hafsa Siddiqua*, D. Sowmya, D. Keerthi, Atif Zama, Yousuf Bin Ahmed and Mustafa Ayad Mohammed


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International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 3 May - June 2021, pp: 729-734 www.ijprajournal.com ISSN: 2249-7781

# A Review on Ixora Coccinea Plant

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Date Of Submission: 01-06-2021 Date Of Acceptance: 14-06-2021

**ABSTRACT**: Ixora Coccinea is additionally referred to as Jungle herb, flame of the woods or Jungle flame. It belongs to the family rubiaceae; it's a typical shrub native to southern Asian nation, Asian nation and srilanka. Relying upon the medical condition the flowers, leaves, roots and also the stem area unit wants to treat varied ailments within the Indian ancient system of drugs, the written material, and additionally in varied people medicines. The fruits once totally ripe area unit wants to treat varied ailments within the Indian ancient system of drugs. The fruits once totally ripe area unit used as dietary sources. Pharmacological studies of those plant shows that it posses inhibitor, medicament, gastro protecting, hepatoprotective, antidiarrhoeal, anti-nociceptive, antimutagenic and chemo preventive effects. This review studies concerning the cultivation, ancient and pharmacologic effects of Ixora Coccinea.

**KEYWORDS:** Ixora Coccinea, flame of woods, Jungle herb, Ayurveda, ancient system of drugs, pharmacologic studies.

## I. INTRODUCTION

Ixora Coccinea is additionally referred to as Jungle herb, flame of the woods or Jungle flame. It belongs to the family rubiaceae; it's a typical shrub native to southern Asian nation, Asian nation and srilanka. The genus name Ixora is meant to be derived from the Indo-Aryan word "ikvana" when a Malaysian spiritual being, or probably from the name "iswara" the opposite name of lord Shiva to whom the flowers area unit offered throughout worship, whereas the species name "cocaine" suggests that scarlet(reference:Manjeshwar shrinath Baliga and Poruthukaran john kurian)

Ixora coccinea is a dense, multi-branched evergreen shrub, usually 4–6 ft (1.2–1.8 m) tall, however capable of reaching up to 12 ft (3.7 m) high. It's a rounded kind, with a selection which will exceed its height. The glossy, leathery, rectangular leaves are concerning 4 in (10 cm) long, with entire margins, and area unit carried in opposite pairs or whorled on the stems. Tiny cannular, scarlet flowers in dense rounded clusters 2–5 in (5.1–12.7 cm) across area unit created most years long.

Fig: 1-IXORA COCCINEA PLANT

| SCIENTIFIC CLASSIFACIATION |
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| Kingdom : Plantae |

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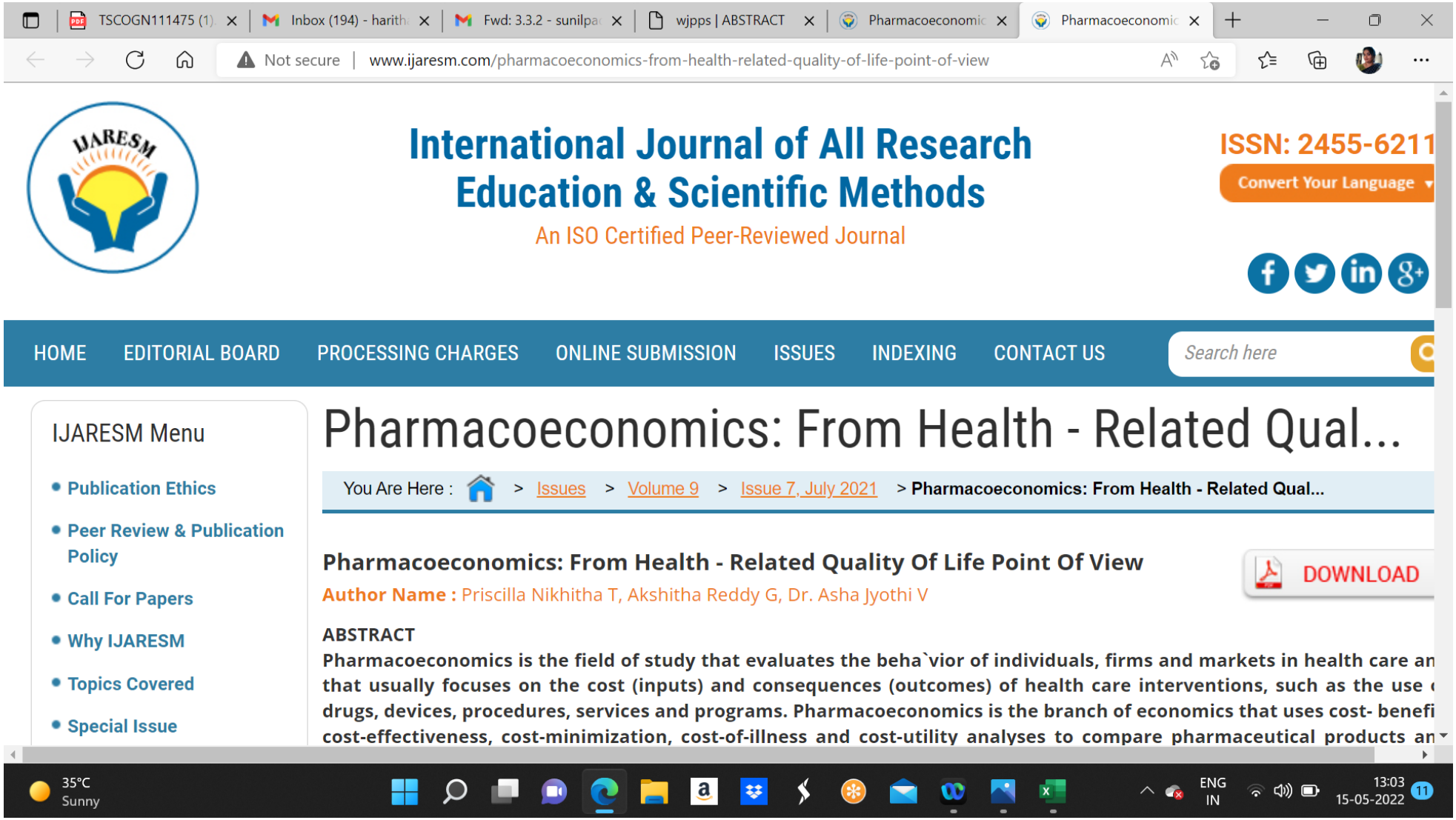


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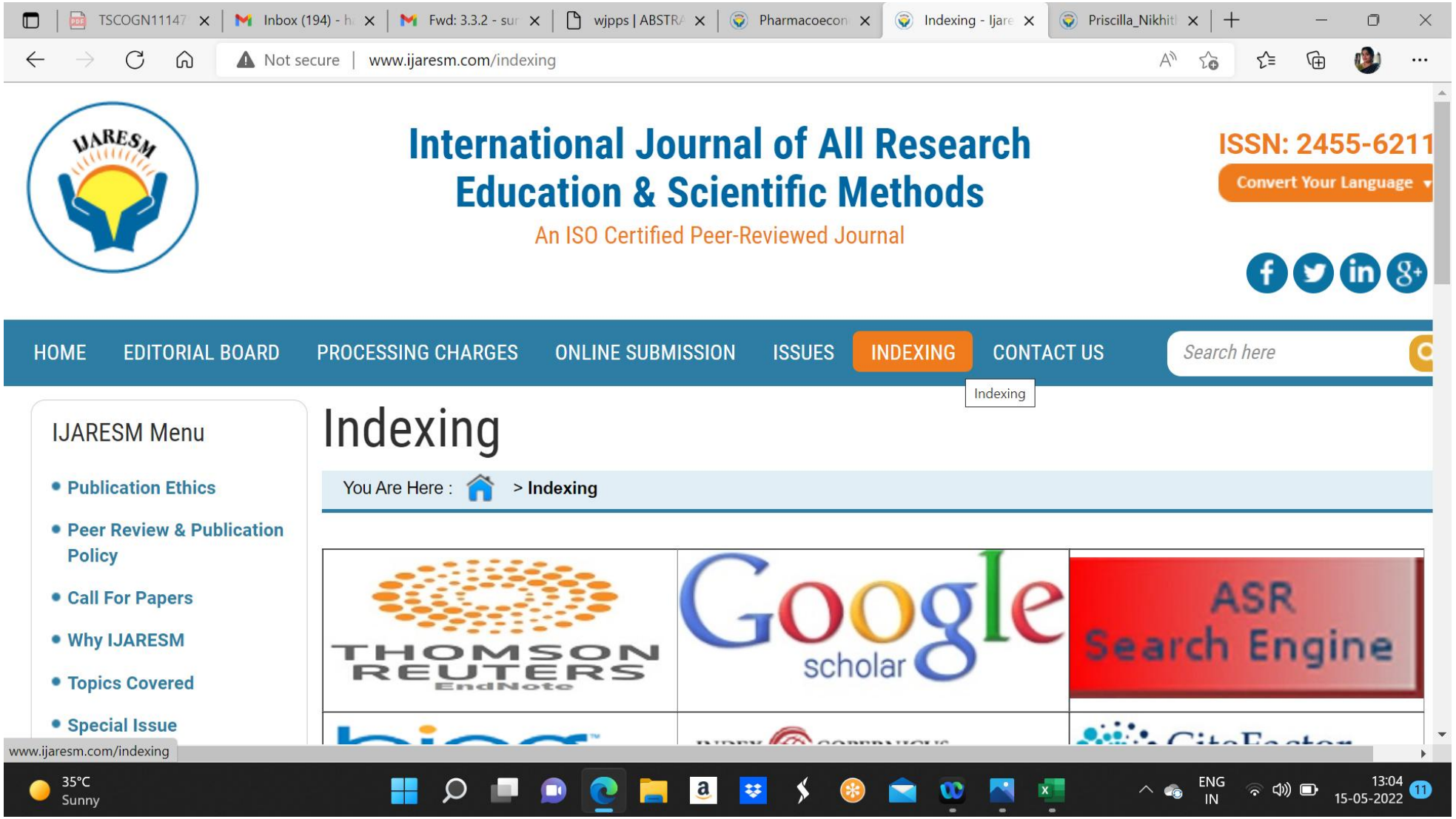


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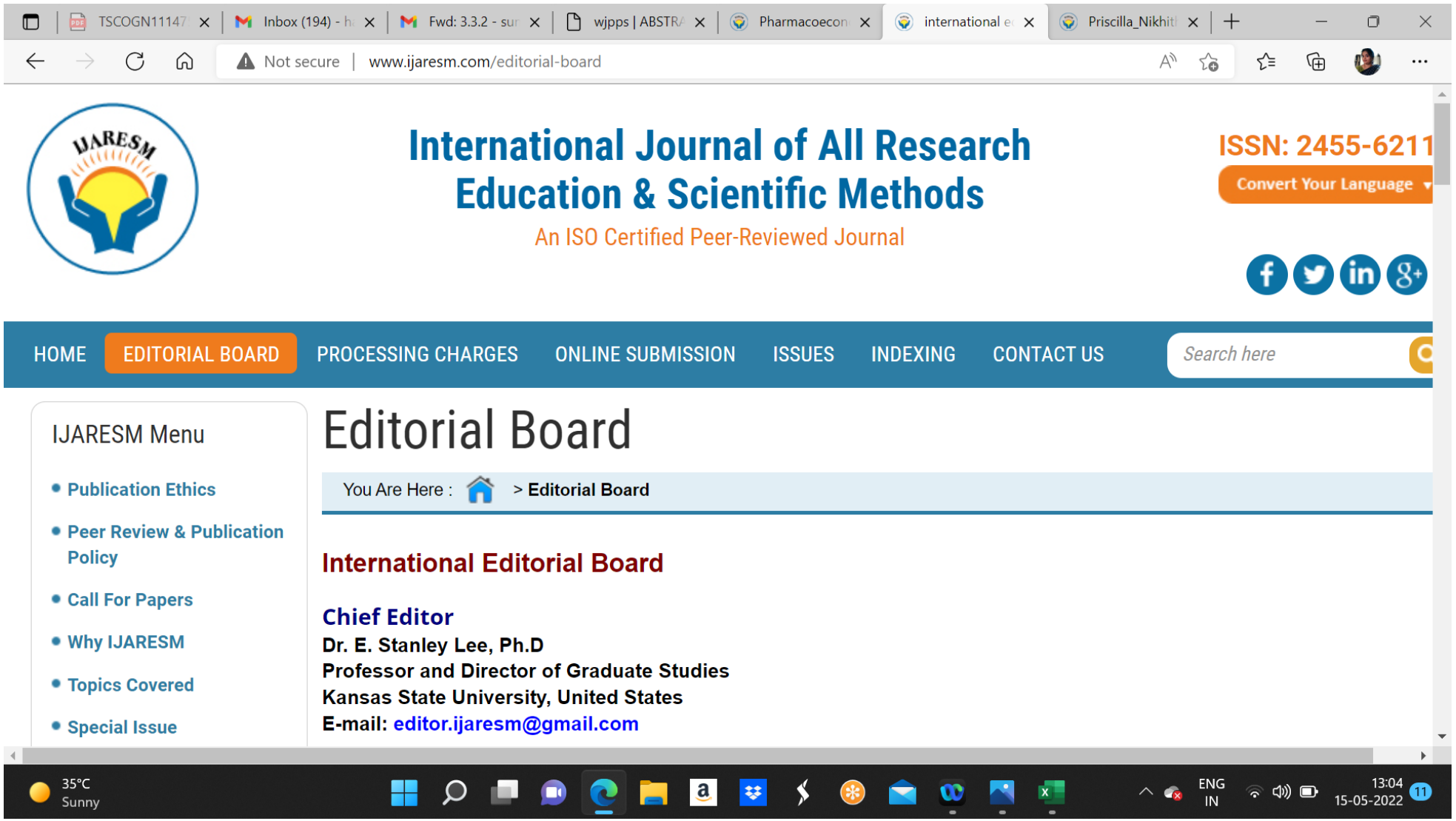


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International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211
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# Pharmacoeconomics: From Health - Related Quality Of Life Point Of View

**Priscilla Nikhitha T[1], Akshitha Reddy G[2], Dr. Asha Jyothi V[3]**

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**ABSTRACT**

**Pharmacoeconomics is the field of study that evaluates the beha`vior of individuals, firms and markets in health care and that usually focuses on the cost (inputs) and consequences (outcomes) of health care interventions, such as the use of drugs, devices, procedures, services and programs. Pharmacoeconomics is the branch of economics that uses cost- benefit, cost-effectiveness, cost-minimization, cost-of-illness and cost-utility analyses to compare pharmaceutical products and treatment strategies. Health outcomes research and patient- reported outcomes in particular; aim at understanding patient value in terms of impact of disease and its treatment on physical functioning and psychosocial well-being, known also as "health-related quality of life" (HRQL). The major challenging area of interest for both pharmacoeconomics and research is the role of Quality Adjusted Life Years (QALYs) in economic evaluation. The high price of medicines and increasing expenditure on pharmaceuticals is a serious concern for governments in low-income countries where already over half of the population lacks regular access to essential medicines. India must develop the platform for pharmacoeconomics with a validating methodology and appropriate training, for the insurance companies to give better facility at minimum cost. The role of clinical pharmacist including Pharm D graduates are expected to be more beneficial than conventional pharmacists, as they will apply the principles of economics in community and hospital pharmacy.**

**Key Words: Pharmacoeconomics, Cost- minimization, Health Related Quality of Life, Quality Adjusted Life Years.**

## INTRODUCTION

Pharmacoeconomics can be defined as the measurement of both the cost and consequences of therapeutic decision making, it is the process of identifying, measuring, comparing the cost, risk and benefits of programs, services or therapies and determining which alternative produces the best health outcome for the resource invested. Pharmacist can be used to improve the efficiency of his profession[1]. In the present scenario of evidence-based health care, there is an increased interest in economic efficiency of health care due to the limitations on relevant resources. One of the major targets of cost savings on health care is spending on drugs. Other than decision makers, expenditure on drugs is equally a concern for patients, physicians, insurance companies and hospital administrators. This is the major reason that led to the branch of sciences called "Pharmacoeconomics"[2].

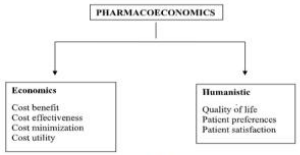


**Figure 1: Components Of Pharmacoeconomics**



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# PHARMACOECONOMICS - A REVIEW

**Malvey Anusha Shree and V. Asha Jyothi***

St. Paul's College of Pharmacy, Turkayamjal, Hyderabad Telangana.

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**ABSTRACT**

Pharmacoeconomics is the branch of economics that applies the cost-benefit, cost-effectiveness, cost-minimization and cost-utility analyses. Comparing the economics of different pharmaceutical products or a drug therapy to the non-drug therapy or treatment. Pharmacoeconomics is defined as the description and analysis of the costs of drug therapy to the health care system and society. Pharmacoeconomic identifies, measures and compare the resources cost and clinical, economic and humanistic consequences. The research methods include cost minimization, cost-effectiveness, cost benefit, cost of illness, cost utility, cost consequences and decision analysis. It focuses on cost and benefits of drug therapy. The review article emphasize on the pharmacoeconomic needs, methods, aim and challenges.

**KEYWORDS:** Pharmacoeconomics, cost effectiveness, cost benefit, cost minimization, cost utility.

## INTRODUCTION

Pharmacoeconomics is defined as description and analysis of costs of drug therapy to health care system and society.[1] Pharmacoeconomic is the branch of economics which particularly depend upon the costs and benefit of drug therapy.[3] The pharmacoeconomics is the new words, but the economic interest is upon the treatment and drug of health problems.[3] It applies and adopts the principle and methods of the economic health in the field of pharmaceutical policy.[7] The importance of pharmacoeconomic is to give information to health care decision worker or makers which depend on viewpoint of analysis to conduct. The research methods connected to cost-minimization, cost effectiveness, cost-benefit, cost-of illness, cost utility, cost consequences and decision analysis are included within the frame work.[7] Pharmacoeconomics promotes to continue development and study of health economics, quality





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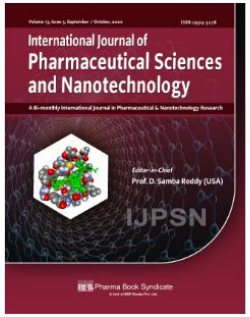


# Fenofibrate Solid Dispersion for Improving Oral Bioavailability: Preparation, and Characterization and in vivo Evaluation

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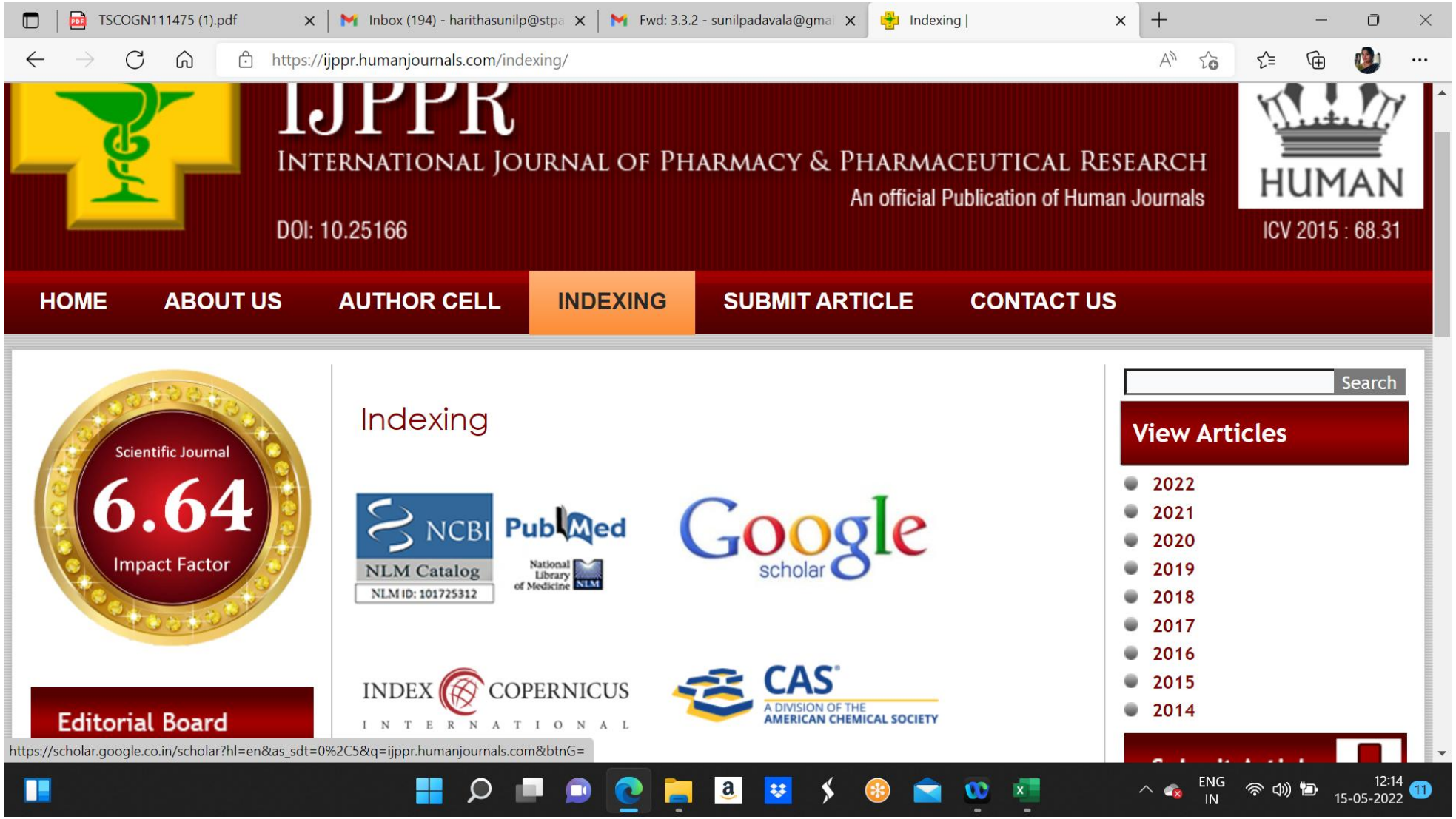


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May 2021 Vol.:21, Issue:2


# A Review on Polyherbal Shampoo Powder

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**P Naga Haritha*[1], Pabba Supraja[2], Shaista Samreen[2], Hrudayanjali[2], Munawar Qureshi[2], P. sandya[2], T. swetha[2]**

*1 Assistant Professor, Dept of Pharmaceutics, 2*

**Keywords:** Hair, Powdered polyherbal shampoo, *Barbadensis miller*, Hair disorder, Ayurvedic ingredients, Physicochemical evaluation

**ABSTRACT**

The shampoo sector is probably the largest unit among the hair care products. Shampoos are one of the cosmetic products used daily as the hair is a special and cherished feature of human being which beautifies the look of every individual. Day by day dependency of people is raising on

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# MICROBALLOONS – A NOVEL FLOATING DRUG DELIVERY SYSTEM

**Rithu Kadagala*[1], Hema Kumari[2] and Naga Haritha Pamujula[3]**

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**ABSTRACT**
The purpose of this review on microballoons is to collect the recent literature with a special focus on the novel



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Rithu Kadagala*, Hema Kumari and Naga Haritha Pamujula

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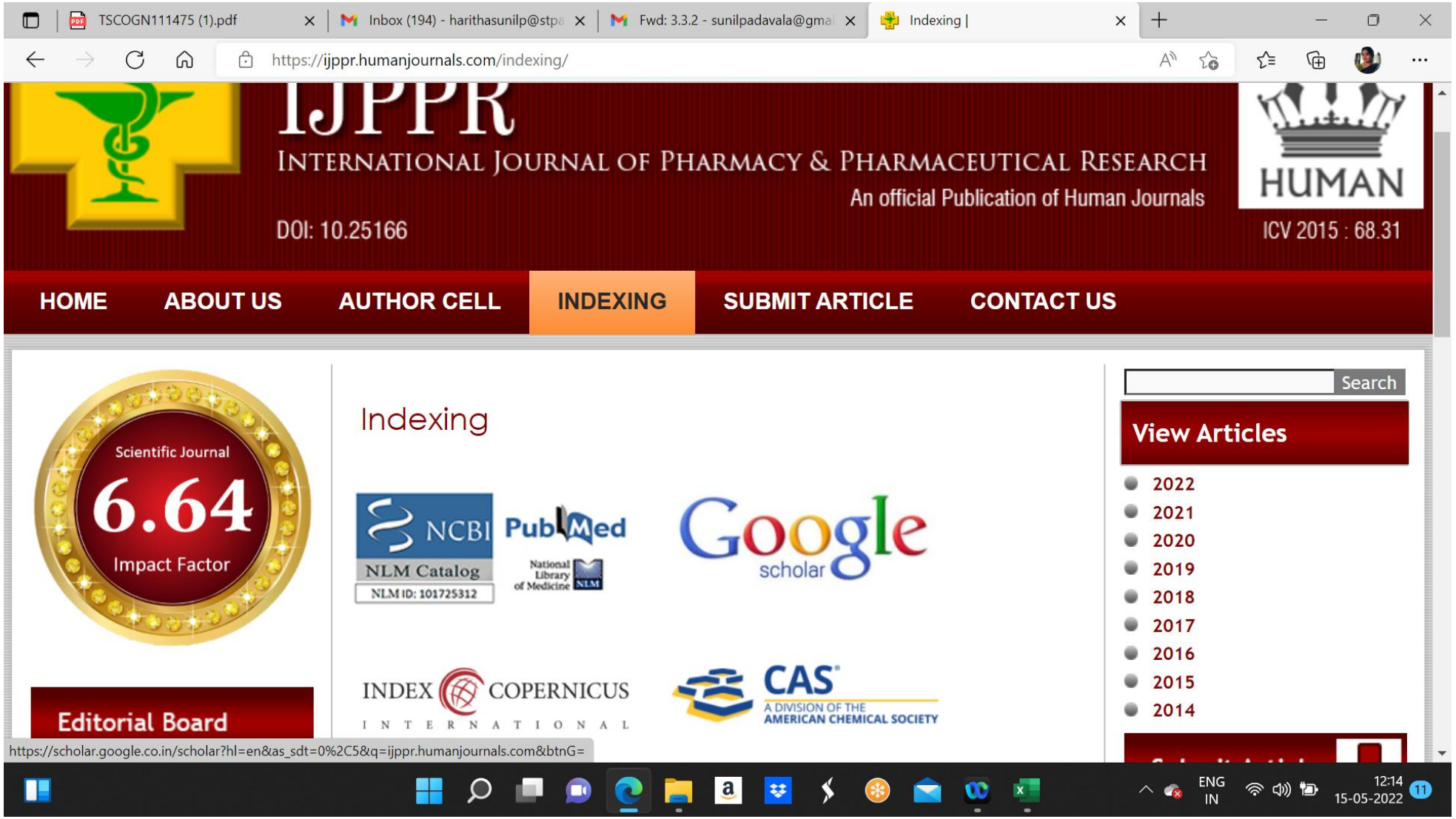


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# Abstract

## DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPIC METHOD FOR THE SIMULTANEOUS ESTIMATION OF CETRIZINE AND CHLORPHENIRAMINE IN TABLET DOSAGE FORM

**Hafsa Siddiqua*, D. Sowmya, D. Keerthi, Atif Zama, Yousuf Bin Ahmed and Mustafa Ayad Mohammed**

**ABSTRACT**

The present research work is focused towards development and validation of a simple, sensitive, rapid, accurate, precise and economical UV electro photometric method for the estimation of cetirizine and chlorpheniramine in tablet dosage form. This experiment is done based on the measurement of absorption maxima of cetirizine and chlorpheniramine at 230 nm and 262 nm respectively in 0.1N NaOH. The linearity range of cetirizine and chlorpheniramine was found to be 5-30microgm/ml and 10-60micro gm/ml respectively. The proposed method was statistically validated for its accuracy, precision and specificity.

**Keywords:** Cetirizine, Chlorpheniramine, 0.1N NaOH, UV spectroscopy.

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# DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPIC METHOD FOR THE SIMULTANEOUS ESTIMATION OF CETRIZINE AND CHLORPHENIRAMINE IN TABLET DOSAGE FORM

**Hafsa Siddiqua*, D. Sowmya, D. Keerthi, Atif Zama, Yousuf Bin Ahmed and Mustafa Ayad Mohammed**

Department of Pharmaceutical Sciences, St. Paul's College of Pharmacy.

Article Received on
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## ABSTRACT

The present research work is focused towards development and validation of a simple, sensitive, rapid, accurate, precise and

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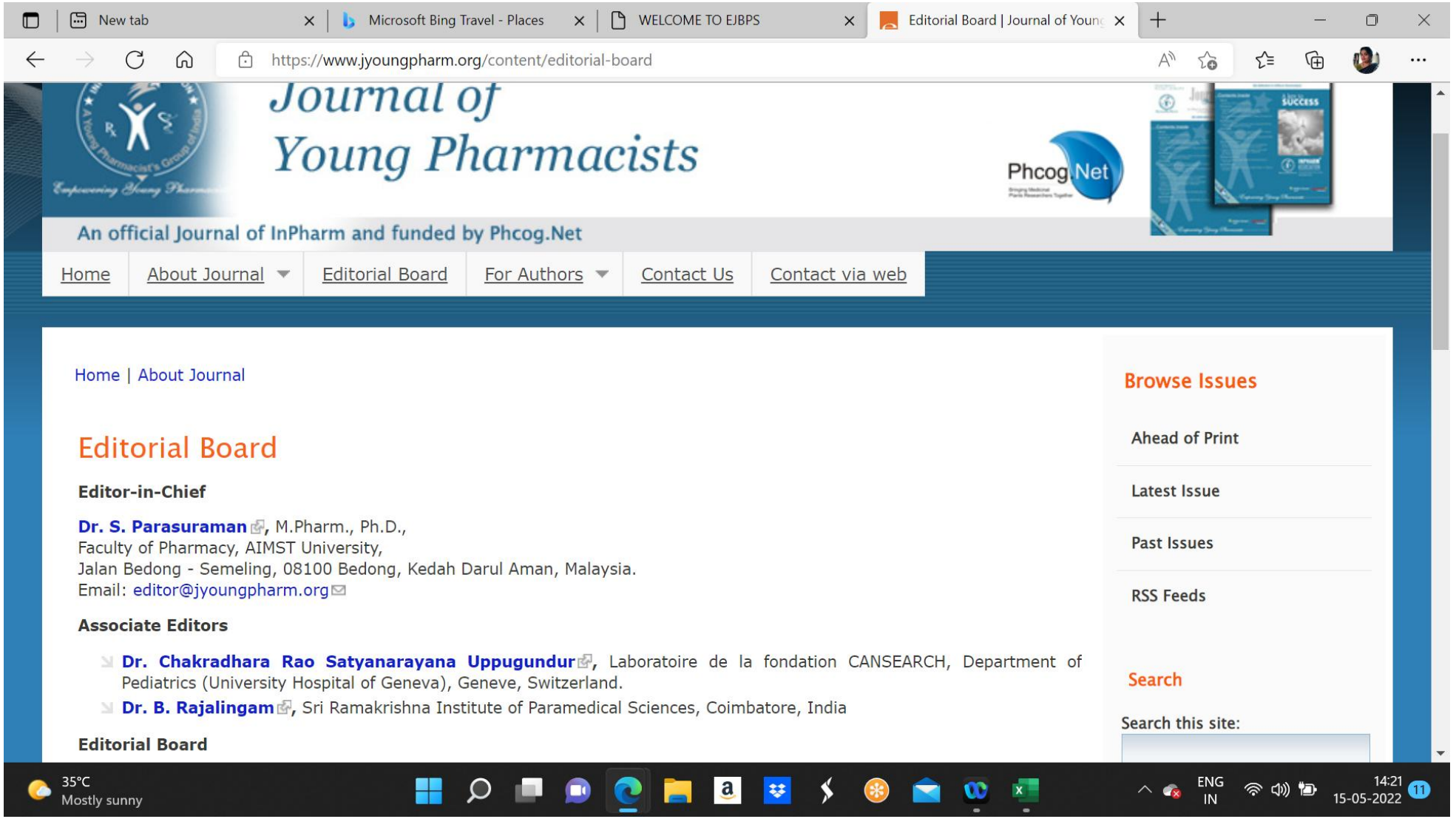


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Original Article | doi:10.5530/jyp.2020.12s.40

**Authors:**

***Jyothi Bhandari[1], Neha Kanswami[2], Lakshmi P.K[2]****

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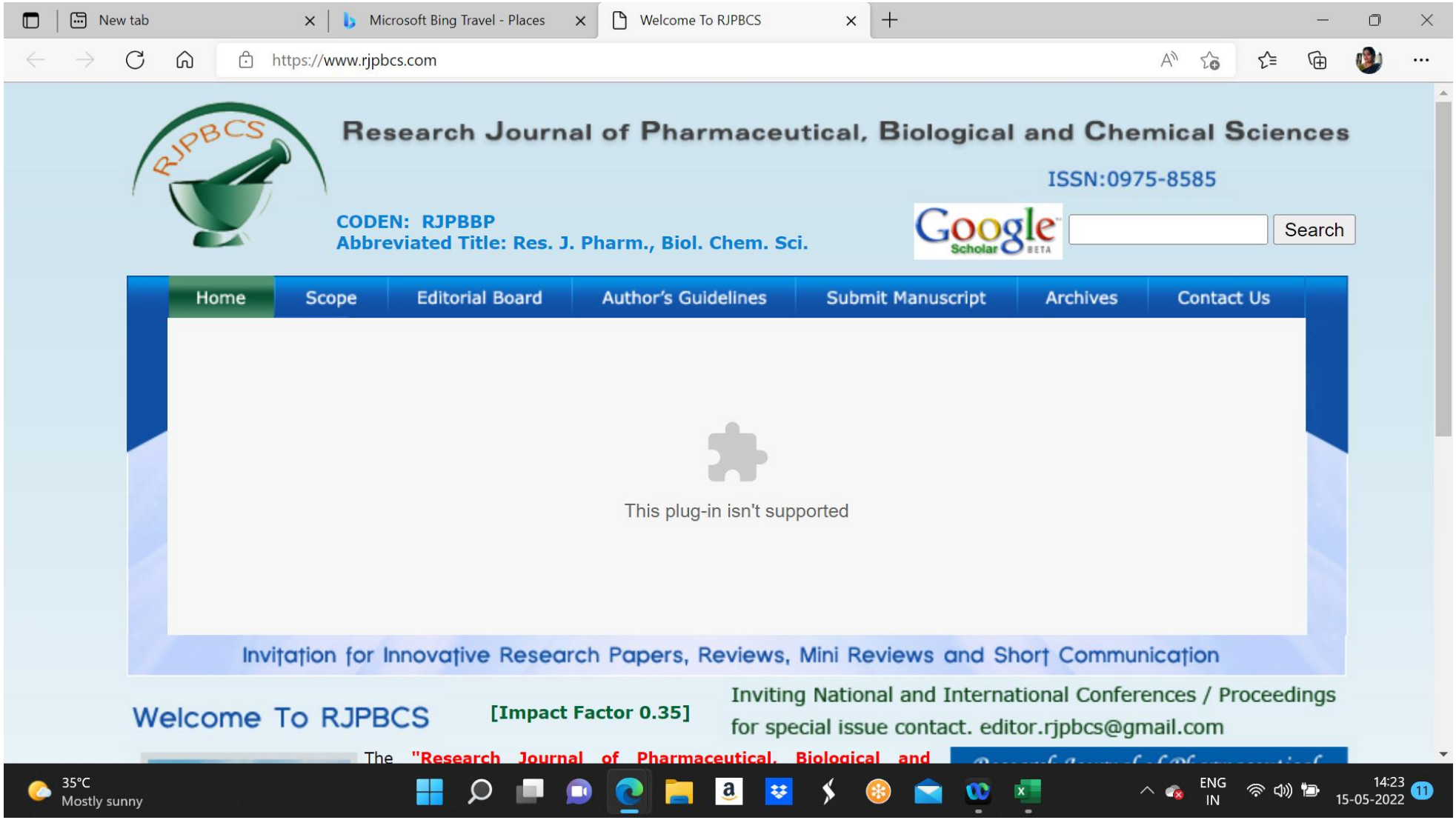


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International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 3 May - June 2021, pp: 1300-1311 www.ijprajournal.com ISSN: 2249-778

# A Review on Formulation and Evaluation of Herbal Anti-Dandruff Shampoo

Mrs.K.Sravanthi *, N.Kavitha, K.Sowmya, S. Naazneen , U.Vaishnavi, CH.Anil
*St.Pauls college of pharmacy,Turkayamjal,Rangareddy district,Telangana,501510*

Date of Submission: 10-06-2021 Date of Acceptance: 25-06-2021

**ABSTRACT** :The aim of the present study is to formulate and evaluate herbal Anti dandruff shampoo containing natural ingredients with an emphasis on safety and efficacy. It clears dirt, dandruff, promotes hair growth, luster , strengthens and darkens the hair. The shampoo sector is probably the largest unit of among the hair care products. Since the shampoos are one of the cosmetic product used in daily as the hair is special and cherished feature of humans. Majority of ingredients in the shampoos are chemicals and hence have been under severe attack due to its potential risk of side effects with its usage. The main objective is to study how to eliminate harmful synthetic ingredients from anti-dandruff shampoo formulation and substitute them with safe natural ingredients. An attempt has been made to combine modern formulation technology into a formula based on natural ingredients. The shampoo was prepared by taking the extracts of Orange peel powder (Citrus Aurantium Dulcis-Rutaceae) (active ingredient), Curry Leaves (Murraya Koenigii-Rutaceae), Ginger (Zingiber Officinale-Zingiberaceae), Aloe vera (Aloe Barbadensis Miller-Asphodelaceae), Reetha (Sapindus Mukorossi-Sapindaceae) in different proportions. Several physicochemical tests were performed for visual assessment, wetting time, pH, assurance of solid contents, surface tension, detergency, dirt dispersion, conditioning performance, foam stability. The formulated herbal shampoo is black in color with demonstrable good froth stability, detergency, good cleansing, low surface tension, optimum pH and conditioning activity. All these are the ideal characters for good quality of the herbal shampoo to be used in daily life. However, further scientific investigation is required for validation of its overall quality.

**KEYWORDS** : pH,Herbal shampoo, Natural ingredients, Hair,Dandruff, Cleansing action, Dirt removal

## I. INTRODUCTION :

➤Hairs are the integral part of human beauty.
➤Hair is a protein filament that grows from follicles on the dermis or skin.
➤Scientific name of hair is pili or pilus.
➤Hair is a component of the integumentary system and extends downward into the dermal layer where it sits in the hair follicle.
➤The presence of hair is a primary differentiator of mammals as a unique class of organisms. In humans, it is a cherished and highly visible indicator of health, youth, and even class.
➤ It has a sensory function, protects from cold and UV radiation, and can have a significant psychological impact when its growth or structure is deranged.
➤At a microscopic level, the variety in length, color, diameter, and cross-sectional shape of each hair creates the characteristic profiles seen across ethnic groups and among individuals.

**Hair Anatomy:**

➤Hair grows from hair follicles situated within the fatty layer of the scalp. Contrary to the popular belief that hair grows as single strands, hair follicles actually grow in groups of 1-4 hairs called "follicular units" ➤At the base of each hair follicle is a hair bulb where the growth mechanism for producing hair occurs. Hair follicles get their nourishment from the blood vessels within the dermis. The cells divide and develop to produce the hair shaft.➤While the hair is still developing underneath the epidermis, it maintains a soft form. Once the pushes past the epidermis, its outside layer hardens into keratin.





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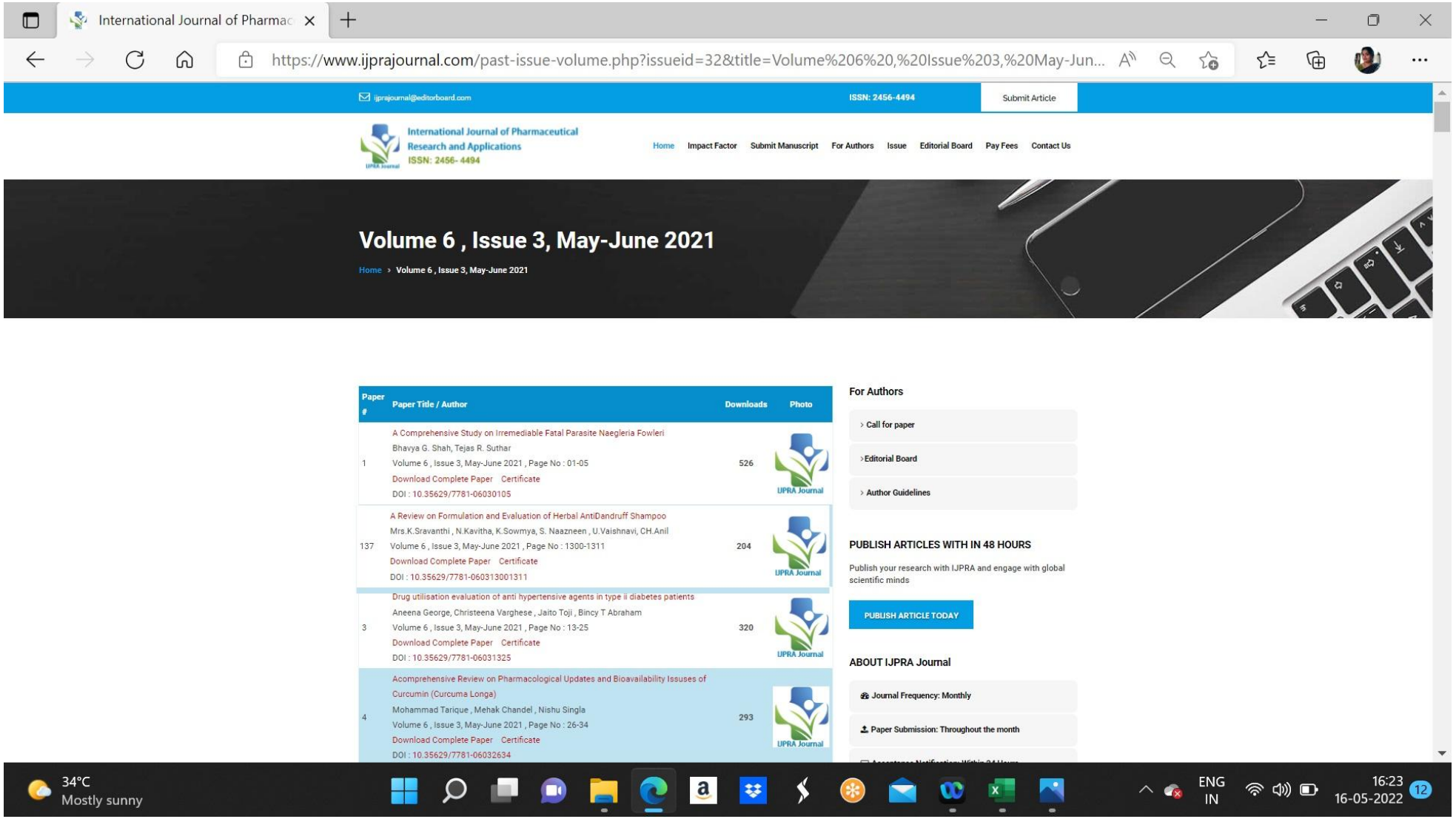


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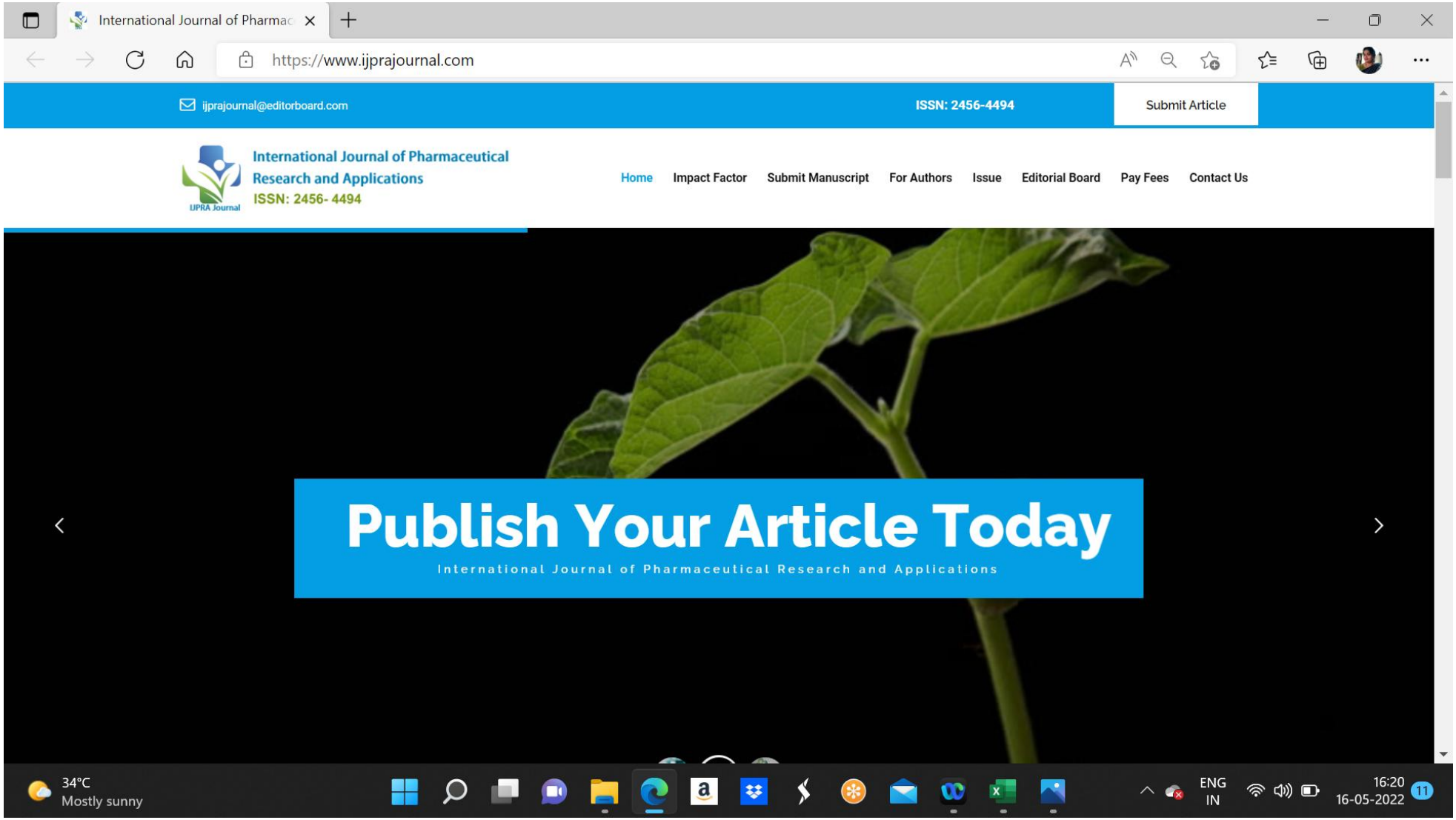


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# DEVELOPMENT OF STRATEGIES FOR REDUCING ADMINISTRATION AND TRANSCRIPTION ERRORS IN TERTIARY CARE HOSPITAL

**Akshitha Reddy G.[2], Priscilla NikhithaT.[2], Noman Nahdi[2], Shambavi P.[2], Asha Jyothi V.[1]* and Venkateshwarlu Konuru[1]**

Pharm D.[2], HOD of Pharmacology[1*], HOD of Pharmacy Practice[1],
St. Pauls College of Pharmacy, Hyderabad.

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***Corresponding Author**
**Dr. Asha Jyothi V.**
HOD of Pharmacology St. Pauls College of Pharmacy, Hyderabad.

**ABSTRACT**

**Introduction:** Medication errors are the most common medical errors which occur because of inappropriate use of medication in each of medicine prescription stages for patients. Nurses and nursing students in hospitals are people that are directly related to giving drug to patients and that they are referred to as people could build the medication errors. Nurses use 40% of their time on the average in hospital for giving drugs to their patient's and there are 20,000 forms of medicines within the world that every one of them despite their therapeutic effects has complications and their own directions which need an expertise in accuracy in handling them. **Methods:** The study was a prospective, observational study which was conducted over a period of six months October 2019 to March 2020. The necessary information was collected from in-patient case sheets, treatment charts and nursing staff. The collected data was analyzed using (NCC MERP) taxonomy and assessed the types, frequency and factors responsible for medication administration and transcription errors. **Results:** During the study period, 252 errors were identified in which Administration errors are 134(53.17%) and Transcription errors are 118(46.82%). Types of errors observed were wrong frequency (29.76%), Omission error (19.44%), wrong strength (15.07%), and improper dose (11.11%). Majority of errors belongs to Category B (43.65%) followed by Category C (25.79%) and Category D (23.80%). Contributing factors responsible for errors are frequent interruptions and distractions (25.39%), staffing (22.22%), inexperienced personnel (12.3%) and lack of availability of health care professionals (12.3%). Human factors responsible for errors are Stress (30.95%), Knowledge deficit





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## Abstract

### DEVELOPMENT OF STRATEGIES FOR REDUCING ADMINISTRATION AND TRANSCRIPTION ERRORS IN TERTIARY CARE HOSPITAL

**Akshitha Reddy G., Priscilla NikhithaT., Noman Nahdi, Shambavi P., Asha Jyothi V.* and Venkateshwarlu Konuru**

**ABSTRACT**

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**Keywords:** .

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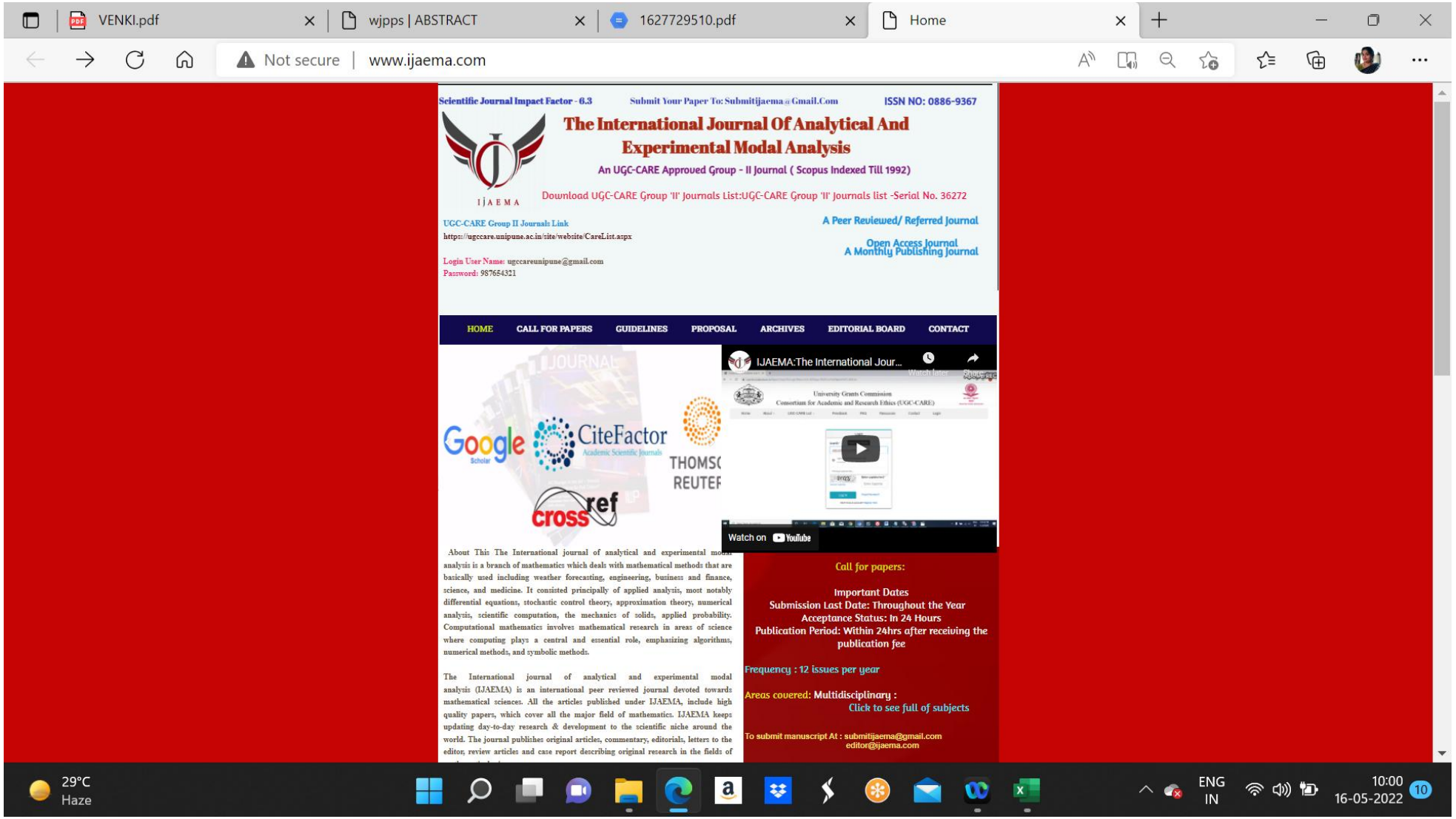


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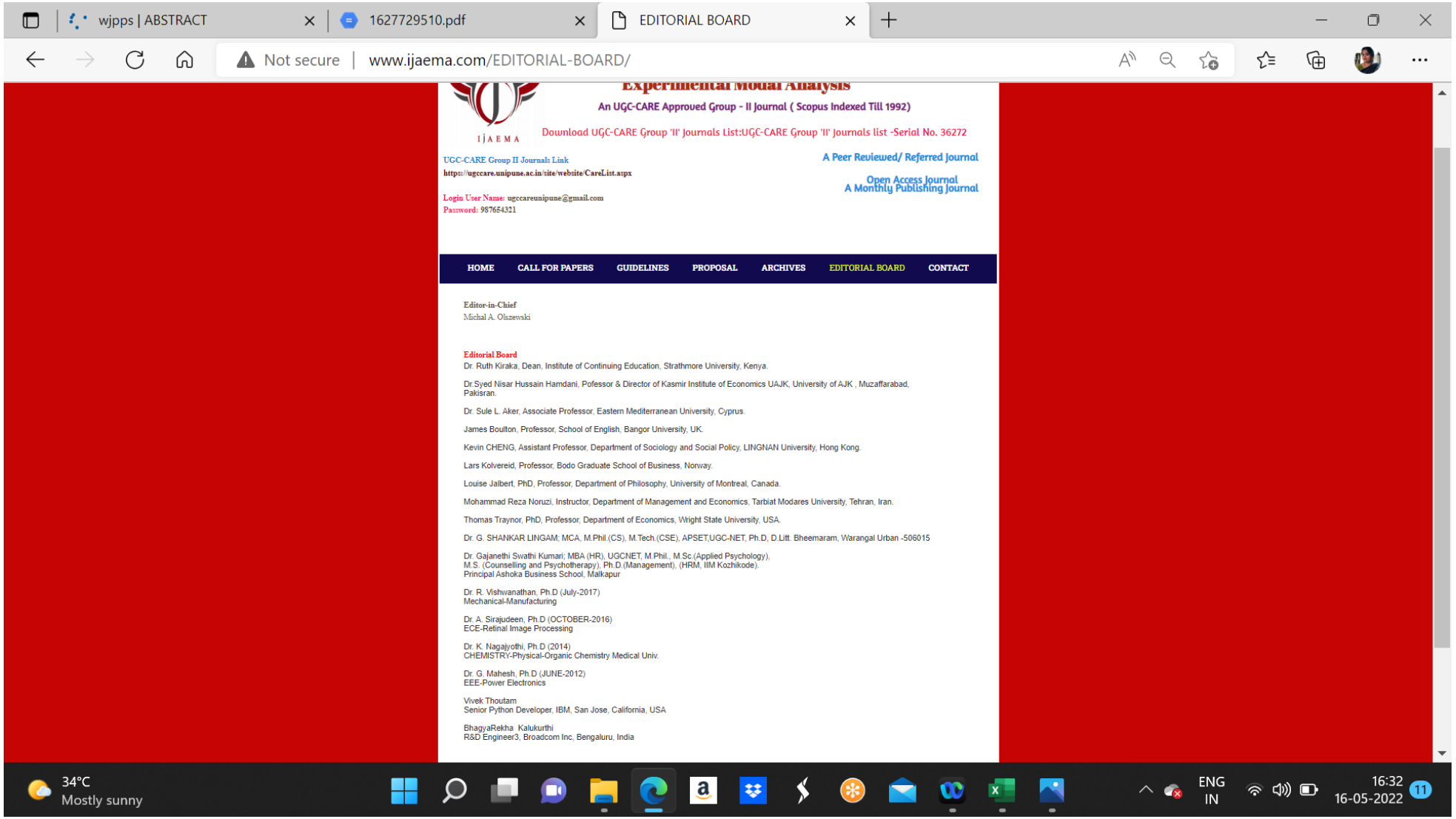


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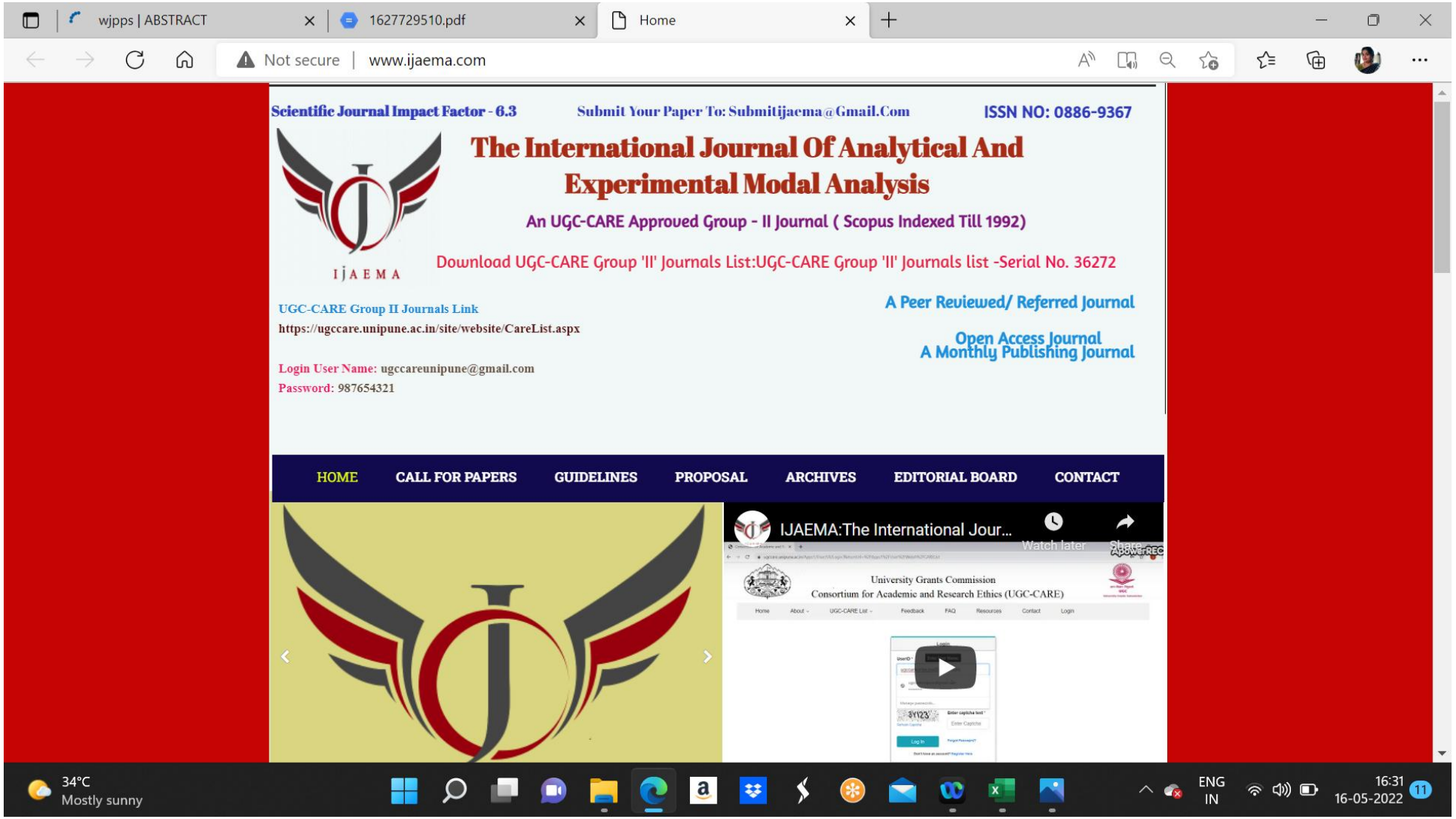


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175. **Development and Validation of an Analytical Method for the Simultaneous Estimation of Artemether and Lumefantrine in Bulk and Pharmaceutical Dosage Form**

Afia, P.Sunil Kumar Chaitanya, P.Sudhakar, Rubeena Kauser, Hafsa Siddiqua; St. Paul's College of Pharmacy, Turkhyamzal -510510, RR – Dist, Telangana, India.

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The International journal of analytical and experimental modal analysis ISSN NO:0886-9367

# Development and Validation of an Analytical Method for the Simultaneous Estimation of Artemether and Lumefantrine in Bulk and Pharmaceutical Dosage Form

**Afia, P.Sunil Kumar Chaitanya*, P.Sudhakar, Rubeena Kauser, Hafsa Siddiqua**

*Dept of Pharmaceutical Analysis, St.Pauls college of Pharmacy.*

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**Corresponding Author**

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**RR – Dist, Telangana,**

**India.**

**Mob: +91 9550343883**

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## Abstract

**A rapid and a precise Reverse Phase High Performance Liquid Chromatographic method has been developed and validated for the simultaneous estimation of Artemether and Lumafantrine, in bulk as well as in tablet dosage form. Separation was carried out on HPLC –Waters Model NO.2690/5 Inertsil-ODS C18 (250 x 4.6mm, 5µm) column using a mixture of Methanol: water 45:55 as mobile phase at a flow rate of 1.0ml/min. The detection was carried out at 254nm.The retention times of Artemether and Lumafantrine were found to be 4.249 , 5.995 respectively. The method produces linear response in the concentration range of 20ppm to 80 ppm of target concentration .The method was precise since the %RSD values of peak areas for five duplicate injection was found to be below " 2".The % recovery values for the analyte were found to be "99.987% & 99.99%" indicating the method was accurate. The LOD & LOQ of artemether and lumefantrine were found to be**



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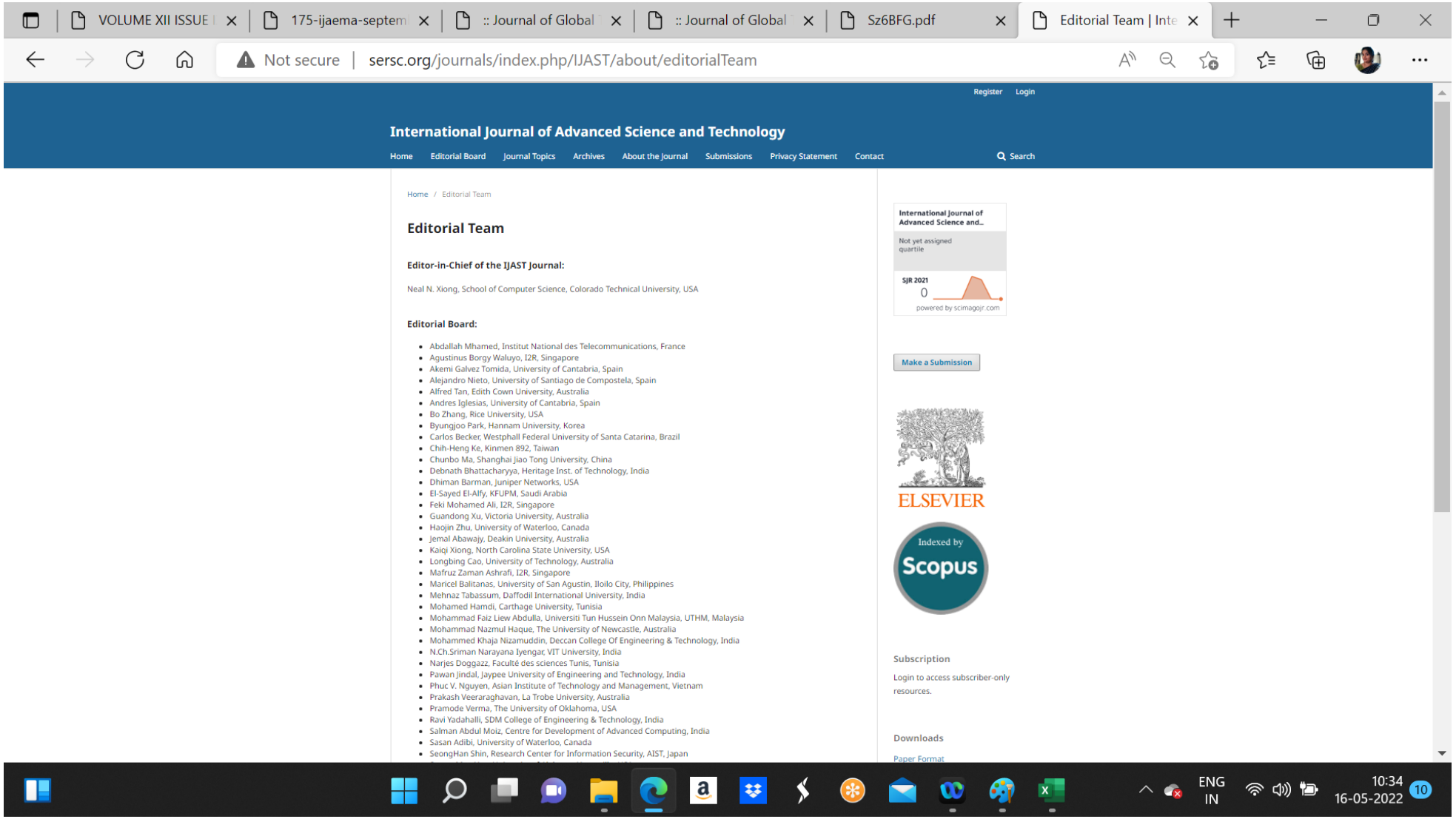


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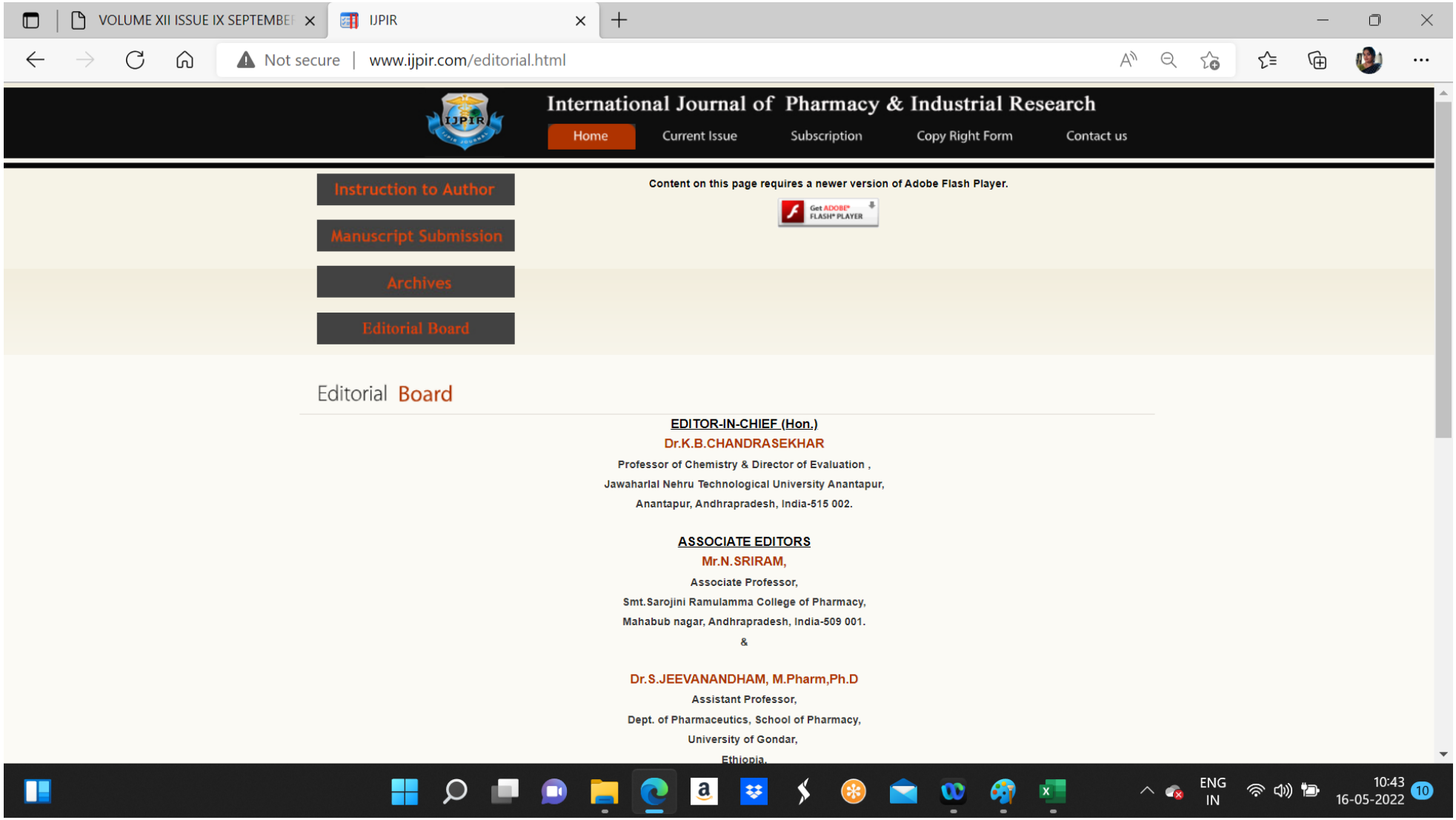


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*Research Article*

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# Preparation, Characterization and Evaluation of Pregabalin Microspheres

**Gosa Geethika[1], Katla Venu Madhav[1*], Ayesha Sultana[2], Pumajula Naga Haritha[3]**
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**ABSTRACT**
In the present work, Microspheres of Pregabalin using PLGA, Ethyl cellulose and HPMC K4M as polymers were formulated to deliver pregabalin via oral route. The results of this investigation indicate that solvent evaporation method can be successfully employed to fabricate pregabalin microspheres. In this work an effort was made to formulate microsphere of pregabalin by using different polymers. Prepared formulations are evaluated for bulk density, tapped density, precent mucoadhesion, Percent compressibility, hausners ration, percentage yield, size and interaction study by Differential scanning calorimeter and *in vitro* drug release. Formulation which passed all the evaluation parameters was considered as best formulation of Pregabalin. The present study conclusively that pregabalin microsphere could be prepared successfully and formulation E5 was shows satisfactory result.

**Keywords:** Pregabalin, PLGA, Ethyl cellulose and HPMC K4M and Microspheres.

## INTRODUCTION

Oral route drug administration is by far the most preferable route for taking medications. However, their short circulating half life and restricted absorption via a defined segment of intestine limits the therapeutic potential of many drugs. Such a pharmacokinetic limitation leads in many cases to frequent dosing of medication to achieve therapeutic effect. Rational approach to enhance bioavailability and improve pharmacokinetic and pharmacodynamics profile is to release the drug in a controlled manner and site specific manner. Microspheres are small spherical particles, with diameters 1 µm to 1000 µm. They are spherical free flowing particles consisting of proteins or synthetic polymers which are biodegradable in nature. There are two types of microspheres; microcapsules and micromatrices, which are described as, Microcapsules are those in which entrapped substance is distinctly surrounded by distinct capsule wall and micromatrices in which entrapped substance is dispersed throughout the matrix. Microspheres are sometimes referred to as microparticles. Microspheres can be manufactured from various natural and synthetic materials. Microsphere play an important role to

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# MICROBALLOONS – A NOVEL FLOATING DRUG DELIVERY SYSTEM

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**ABSTRACT**
The purpose of this review on microballoons is to collect the recent literature with a special focus on the novel technological advancements in floating drug delivery system to achieve gastric retention. Microballoons (Hollow microsphere) promises to be a potential approach for gastric retention. Microballoons drug-delivery systems are based on noneffervescent system containing empty particles of spherical shape without core ideally having a size less than 200 micrometer. Microballoons drug delivery systems have shown to be of better significance in controlling release rate for drugs having site specific absorption. The floating microballoons showed gastroretentive controlled release delivery with efficient means of enhancing the bioavailability by means of enhancing the gastric retension. Optimized hollow microspheres will find the central place in novel drug delivery, particularly in safe, targeted and effective in vivo delivery promises to be a potential approach for gastric retention. The advantages, limitations, methods of preparation of hollow microsphere, applications, characterizations of microballoons and formulation aspects with various evaluation techniques and marketed products are included in detail.

**KEYWORDS:** Hollow microspheres, Gastroretentive, Floating, Controlled release.

## INTRODUCTION

The oral delivery of drugs is the most favored route of administration because of ease of administration. Drug bioavailability of oral dosage forms is subjective by various factors. One of the significant factor is a Gastric residence time (GRT) of these dosage forms. Truly, gastric retention has received important interest in the past few years as many of the conventional oral delivery systems have some limits related to fast gastric emptying time. Gastroretentive dosage form is a type of novel drug delivery system which can persist in the stomach for prolonged period of time and thus increases the GRT of drugs.[1]

The conventional drug delivery system achieves and also maintains the drug concentration in the therapeutically effective range desired for treatment, only when taken numerous times in a day.[2] A drug that has a narrow absorption window in the GIT(Gastro Intestinal Tract) may have poor absorption. For these drugs, GRDDS(Gastro Retentive Drug Delivery Systems) offer the advantages in extending the gastric emptying time.

Many problems are faced in preparing controlled release systems for better absorption and improved bioavailability. Drug absorption from the GIT is a complex process and is subject to several variables.[3] It is broadly, recognised that the extent of GIT drug absorption is correlated to contact time with small intestinal mucosa. GRDDS can persist in the GI region for many hours and therefore significantly extend the GRT of drugs. Extended gastric retention increases bioavailability, decreases drug waste and increases solubility of drugs which are less soluble in high pH environment.

### Anatomy of Stomach

The stomach is J shaped enlargement of GIT directly inferior to the diaphragm in epigastric, umbilical and left hypochondriac regions of the abdomen. It connects esophagus to the duodenum, the first part of the small intestine and provides a barrier to the delivery of drugs to the small intestine.[4] The stomach has four regions: Cardia, Fundus, Body & Pylorus

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MICROBALLOONS – A NOVEL FLOATING DRUG DELIVERY SYSTEM

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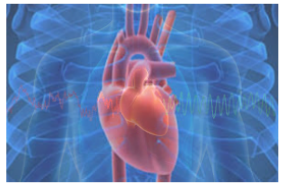

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*Original Article*

# Nano Co-crystal Engineering Technique to Enhance the Solubility of Ezetimibe

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**ABSTRACT**

**Background:** Co-crystals have been highly promising for tailoring physico-chemical properties of Active pharmaceutical ingredient (API) by coupling with co-former. **Objectives:** The objective of the present work was to prepare and characterize novel nano co-crystals of Ezetimibe by different methods in various ratios of co-formers and to optimize the formulation based on the enhancement in solubility and dissolution rate. **Methods:** Ezetimibe nano co-crystals were prepared employing oxalic acid, succinic acid and maleic acid as co-formers by solvent evaporation method and anti-solvent method. **Results:** Instrumental analysis of co-crystals (DSC, IR, SEM and XRD) was performed to characterize the novel nano co-crystals. Dissolution studies and chemical stability were assessed and compared with pure Ezetimibe. The formulation with maleic acid as a co-former in the molar ratio of Ezetimibe and maleic acid (0.4:0.4) was found to be efficient than oxalic acid and succinic acid. The co-crystal dissolution profile in distilled water containing 0.5% SLS showed 18.8 folds increase in the dissolution efficiency and was found to be 95.2% within 45 min. **Conclusion:** The results demonstrate feasibility of co-crystallization method using maleic acid as co-former to enhance the solubility of poorly soluble drug Ezetimibe.

**Key words:** Anti-solvent, Co-Formers, Maleic Acid, Oxalic acid, Solubility, Solvent evaporation, Succinic acid.

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## INTRODUCTION

The oral route is the most preferred route of drug administration due to its convenience, good patient compliance and low medicine production costs. In order to a drug to be absorbed into the systemic circulation following oral administration, the drug must be dissolved in gastric fluids. For hydrophobic drugs, the dissolution process acts as the rate controlling step, which determines the rate and degree of absorption. Thus, one of the major challenges to development today is poor solubility, as an estimated 40% of all newly developed drugs are poorly soluble or in soluble in water.[1]

Bioavailability of poorly water soluble hydrophobic drugs (class II and class IV in biopharmaceutical classification system) is limited by solubility and dissolution rate. The dissolution rate of these drugs can be improved by decreasing particle size, decreasing crystallinity and/or increasing surface area. Several studies have been carried out to increase the rate of drugs dissolution by increasing the particle size. However, the fine drug particles have high tendency to agglomerate due to Vander Waals attraction or hydrophobicity, which both result in decrease in surface area over time.[2,3]

The enhancement of oral bioavailability of such poorly water soluble drugs remains one of the most challenging aspects of drug development. The development of nano co-crystals as a practically viable method to enhance bioavailability of poorly water soluble is to overcome the limitations of previous approaches such as salt formation, solubilization by co-solvents, particle size reduction and solid dispersion.[4]

One of the challenging tasks in the pharmaceutical industry is to discover ways of improving the physicochemical properties of active pharmaceutical ingredients (APIs). The solubility, dissolution rate, melting point, moisture sorption tendency and compressibility of APIs and/or recipients affect the bioavailability, design, processing, manufacturing and stability of the resultant dosage form.[5] Pharmaceutical co-crystals are attractive to the pharmaceutical industry because they offer multiple opportunities to modify the chemical and/or physical properties of an API without making or breaking covalent bonds.

Co-crystals may be defined as crystalline materials that consist of two or more molecular species held together by non covalent forces. In the recent years Pharmaceutical nano co crystals are highly promising in enhancing the dissolution rates and thus, improved bioavailability and efficacy of medication.[6] In pharmaceutical industry, it has been a major lucrative wherein the solid properties of pharmaceutical active agents have been modulated using complementary molecules in the form of co-crystal formers (CCFs). Co-crystals containing an active pharmaceutical ingredient (API) can improve the physiochemical properties such as solubility/dissolution rate, stability and mechanical properties of an API. Nano-scaling will further advance these characteristics compared to their conventional forms because of a larger surface to volume ratio of nano sized particles, one can further improve properties of an API (e.g. dissolution rate). The enhanced dissolution rate of a nanocrystal is mainly due to the increased surface area. A slight increase in solubility owing to the curvature and the high-energy surfaces of nanosized particles will also contribute to faster dissolution. The components in a co-crystal exist in a definite stoichiometric ratio and assemble via non-covalent interactions such as hydrogen bonds, ionic bonds, - or Vander Waals interactions rather than by ion pairing. Further, co-crystals have

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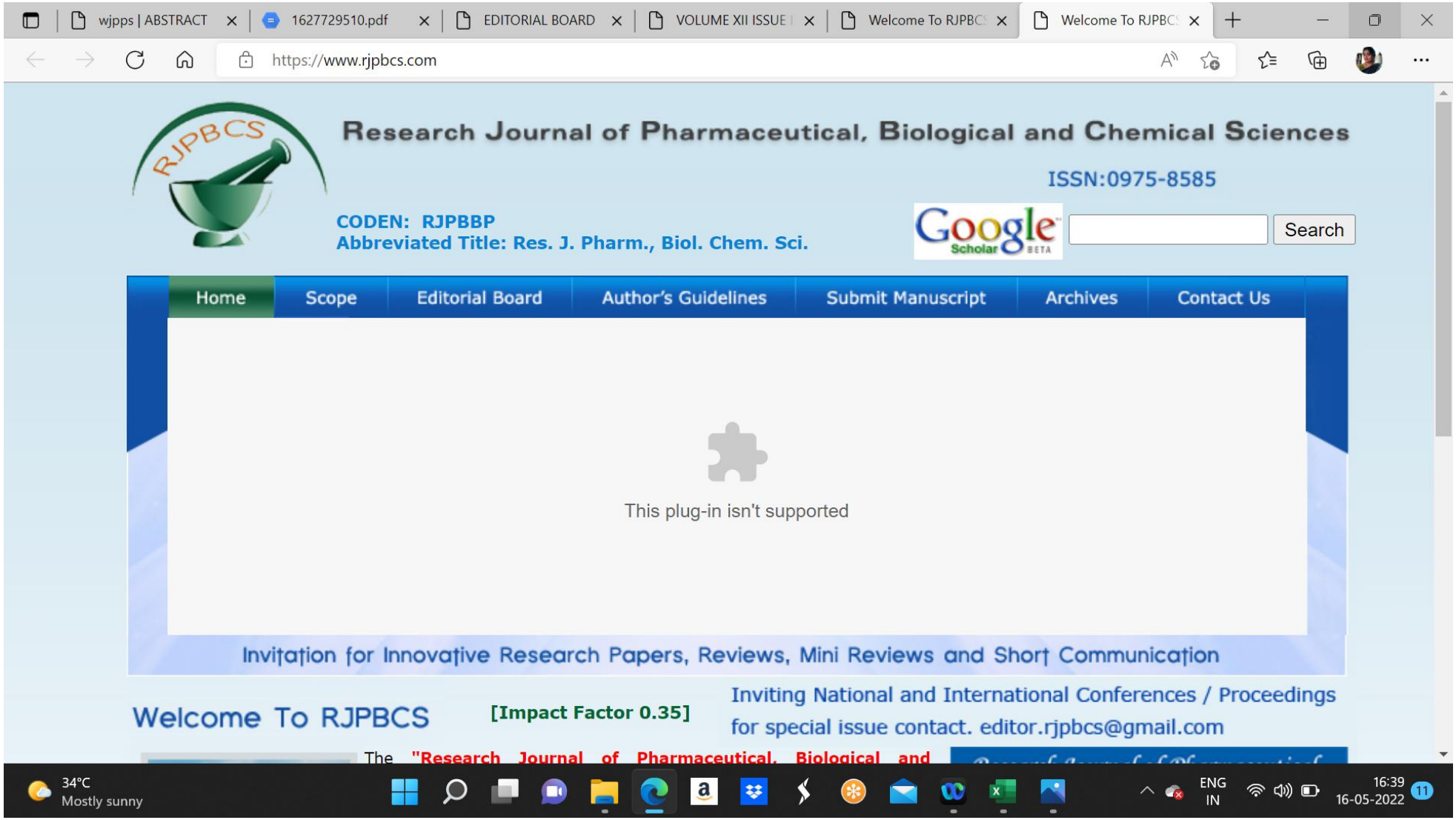


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# DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR THE SIMULTANEOUS ESTIMATION OF ATOVAQUONE AND PROGUANIL HYDROCHLORIDE IN PHARMACEUTICAL DOSAGE FORM

**Sharanya M.[1], Hafsa Siddiqua*[2], Dr. Sunil Kumar Chaitanya Padavala[3] and Rubina Kauser[4]**

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**ABSTRACT**

A simple, reproducible and efficient reverse phase high performance liquid chromatographic method was developed for simultaneous determination of Atovaquone and Proguanil HCL in pure form and marketed combined pharmaceutical dosage forms. A column having Phenomenex Luna (C18) (250mm x 4.6mm, 5µm) in isocratic mode with mobile phase containing Methanol: Water (65:35 v/v) was used. The flow rate was 1.0 ml/min and effluent was monitored at 220 nm. The retention time (min) and linearity range (ppm) for Atovaquone and Proguanil HCL were found to be (3.202, 5.463min) and (30-70, 10-50), respectively. The proposed method has been validated for linearity, accuracy and precision, robustness and limit of detection and limit of quantification. The limit of detection (LOD) and limit of quantification (LOQ) were found to be 2.6µg/ml and 7.8µg/ml for Atovaquoneand 3.4µg/ml 10.2µg/ml for Proguanil HCL respectively. The percentage recovery of Atovaquone and Proguanil HCL was found to be 100.187% and 100.748% respectively. The developed method was found to be accurate, precise and selective for simultaneous determination of Atovaquone and Proguanil HCL in pure form and marketed combined pharmaceutical dosage forms.

**KEYWORDS:** Atovaquone and Proguanil HCL, RP-HPLC, Validation, Accuracy, Precision.





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**Sharanya M.[1], Hafsa Siddiqua*[2], Dr. Sunil Kumar Chaitanya Padavala[3] and Rubina Kauser[4]**

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**KEYWORDS:** Atovaquone and Proguanil HCL, RP-HPLC, Validation, Accuracy, Precision.

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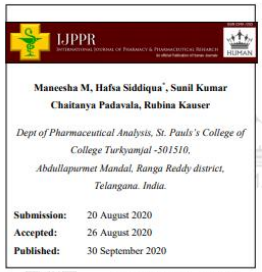
# Development and Validation of RP-HPLC Method for the Simultaneous Estimation of Bupropion and Zonisamide in Bulk and Tablet Dosage Form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**Keywords:** Bupropion, Zonisamide, RP-HPLC, ICH guidelines, Validation

**ABSTRACT**

The present research work aims to develop and validate the RP-HPLC method for the simultaneous estimation of bupropion and Zonisamide in bulk and tablet dosage form. Chromatographic separation was achieved by using water inertsil -ODS C18 (250 x 4.6 mm, 5 µ) column with a flow rate of 1.0 ml/min. The injection volume was 20µl. The optimized mobile phase was methanol and phosphate buffer in the ratio of 80:20%v/v. UV detector wavelength monitored at 252 nm and the run time was 8 min. The retention time was found to be 3.226min for Bupropion and 4.522 min for Zonisamide. The linearity was obtained in the range of 20-80 ppm for both drugs. The developed method was validated statistically according to ICH guidelines. The proposed method was accurate, precise, reproducible, and robust and can be employed for routine quality control analysis of pharmaceutical formulations.



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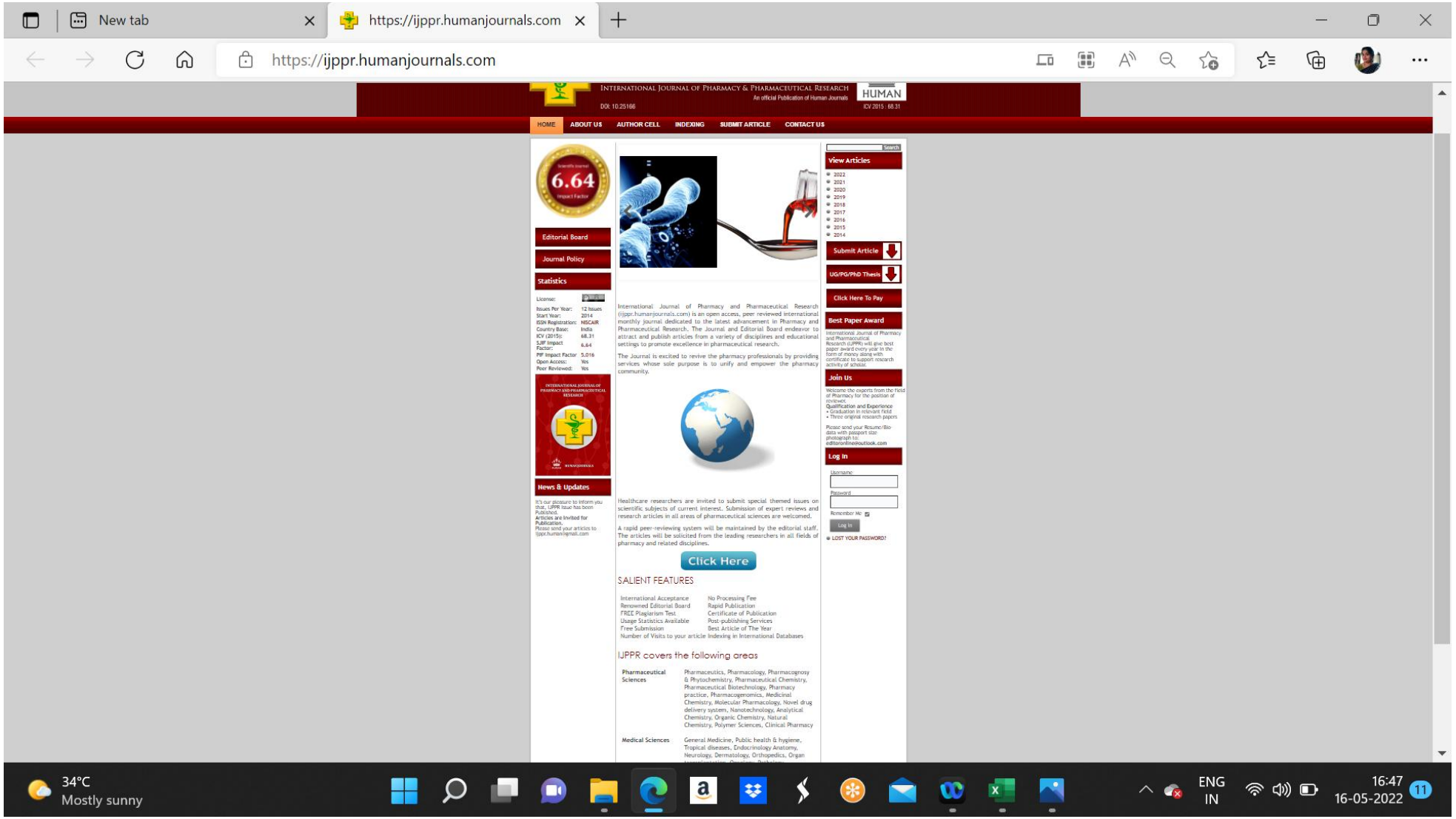


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# DEVELOPMENT OF STRATEGIES FOR REDUCING ADMINISTRATION AND TRANSCRIPTION ERRORS IN TERTIARY CARE HOSPITAL

**Akshitha Reddy G.[2], Priscilla NikhithaT.[2], Noman Nahdi[2], Shambavi P.[2], Asha Jyothi V.[1]* and Venkateshwarlu Konuru[1]**

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**ABSTRACT**

**Introduction:** Medication errors are the most common medical errors which occur because of inappropriate use of medication in each of medicine prescription stages for patients. Nurses and nursing students in hospitals are people that are directly related to giving drug to patients and that they are referred to as people could build the medication errors. Nurses use 40% of their time on the average in hospital for giving drugs to their patient's and there are 20,000 forms of medicines within the world that every one of them despite their therapeutic effects has complications and their own directions which need an expertise in accuracy in handling them. **Methods:** The study was a prospective, observational study which was conducted over a period of six months October 2019 to March 2020. The necessary information was collected from in-patient case sheets, treatment charts and nursing staff. The collected data was analyzed using (NCC MERP) taxonomy and assessed the types, frequency and factors responsible for medication administration and transcription errors. **Results:** During the study period, 252 errors were identified in which Administration errors are 134(53.17%) and Transcription errors are 118(46.82%). Types of errors observed were wrong frequency (29.76%), Omission error (19.44%), wrong strength (15.07%), and improper dose (11.11%). Majority of errors belongs to Category B (43.65%) followed by Category C (25.79%) and Category D (23.80%). Contributing factors responsible for errors are frequent interruptions and distractions (25.39%), staffing (22.22%), inexperienced personnel (12.3%) and lack of availability of health care professionals (12.3%). Human factors responsible for errors are Stress (30.95%), Knowledge deficit





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# DEVELOPMENT OF STRATEGIES FOR REDUCING MEDICATION ADMINISTRATION AND TRANSCRIPTION ERRORS IN TERTIARY CARE HOSPITAL

Priscilla Nikhitha T[1], Akshitha Reddy G[1], Dr. Asha Jyothi V*, Dr. Venkateshwarlu K[2]

Pharm D[1], HOD of Pharmacology*, HOD of Pharmacy Practice[2], St. Pauls College of Pharmacy, Hyderabad.

## ABSTRACT

**The principal drawback of the present scenario in health care system is, the failure in the treatment process is mainly due to Medication Errors that lead to harm to the patient, hospitalization and even death. Our study mainly aimed to identify Medication Administration Errors and Medication Transcription Errors, and the factors responsible for causing error in the hospital setting. It is the responsibility of Health Care Professionals to enhance Patient Safety and Quality of life. So, our study mainly focusses on the role of Clinical Pharmacist in detecting, evaluating and preventing medication administration errors reaching the patient and also to know the impact of suggestions given to Health Care Staff by clinical pharmacist either helped them to prevent errors or not. Taking all these points into consideration we suggest implementation of interventions or strategies in an effort which helps Health Care Professionals to prevent Medication Administration and Medication Transcription Errors. In every hospital setting it is mandatory to introduce some professional programs which help the nurses to improve the handling and administration of intravenous infusions and other health care professionals to transcribe the prescription drugs into drug chart without any failure.**

Keywords: Medication Administration Errors, Medication Transcription Errors, Clinical Pharmacist, Health Care Professionals.



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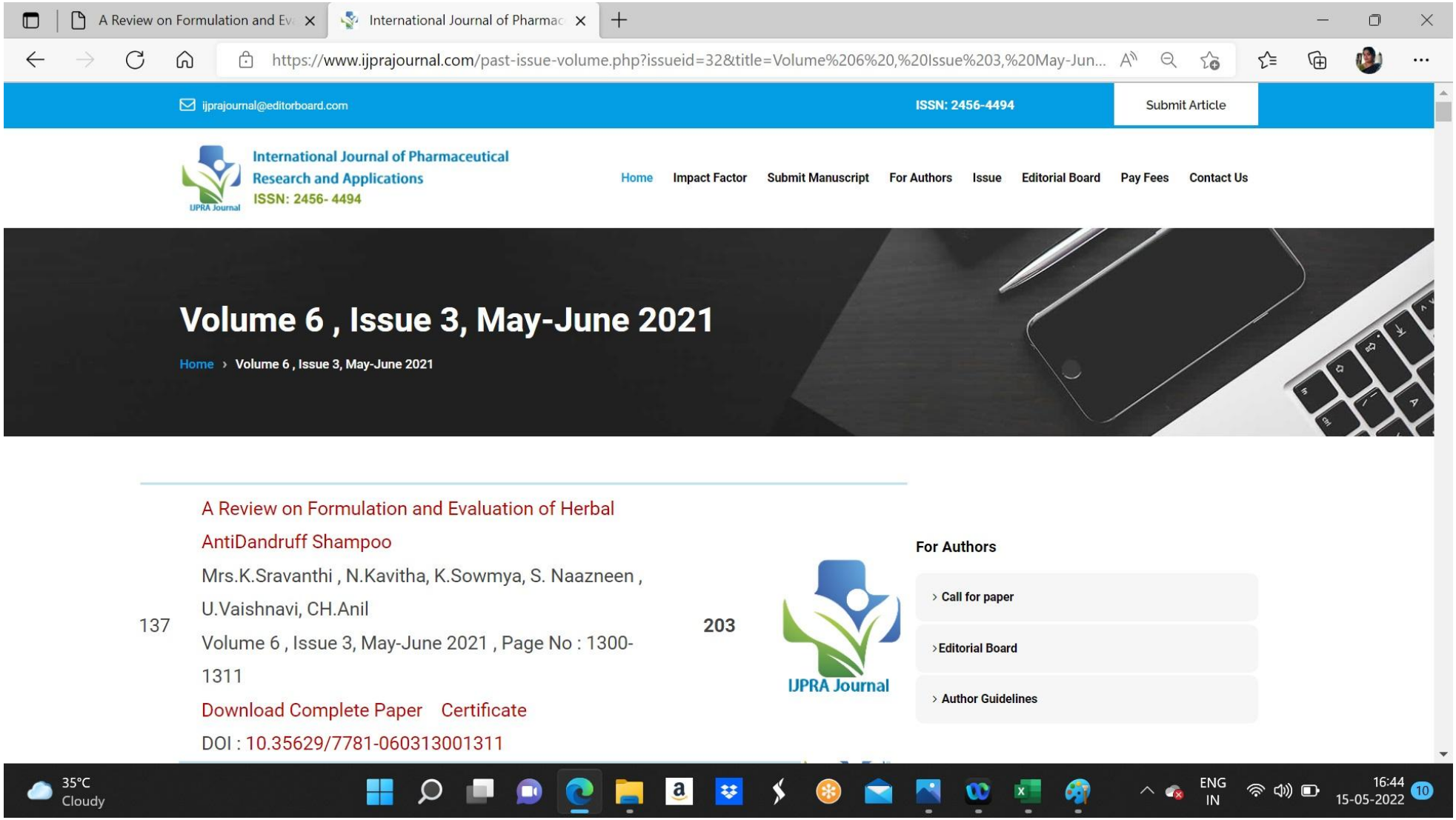


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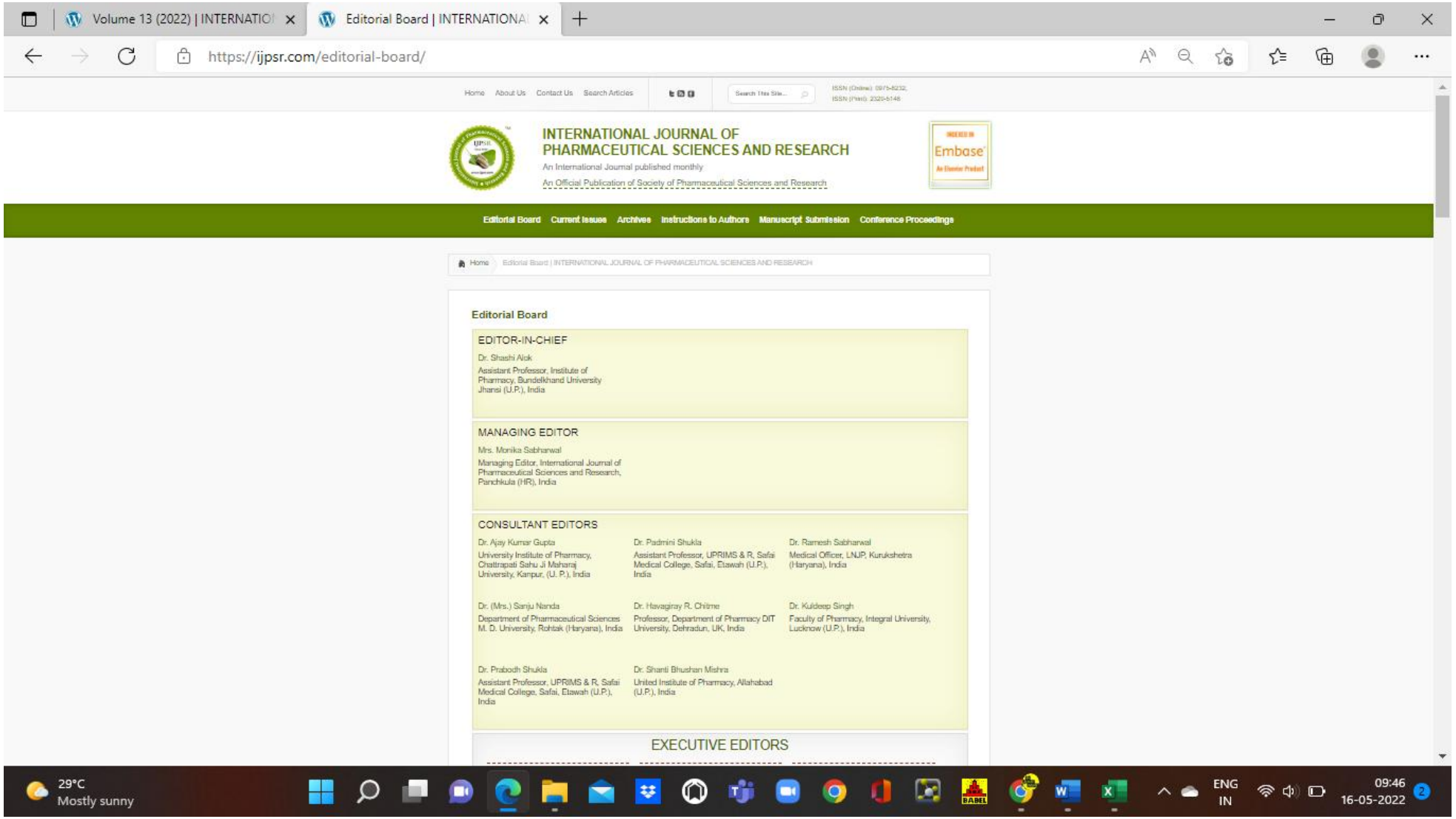


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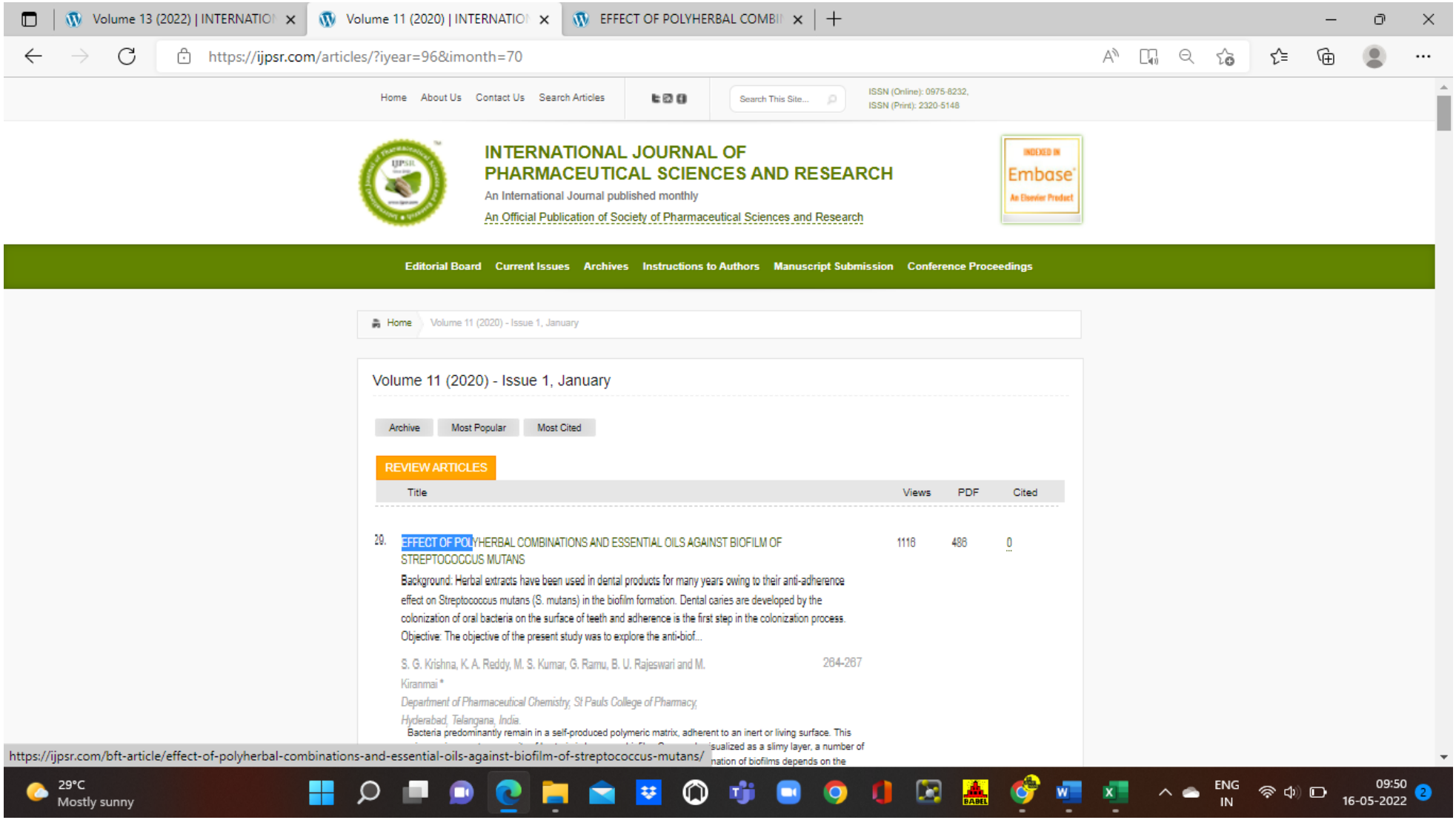

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| 29. | EFFECT OF POLYHERBAL COMBINATIONS AND ESSENTIAL OILS AGAINST BIOFILM OF STREPTOCOCCUS MUTANS | 1118 | 486 | 0 |

Background: Herbal extracts have been used in dental products for many years owing to their anti-adherence effect on Streptococcus mutans (S. mutans) in the biofilm formation. Dental caries are developed by the colonization of oral bacteria on the surface of teeth and adherence is the first step in the colonization process. Objective: The objective of the present study was to explore the anti-biof...

S. G. Krishna, K. A. Reddy, M. S. Kumar, G. Ramu, B. U. Rajeswari and M. Kiranmai *

264-267

*Department of Pharmaceutical Chemistry, St Pauls College of Pharmacy, Hyderabad, Telangana, India.*

Bacteria predominantly remain in a self-produced polymeric matrix, adherent to an inert or living surface. This ... visualized as a slimy layer, a number of ... nation of biofilms depends on the

https://ijpsr.com/bft-article/effect-of-polyherbal-combinations-and-essential-oils-against-biofilm-of-streptococcus-mutans/

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INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

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# EFFECT OF POLYHERBAL COMBINATIONS AND ESSENTIAL OILS AGAINST BIOFILM OF *STREPTOCOCCUS MUTANS*

S. Gopi Krishna [1], K. Abhilash Reddy [1], M. Shiva Kumar [1], G. Ramu [1], B. Uma Rajeswari [2] and M. Kiranmai [*3]

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Department of Pharmaceutical Chemistry [3], St Pauls College of Pharmacy, Hyderabad - 501510, Telangana, India.

**Keywords:**
*Streptococcus mutans*, Antiadherence activity, Polyherbal extracts, Plate count method, Essential oils

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Department of Pharmaceutical Chemistry, St Pauls College of Pharmacy, Hyderabad - 501510, Telangana, India.
**E-mail:** gchaitra.kiran@gmail.com

**ABSTRACT: Background:** Herbal extracts have been used in dental products for many years owing to their anti-adherence effect on *Streptococcus mutans* (*S. mutans*) in the biofilm formation. Dental caries are developed by the colonization of oral bacteria on the surface of teeth and adherence is the first step in the colonization process. **Objective:** The objective of the present study was to explore the anti-biofilm effect of the various combinations of herbal extracts and essential oils against *S. mutans* which play a central role in causing dental caries. **Methods:** Hydroalcoholic extracts of *Terminalia chebula* (*T. chebula*), *Psidium guajava* (*P. guajava*), *Azadirachta indica* (*A. indica*) and *Pongamia pinnata* (*P. pinnata*) were prepared separately and dried. Various combinations of herbal extracts, as well as essential oils Syzygium aromaticum (clove) and Mentha piperita (Peppermint oil), were tested for anti-biofilm potential on the glass surface. The number of adhering bacteria (CFU/ml) was determined by the plate count method. **Results:** It was found that all extract combinations and essential oils have shown anti-biofilm activity. The 2:2:1:1 of extracts and 2:2 ratio of essential oils has shown less bacterial count compared to all other tested ratios. Furthermore the herbal extract ratio of 2:2:1:1 has shown significant ($P<0.01$) anti-biofilm activity when compared to standard chlorhexidine mouthwash. **Conclusion:** These findings suggest that the active constituents present in the combined extracts could synergize the anti-biofilm activity owing to the reinforcement effect of constituents present in the combined mixture.

**INTRODUCTION:** The human mouth with its diverse nature and environmental change are well known for its unrestricted growth and formation of natural biofilms comprising a heterogenous microbial population among which vast variety of organisms are bacteria.

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Among the microbes *Streptococcus mutans* (*S. mutans*) have been implicated as a primary causative organism of dental caries [1]. Dental caries and gingivitis are the most prevalent oral infectious diseases of humans and are due to the accumulation of the dental plaque (a microbial biofilm) to the tooth surface and at the gingivitis margin respectively [2]. Strains of *S. mutans* adhere by hydrophobic bonds to enamel surface and ferment dietary carbohydrates, notably sucrose [3].

Sucrose metabolism promotes the firm adherence and cellular aggregation (biofilm) of bacteria to the tooth surface using glucan produced by the





cooperative action of glucosyltransferase (gtf) [4]. The oral microflora of biofilm produces acids by carbohydrate fermentation and initiates the

and powdered separately. Each plant material was extracted separately using an equimolar ratio of ethanol and water (50:50) by using a Soxhlet

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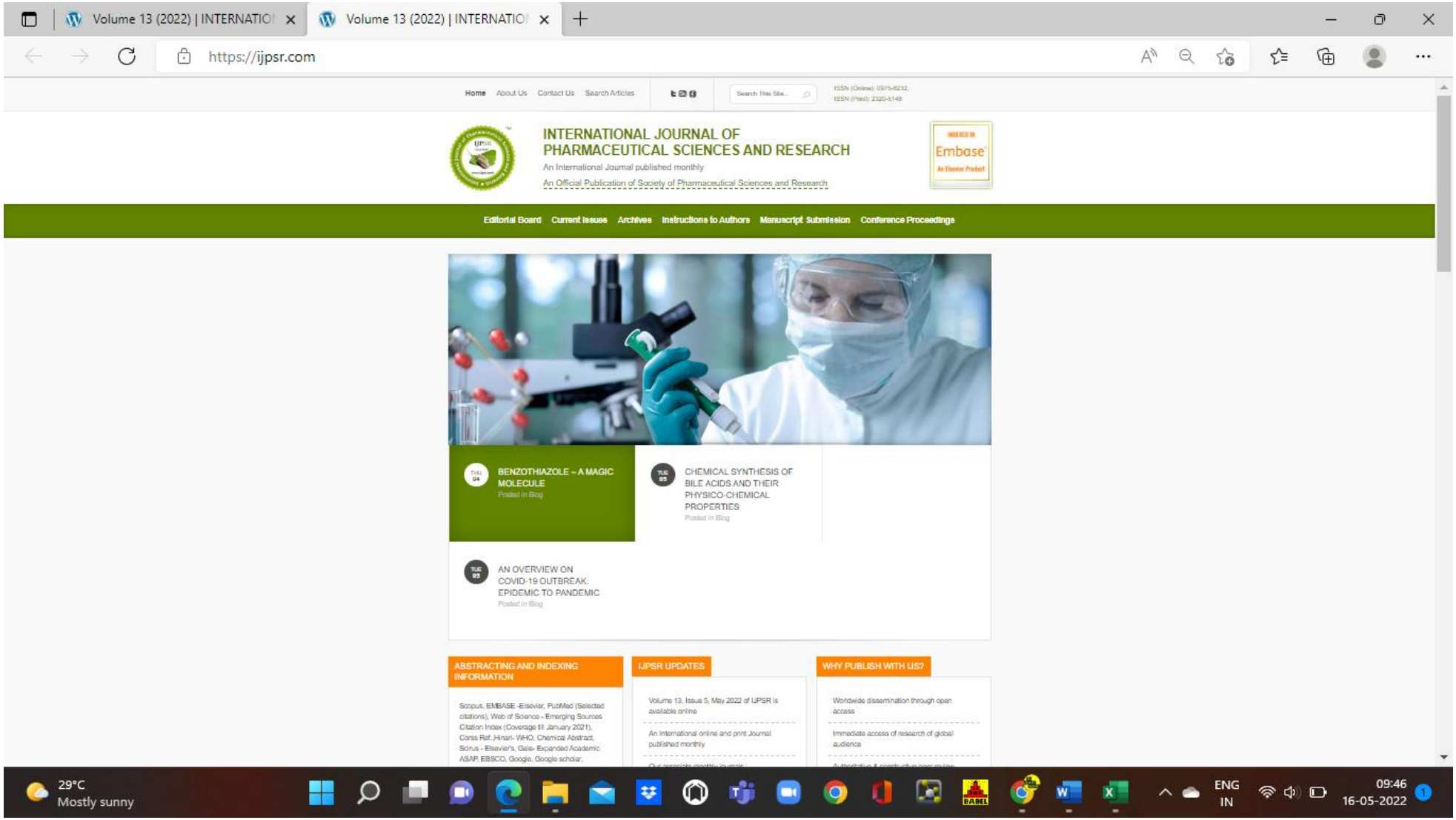


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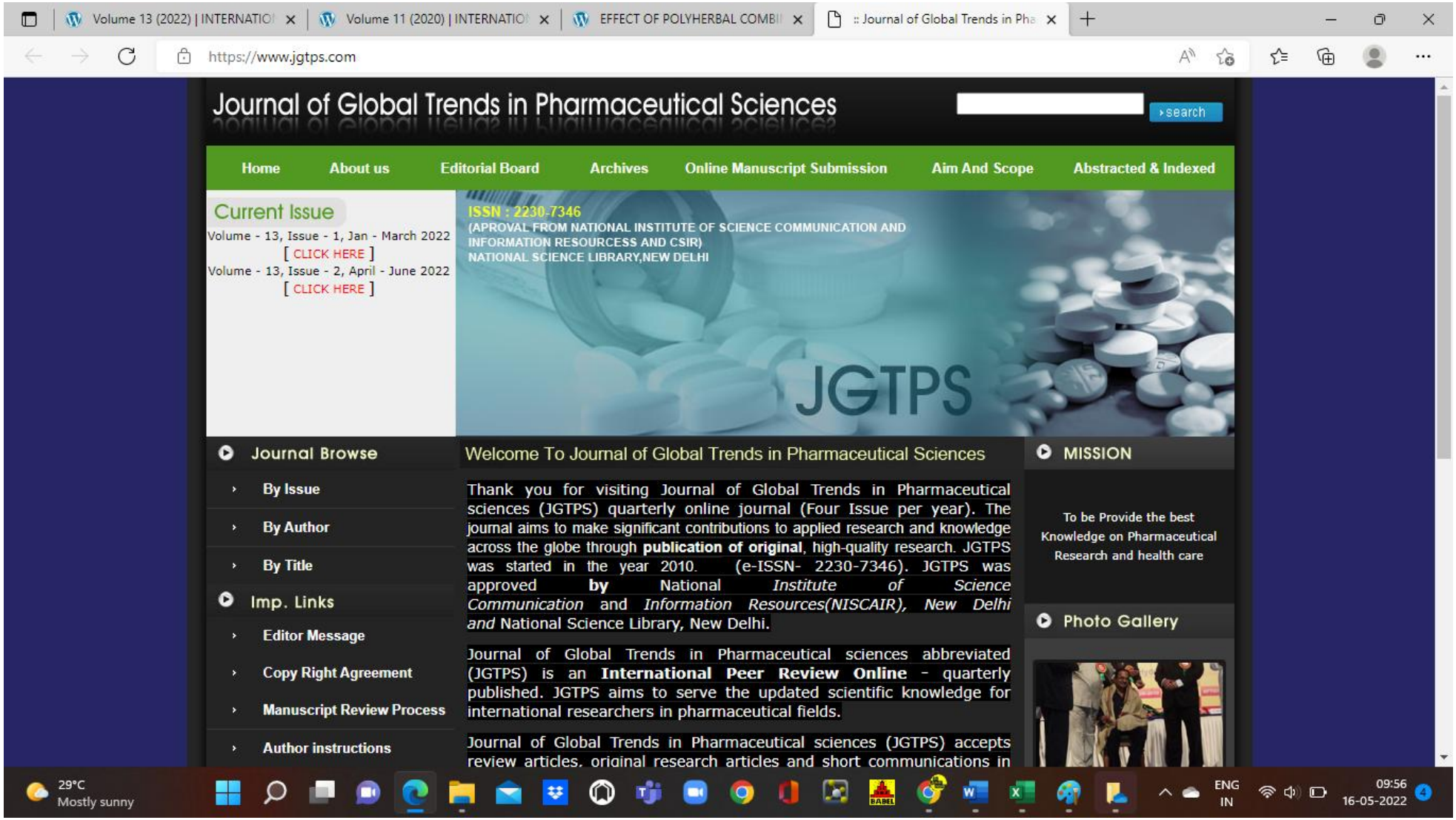


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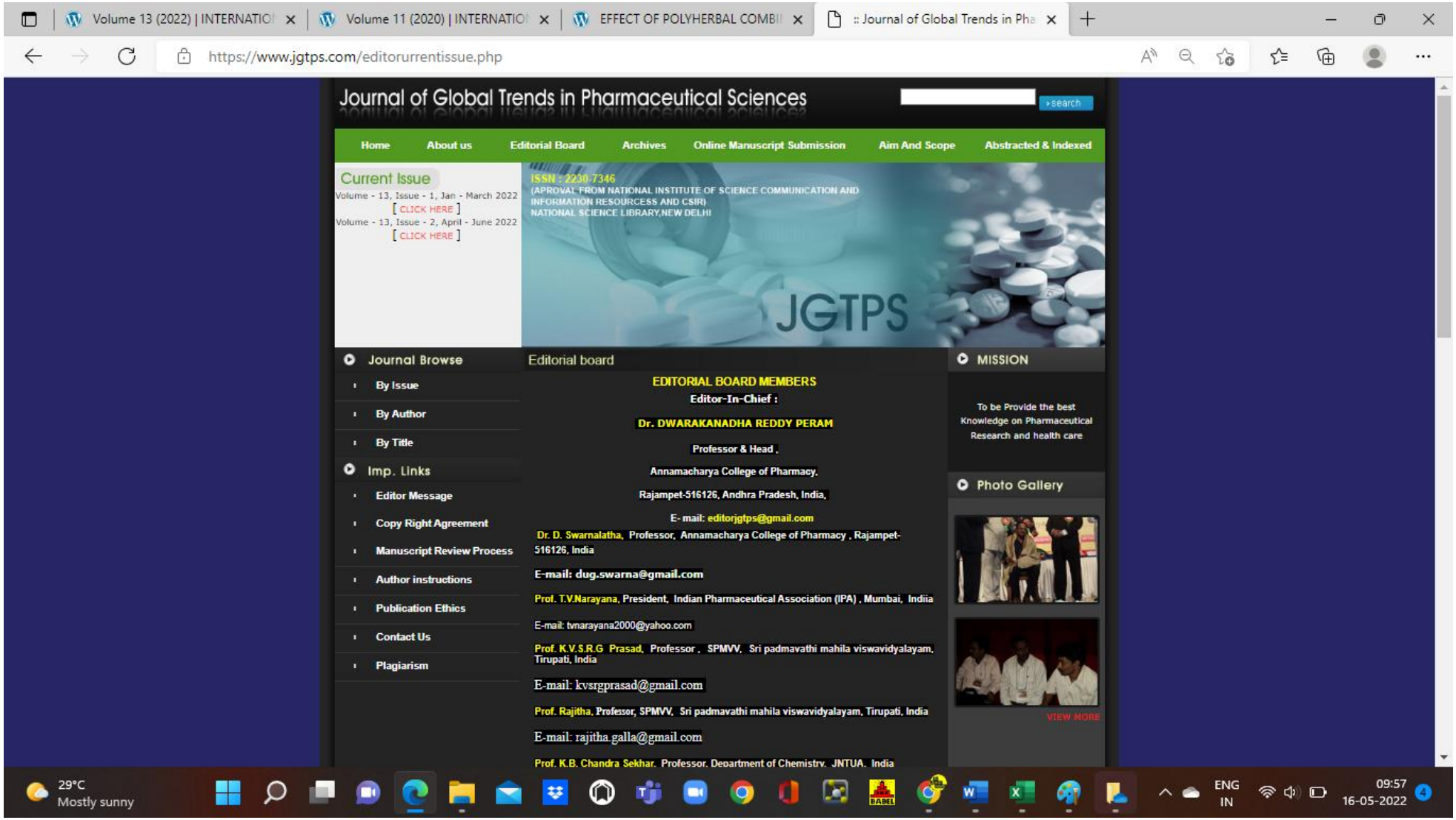


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# PREGNANCY BLUES - TREATING ANEMIA WITH FOLIC ACID LOZENGES REVIEW

**Ayesha Sultana* and Nasreen Sulthana**

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**ARTICLE INFO**

**Key Words**

Anemia, Folate, Methylfolate, Lozenges, Pregnancy, RBC

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**ABSTRACT**

Folic acid also known as folate is an essential vitamin. It is converted to folate in our body. Folate is the natural form of the vitamin, found in whole foods. Methylfolate is the most bioavailable form of vitamin B9. Folic acid helps in producing new cells and keeps them healthy. Folic acid when formulated as lozenges is very convenient for administration and its used to prevent neural tube defects which develops in early pregnancy, sufficient intake of this vitamin even before pregnancy have protective benefits and reduces the risks. It can prevent the pregnancy blues like miscarriage, preterm delivery and maternal anemia. Its recommended to take folate for three months prior to pregnancy, continue through pregnancy and also post partum. A growing baby absorbs folic acid from its mother. Folate deficiency anemia is tested by complete blood count (CBC) to measure the number and appearance of RBC. Lack of folate makes RBC to look large and immature. Each type of anemia is caused by something different, each ranges from mild to severe. RBC plays a central role in this condition, with all forms of anemia tiredness or fatigue is the most common symptom because of low RBC. Shortness of breath, dizziness, headache, coldness in hands and feet, pale or yellowish skin are the signs along with irregular heartbeat. Low RBC causes heart to work harder to move oxygen rich blood through the body. So treating this condition with folic acid lozenges is the most easy, economical and safe to the patient

## INTRODUCTION

Anemia is a medical condition where the RBC count is less than the normal, the blood do not have sufficient healthy red blood cells. It results from lack of red blood cells or dysfunction RBC in the body leading to reduced flow of oxygen to the organs in the body or tissues. The RBC in the body is low and it is measured according to the amount of hemoglobin, the protein present in RBC carries the oxygen from the lungs to the body's tissue. In women suffering from anemia the hemoglobin is less than12.0g/100 ml. According to National heart, lung & blood institute anemia is the most common blood disorder in women and children.The different types of Anemias include:

1. Anemia due to vitamin B12 deficiency
2. Anemia due to folate (Folic acid deficiency)
3. Anemia due to iron deficiency
4. Anemia of chronic disease
5. Hemolytic Anemia
6. Idiopathic aplastic Anemia
7. Megaloblastic Anemia
8. Pernicious Anemia
9. Sickle cell Anemia
10. Thalassemia
11. Aplastic or Hypoplastic Anemia
12. Sideroblastic Anemia-Acquired and Hereditary
13. Myelodysplastic syndrome
14. Autoimmune Hemolytic Anemia
15. Congenital dyserythropoietic Anemia (CDA)





*Ayesha Sultana, J. Global Trends Pharm Sci, 2020; 11 (4): 8486 - 8490*



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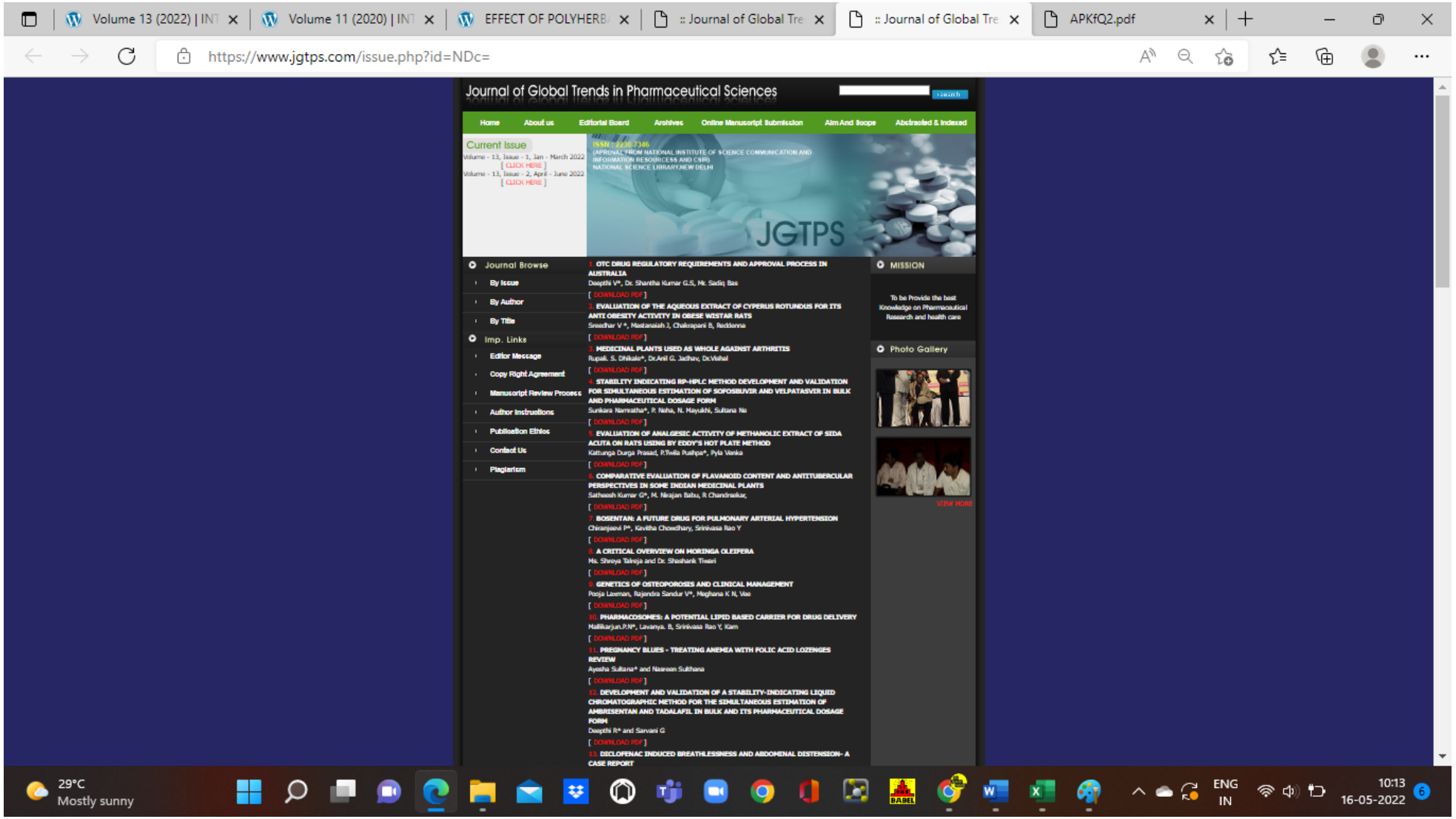


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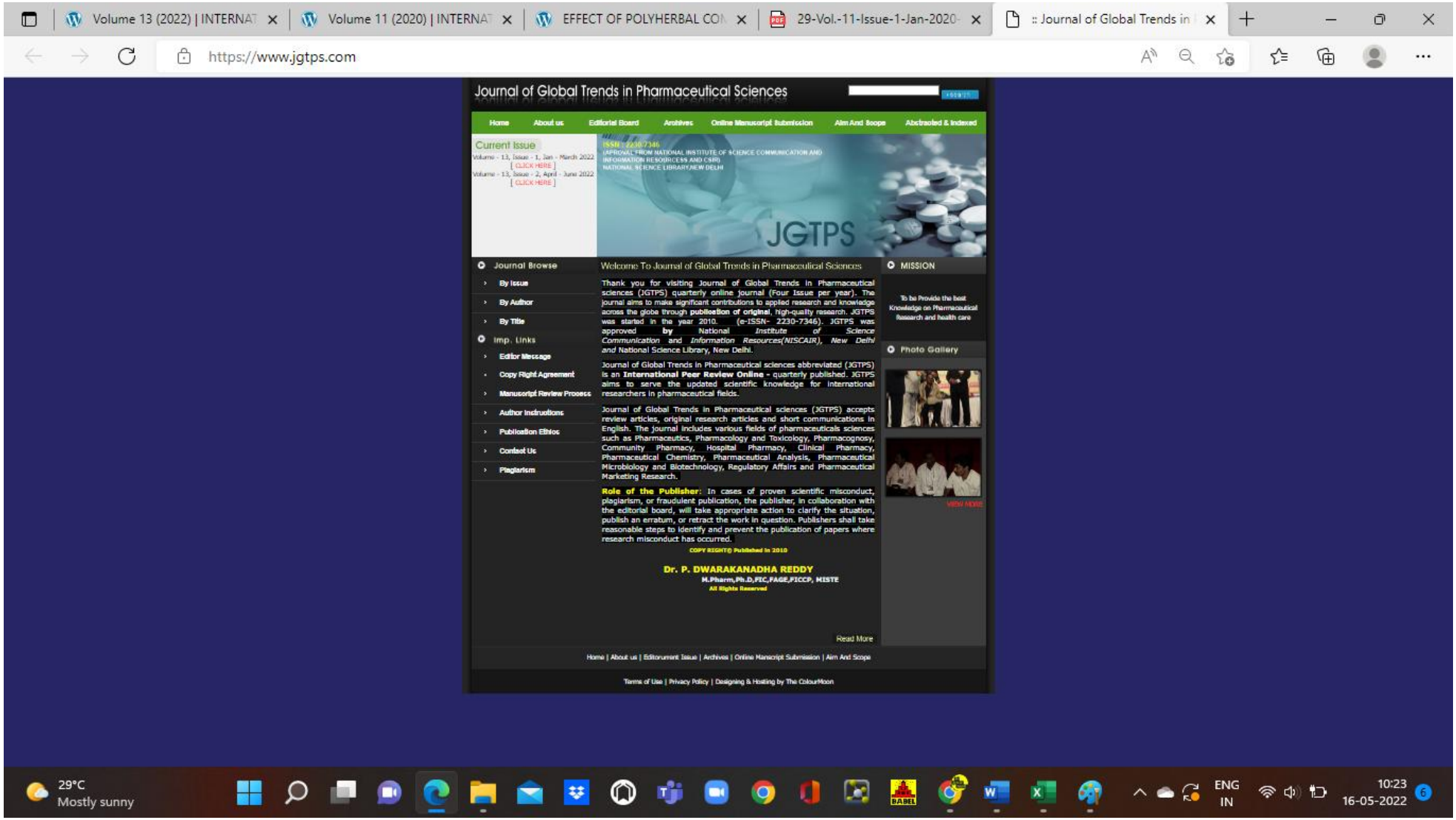


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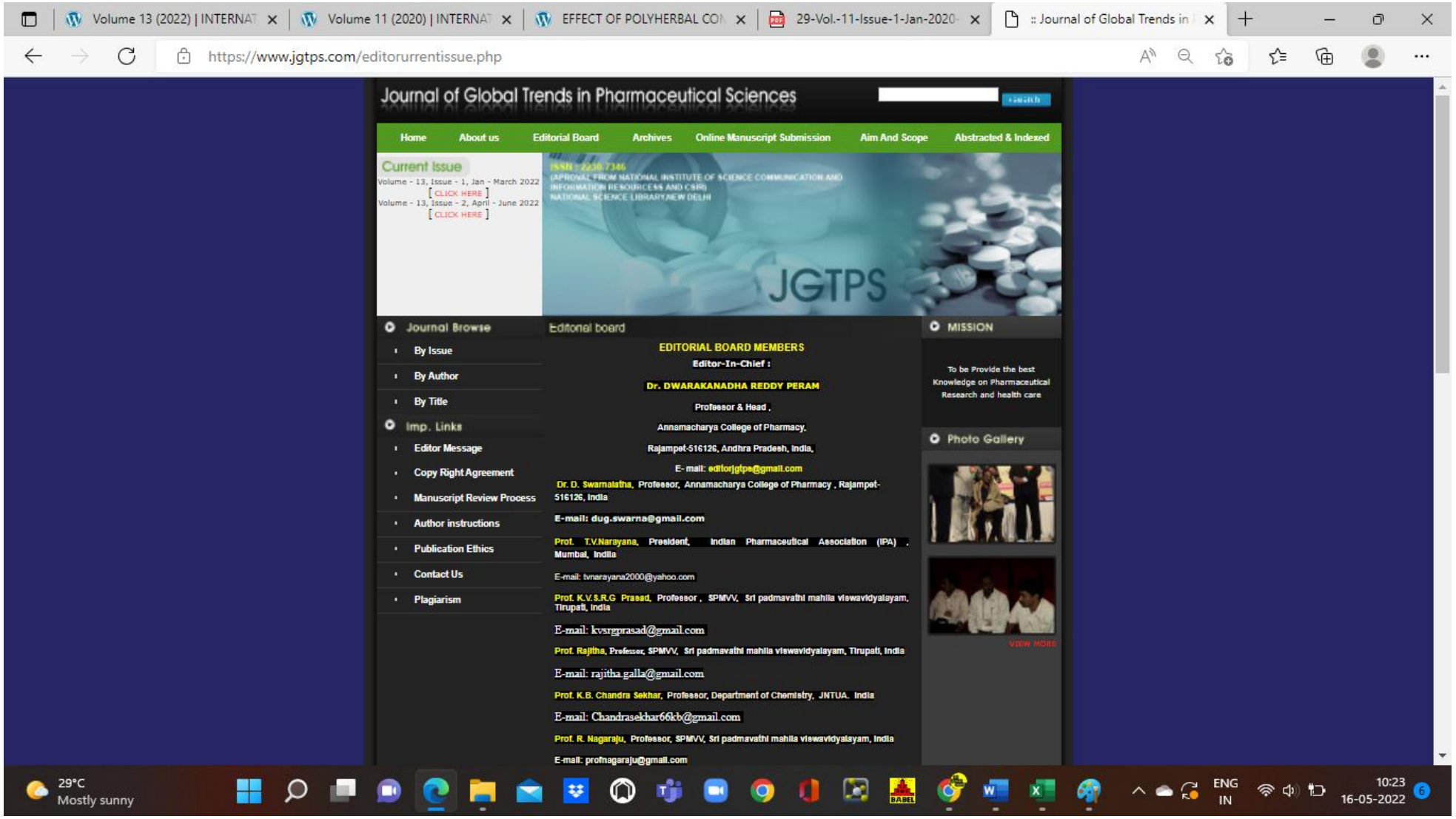


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# A REVIEW ON CORONAVIRUS – THE PANDEMIC CAUSING GLOBAL CRISIS

**Ayesha Sultana*[1], Mohammed Aleemuddin[2]**

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**ARTICLE INFO**

**Key Words**

COVID – 19, pandemic, Quarantine.

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**ABSTRACT**

The word COVID - 19 is abbreviated as CO – Corona, VI – Virus, D – Disease and 19 indicates the year it emerged. The occurrence of coronavirus disease had been confirmed in around 210 countries and territories. The virus had infected 9,360,758 people worldwide. The most severely affected countries include USA, Brazil, U.K, Russia, Spain and India is inching towards the most affected country. Telangana confirms 9,553 confirmed cases till June 24-2020. A pandemic is an epidemic of an infectious disease which spreads across large regions and countries affecting many people. The 2019- 2020 Covid –19 pandemic is expected to have negative effect on the global economy, for years to come with a drop in GDP accompained by increase in unemployment around the world. The basic strategies in the control of an outbreak are containment and mitigation. Another strategy called as suppression strategy includes stringent population – wide social distancing, isolation of cases and quarantine can be considered.

## INTRODUCTION

Coronavirus belongs to the family Coronaviridae. Club-shaped glycoprotein spikes in the envelope give the viruses a crown like appearance. Coronaviridae is generally considered to contain two genera, Coronavirus and Torovirus, which differ in nucleocapsid morphology, the former being helical and the latter being tubular. Coronaviruses constitute the subfamily Orthocoronavirinae, in the family Coronaviridae, order Nidovirales, and realm Riboviria.

## STRUCTURE:

Coronaviruses are large, roughly spherical, particles with bulbous surface projections. The average diameter of the virus particles is around 125 nm (.125 µm). The diameter of the envelope is 85 nm

And the spikes are 20 nm long. The viral envelope consists of a lipid bilayer, in which the membrane (M), envelope (E) and spike(S) structural proteins are anchored. The ratio of E: S: M in the lipid bilayer is approximately 1:20:300. On average a coronavirus particle has 74 surface spikes. The coronavirus surface spikes are homotrimers of the S protein, which is composed of an S1and S2 subunit. The homotrimeric S protein is a class I fusion protein which mediates the receptor binding and membrane fusion between the virus and host cell. The S1 subunit forms the head of the spike and has the receptor binding domain (RBD). The S2 subunit forms the stem which anchors the spike in the viral envelope and on protease activation enables fusion. The E and M protein are important in forming the viral envelope and maintaining its structural shape.





*Ayesha Sultana, J. Global Trends Pharm Sci, 2020; 11 (3): 8235 - 8241*



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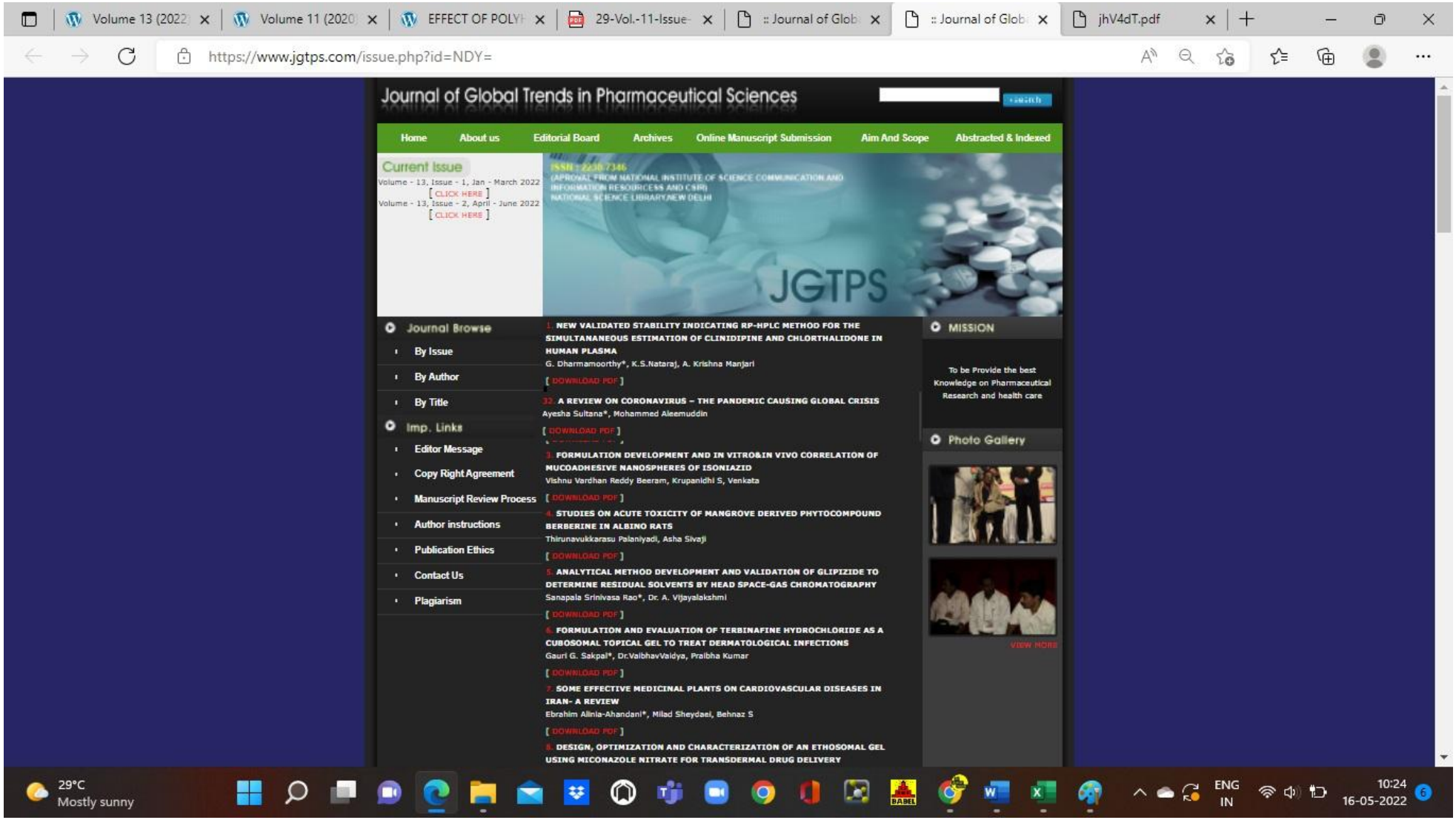


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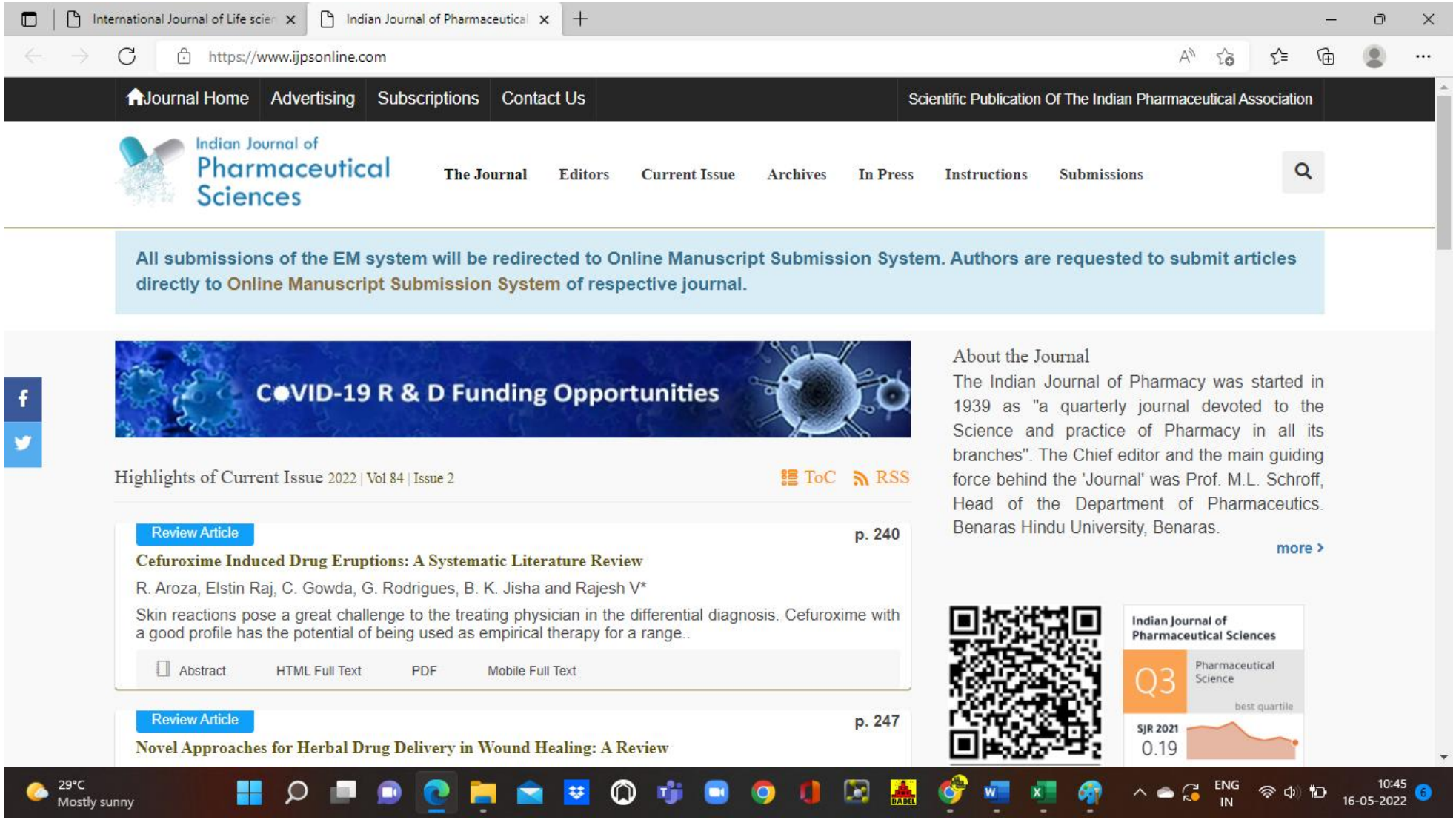


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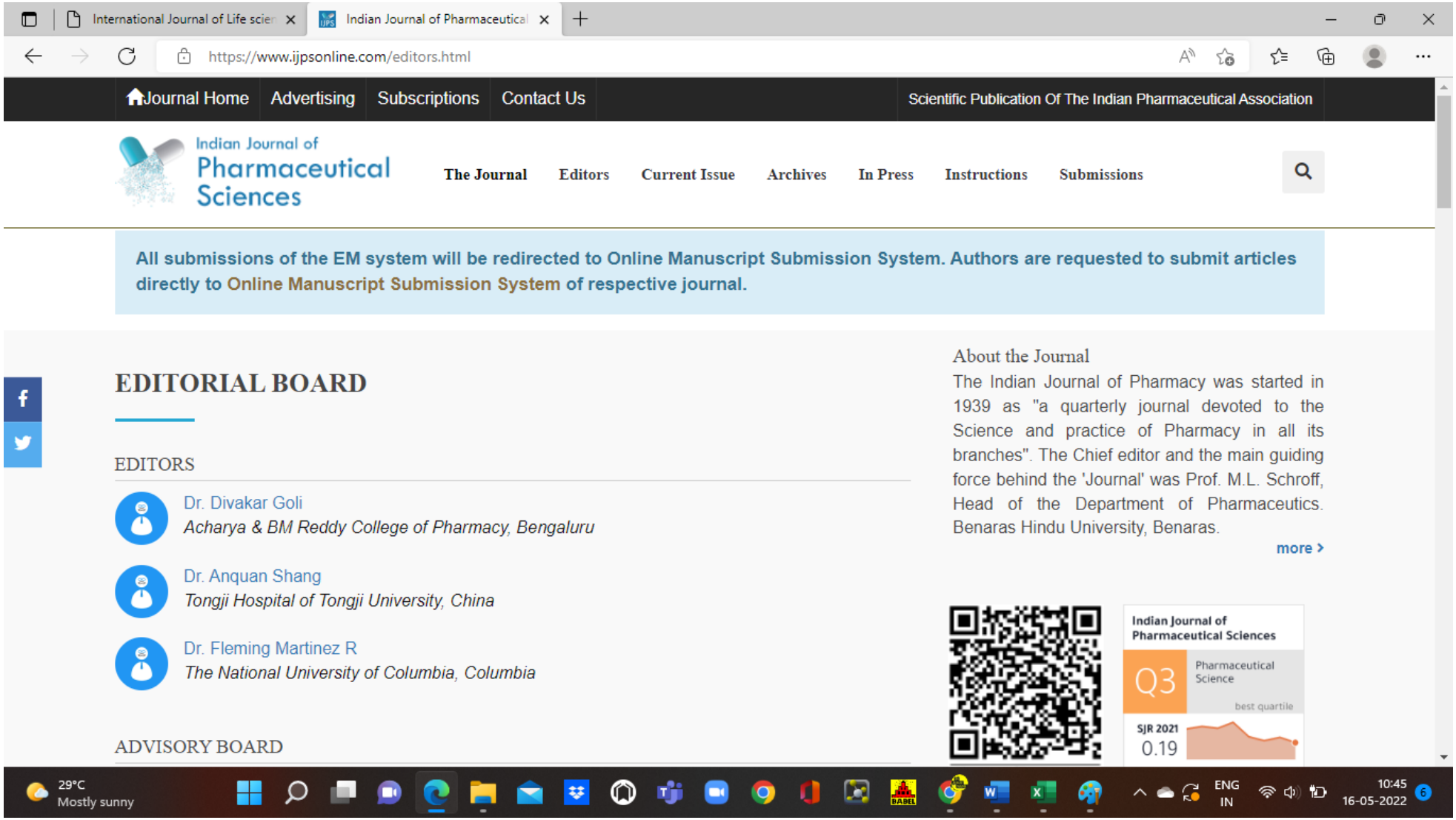


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# OBESITY PROMOTES ALZHEIMER'S DISEASE IN MIDDLE AGED INDIVIDUALS BY AGGRAVATING NEURODEGENERATION THROUGH VARIOUS MECHANISMS : A REVIEW

**Ramya Akoju[1], Sravana Jyothi[1], Anusha Govindula[2], Subba Rao Chamakuri[2], Ashish Suttee[3]* and Md. Sarvar Pasha[4]**

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## Abstract

Obesity can be defined as a metabolic chronic disorder resulting due to imbalance in the intake and expenditure of energy which is also linked to several disorders of metabolism, increasing expressions of pro-inflammatory markers, as well as an increase in the risk of different diseases leading to cardiovascular diseases, type-2 diabetes, and various types of cancer. The primary reasons for the present-day issue of obesity are linked with abruptly changing lifestyles, an increase in energy-dense food consumption in saturated sugar and fat as well as a reduction in physical activity. Obesity apart from causing metabolic disorders also accounts for the onset of AD symptoms in middle-aged obese persons and progresses the symptoms in elderly patients already with the disease by aggravating neurodegeneration via various pathways which include an increased generation and deposition of b-amyloid by cholesterol, neuroinflammation, oxidative stress, brain insulin resistance, hyperlipidemia induced cerebral ischemia and also by accelerating the normal process of aging.

***Key words:*** Obesity, Neurodegeneration, Insulin Resistance (IR), Cerebral Ischemia, Neuroinflammation.

## Introduction

Neurodegenerative diseases are characterized by progressive, irreversible loss of neurons from specific regions of the brain. Neurodegenerative diseases that can affect cognitive ability include Alzheimer's disease (AD), Pick's disease, Parkinson's disease, Lewy body disease, Huntington's disease, progressive supranuclear palsy and cerebella degeneration (Martha *et al.*, 2007). Learning is the process of acquisition of information and skills, while subsequent retention of that information is called memory. Learning and memory together called as cognition. Cognitive impairment is deficit in the processes by which persons perceive, encode, store, retrieve, and use information. Many processes can lead to cognitive impairment which includes neurodegeneration, strokes, tumors, head trauma, hypoxia, cardiac surgery, malnutrition, attention-deficit disorder, depression, anxiety and the side effects of medication, and normal ageing. Common vascular disorders that affect cognition include stroke, multiple strokes, and cerebral embolic disease (Pattewar *et al.*, 2011). Alzheimer's disease (AD), first identified by Alois Alzheimer's in 1906 is an irreversible, progressive neurodegenerative brain disease that slowly destroys memory and thinking skills and eventually even the ability to carry out the simplest tasks. AD is associated with localized loss of cholinergic neurons, mainly in the hippocampus and frontal cortex of the brain (Rang *et al.*, 2007). AD is the most common cause of dementia among people of age 65 and older. Dementia is the loss of cognitive functioning-thinking, remembering, reasoning and behavioral abilities. The two hallmarks of the disease are Beta amyloid plaques (Aβ), the extracellular amorphous deposits of b-amyloid protein) and Intra-neuronal neurofibillary tangles (NFTs), comprising filaments of a phosphorylated form of a microtubule-

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associated protein (Tau) build up inside the neuron (Amartya *et al.*, 2011).

**Alzheimer's disease**

technologies being invented every day especially in the medical field with newer CT (computer tomography) and MRI (magnetic resonance imaging) Scans being used



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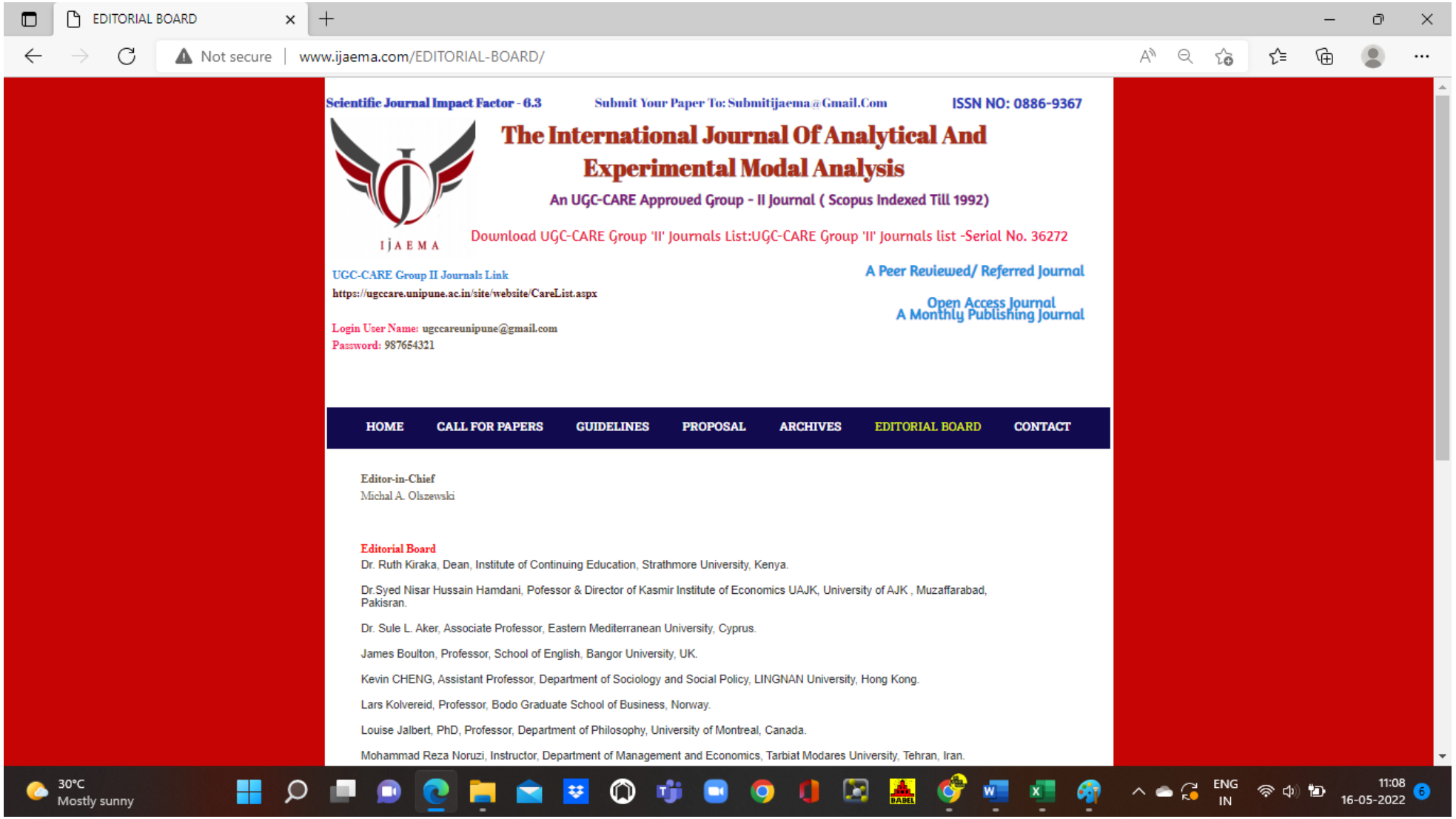


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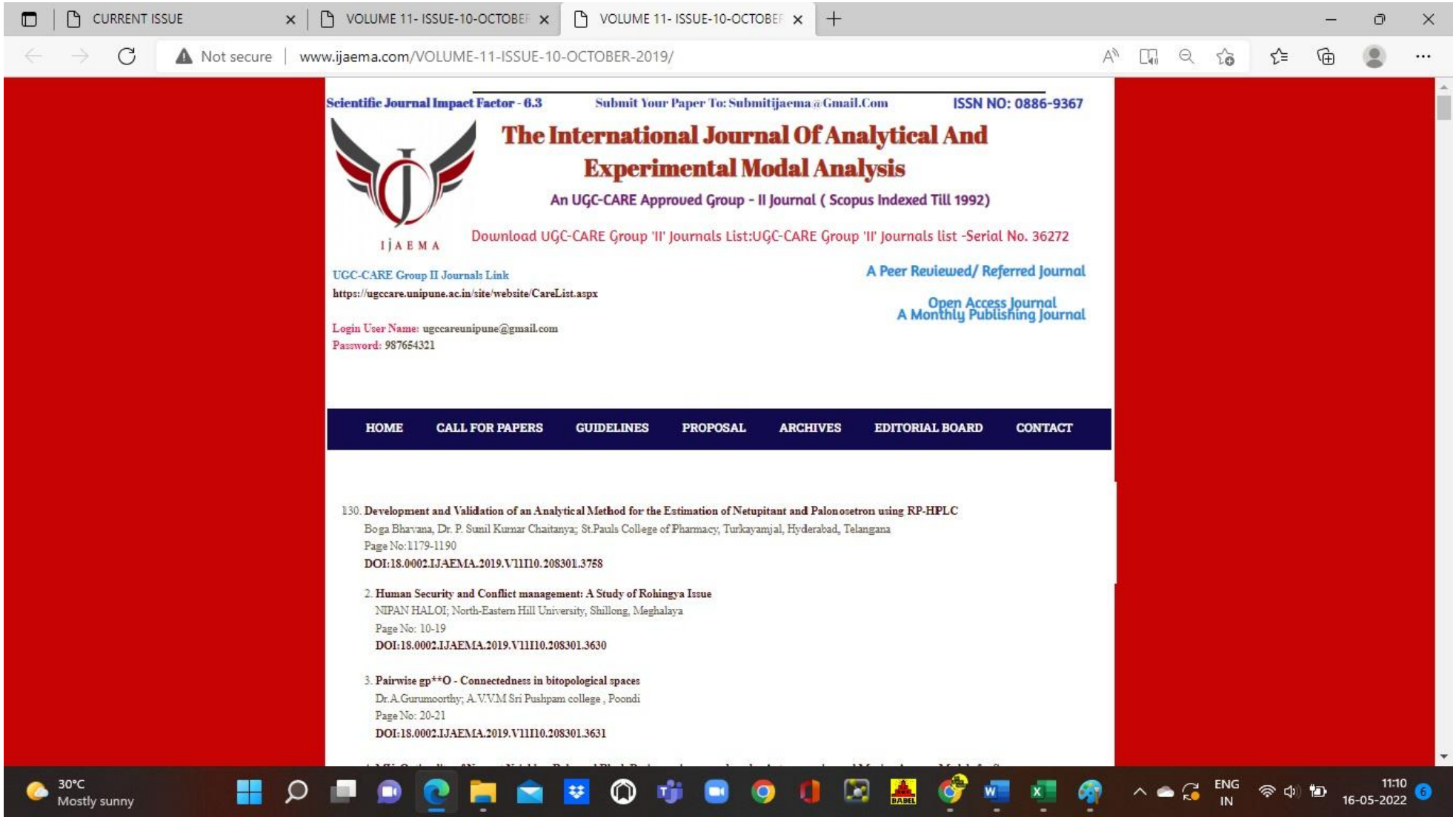

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# Development and Validation of an Analytical Method for the Estimation of Netupitant and Palonosetron using RP-HPLC

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**ABSTRACT:**

**A Rapid and Precise Reverse Phase High Performance Liquid Chromatographic method has been developed for the validated of Palonosetron and Netupitant, in its pure form as well as in tablet dosage form. Chromatography was carried out on X-Terra C18 (4.6 x 150mm, 5µm) column using a mixture of Methanol: Buffer pH 4.5: Acetonitrile (65:15:20) as the mobile phase at a flow rate of 1.0 ml/min, the detection was carried out at 212nm. The retention time of the Palonosetron and Netupitant was 2.090, 5.289 ±0.02min respectively. The method produce linear responses in the concentration range of 5-25µg/ml of Palonosetron and 50-250µg/ml of Netupitant. The method precision for the determination of assay was below 2.0 %RSD. The method is useful in the quality control of bulk and pharmaceutical formulations.**

**Keywords: Palonosetron, Netupitant, RP-HPLC, validation.**

## 1. INTRODUCTION

Palonosetron,(5S)-3-[(3S)-1-azabicyclo[2.2.2]octan-3-yl]-3-azatricyclo[7.3.1.0$^{5,13}$]trideca 1(12),9(13),10-trien-2-one 5-HT3 antagonist used in the prevention and treatment of chemotherapy-induced nausea and vomiting (CINV). It is the most effective of the 5-HT3 antagonists in controlling delayed CINV nausea and vomiting that appear more than 24 hours after the first dose of a course of chemotherapy and is the only drug of its class approved for [illegible] Food and Drug Administration. Palonosetron was shown in Fig. [illegible]

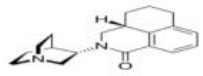

Fig. 1: Chemical Structure of Palonosetron

Netupitant is an antiemetic drug. In the United States, the combination drug netupitant/palonosetron (trade name Akynzeo) is approved by the Food and Drug Administration for prevention of acute and delayed chemotherapy-induced nausea and vomiting, including highly emetogenic chemotherapy such as with cisplatin. In Europe, it is approved by the European Medicines Agency for the same indication.

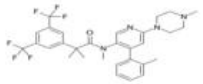

Fig.2 Chemical Structure of Netupitant

The literature survey revealed that there are few RP-HPLC [1-5], UV6 and LC-MS7 methods are available for the estimation of Palonosetron. However, stability indicating UPLC method was not available. Hence, present work focused on the development and validation of simple, rapid, robust and economic stability indicating UPLC method. To the best of our knowledge, the anticipated method is [illegible] to allow estimation of [illegible] ge form.



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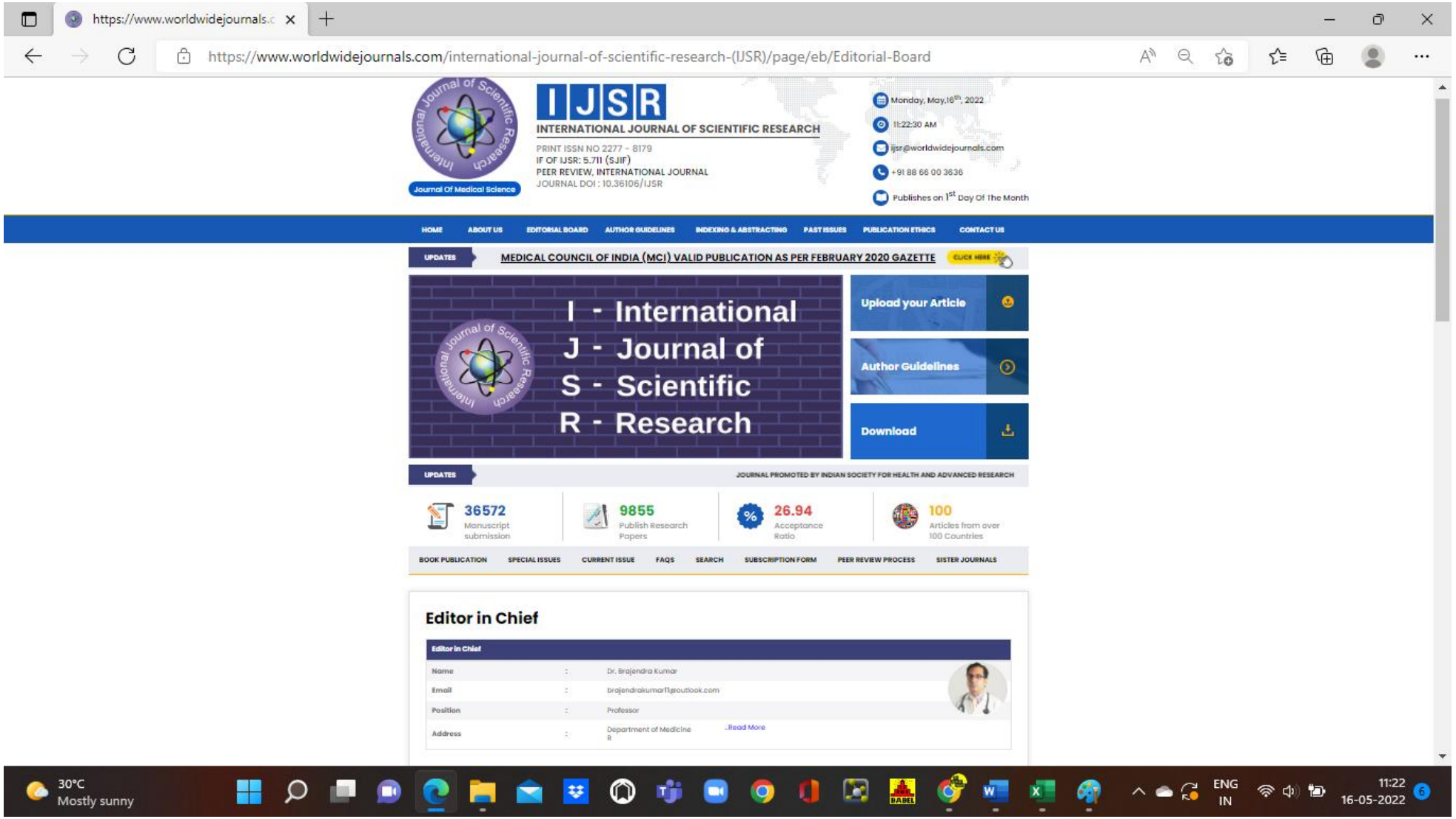


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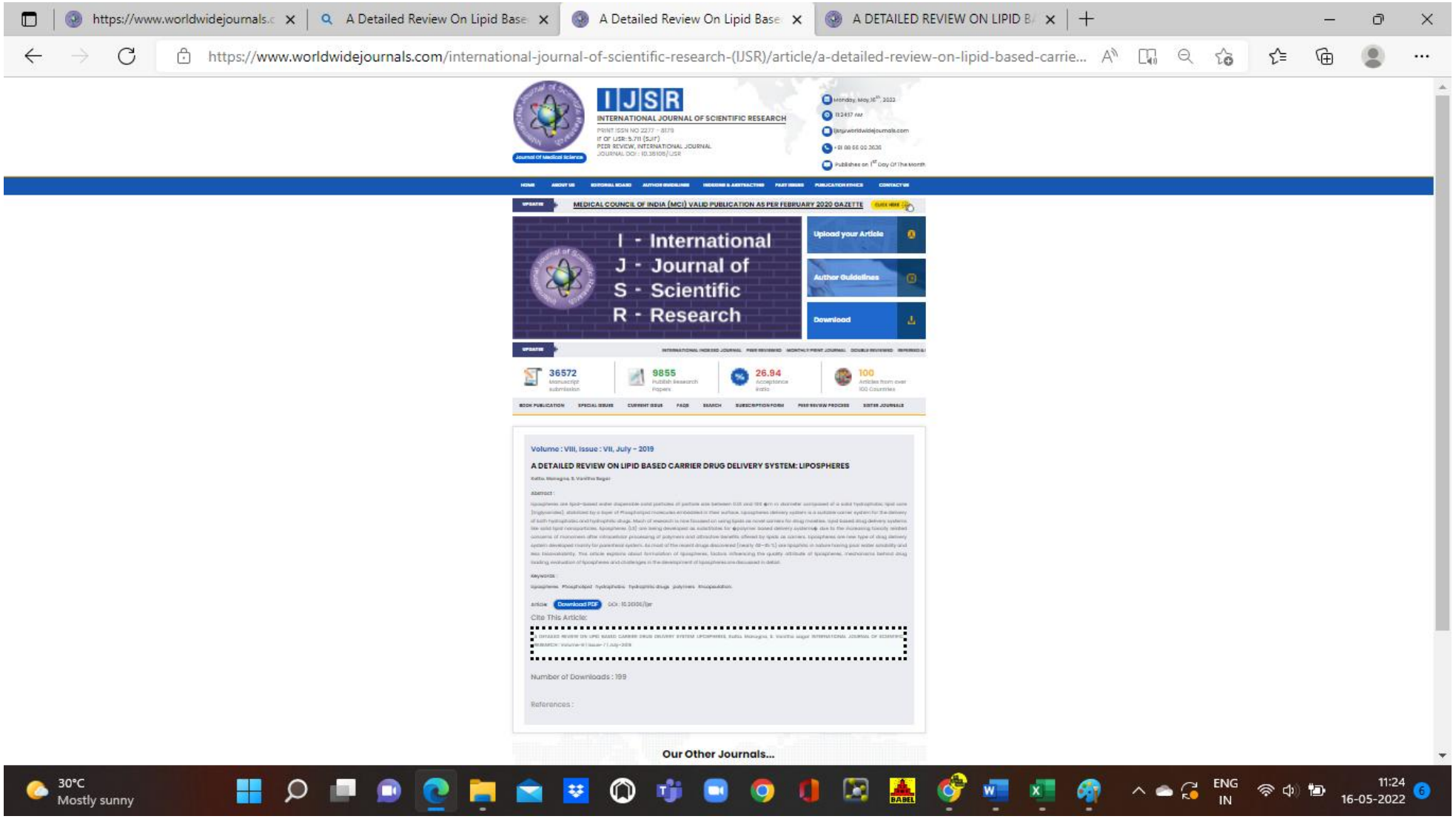


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# A DETAILED REVIEW ON LIPID BASED CARRIER DRUG DELIVERY SYSTEM: LIPOSPHERES

Pharmacy

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## ABSTRACT

Lipospheres are lipid-based water dispersible solid particles of particle size between 0.01 and 100 µm in diameter composed of a solid hydrophobic lipid core (triglycerides), stabilized by a layer of Phospholipid molecules embedded in their surface. Lipospheres delivery system is a suitable carrier system for the delivery of both hydrophobic and hydrophilic drugs. Much of research is now focused on using lipids as novel carriers for drug vesicles. Lipid based drug delivery systems like solid lipid nanoparticles, lipospheres (LS) are being developed as substitutes for "polymer based delivery systems" due to the increasing toxicity related concerns of monomers after intracellular processing of polymers and attractive benefits offered by lipids as carriers. Lipospheres are new type of drug delivery system developed mainly for parenteral systems. As most of the recent drugs discovered (nearly 40–45 %) are lipophilic in nature having poor water solubility and less bioavailability. This article explains about formulation of lipospheres, factors influencing the quality attributes of lipospheres, mechanism on behind drug loading, evaluation of lipospheres and challenges in the development of lipospheres are discussed in detail.

## KEYWORDS

Lipospheres, Phospholipid, hydrophobic, hydrophilic drugs, polymers, Encapsulation.

## INTRODUCTION:

The first approach of using lipid microparticles was described by Eldem *et al.* The liposphere drug delivery system is an aqueous micro dispersion of solid water insoluble spherical micro particles of a particle size between 0.2 and 200 µm. Lipospheres were firstly reported by Domb and Maniar as scattering of strong circular particles of molecule size between 0.2-500 µm in breadth. Recently, advances in pharmaceutical research is focused on new delivery systems utilizing new devices to achieve modification of delivery time, targeting, as well as improve the in-vivo solubility and hence bioavailability of poorly soluble drugs. The particulate drug carriers that have been investigated for sustaining the therapeutic activity are based on the synthetic polymers or natural macromolecules. The drawback of these particulate systems, being the degradation of the polymer, organic solvent residues present in the delivery system that could result in severe acceptability and toxicity problems. To resolve these issues, lipid microspheres, often called lipospheres, have been proposed as a new type of fat-based encapsulation system for drug delivery of bioactive compounds. Lipospheres are lipid based water dispersible solid particles bearing particle size between 0.01 and 100 µm in diameter, composed of a solid hydrophobic lipid core containing active drug moiety dissolved or dispersed in a solid fat matrix, which is stabilized by a layer of phospholipid molecules as external coat.

## LIPOSPHERES:

Lipospheres represents a type of fat based encapsulated system developed for parenteral, topical delivery of bioactive compounds. Lipospheres are lipid-based water dispersible solid particles of particle size between 0.01 and 100 µm in diameter composed of a solid hydrophobic lipid core, stabilized by a layer of phospholipid molecules embedded in their surface.

Many existing drug candidates have poor solubility in biological fluids, which results in low and highly variable bioavailability and a high food dependency after oral administration. Lipospheres are single unit system with respect to their uniform drug dispersion, maintain the uniform absorption of drug at gastrointestinal tract and more advantages than multiple unit drug delivery systems like Nanoparticles microparticles, microemulsions, and liposomes. The amount of drug encapsulated can vary up to 95% for lipophilic as well as for hydrophilic drugs and because they are made from physiological or physiologically related materials, they are well tolerated in living systems.

### Comparison of Lipospheres and Liposomes

**Table 1: Comparison of Lipospheres and Liposomes**

| | Lipospheres | Liposomes |
|---|---|---|
| Components | Soybean oil, Lipid, Water | Phospholipid, Water |
| Lipid membrane | Monolayer single membrane | Mono- or multi-layer double membrane |

| Emulsion form | O/W | W/O/W |
|---|---|---|
| Incorporable drugs | Compounds soluble in soybean oil and triamcinolin in lipids. | Water soluble compounds and compounds triamcinolin in lipids. |
| Particle diameter | 200 – 500 nm | Various sizes |
| Safety in vivo | Safe Clinically used as intravenous nutrition in 100 ml doses | Liposomes made of some lipids are toxic |
| Stability | Stable for 24 months at room temperature. Lipo preparation are stored at 4°C | Rather unstable. |

## CHARACTERIZATION OF LIPOSPHERES:

**Morphology:**

- Lipospheres are characterized in the terms of morphology by various microscopic techniques such as optical and electron microscopy.
- Lipospheres are prepared by melt dispersion method, it shows unimodal shape with average particle size between 5-15µm with less than 2% of particles greater than 100µm.
- Polymeric Lipospheres consisting of PLA and lecithin shows very board particle distribution from 2-100µm.

**Structure:**

- Lipospheres are lipid-based water dispersible solid particles, composed of a solid hydrophobic lipid core, and stabilized by a layer of Phospholipid molecules embedded in their surface.
- Phospholipid content on the surface of lipospheres is determined by $^{31}$P-NMR, before and after complexation of manganese ($Mn2+$) or gadodiamitate ($Dy+3$) ion with 6- nitrobenzoic sulfonic acid labeling using lipospheres formulations containing phosphatidylethanolamine.

**Entrapment efficiency:**

- Loading capacity of drug in lipid carriers depends on the type of lipid matrix, solubility of drug in melted lipid, miscibility of drug melt and lipid melt, chemical and physical structure of solid lipid matrix and the polymorphic states of the lipid material.

**Stability:**

- Numerous research works has been done and they explain the dealing with protein delivery through Lipospheres.
- Preservation of the integrity of protein can be maintained by avoiding exposure to higher temperatures using low melt lipid carriers.
- Stability of proteins in terms of physical, chemical and conformational features is an important prerequisite to establish the utility of the procedures adopted for encapsulation. The extent



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to which they occur is dependent on the temperature and pH of the solution.

**Release Kinetics:**

Release of a hydrophilic substance from a lipophilic matrix depends on matrix material composition, properties of the incorporated drug such as solubility in lipid and aqueous medium, drug carrier interaction,

high temperatures of thermo labile compounds, such as proteins and nucleic acids. This technique is based on the evaporation of organic solvent in which lipids are dissolved and allowing the formation of solid microparticles. In particular, the lipidic matrix is dissolved in an organic solvent such as ethyl acetate and maintaining the temperature about 50°C and then emulsified with an external aqueous phase containing the surfactant agent. The resulting oil-in-water emulsion is

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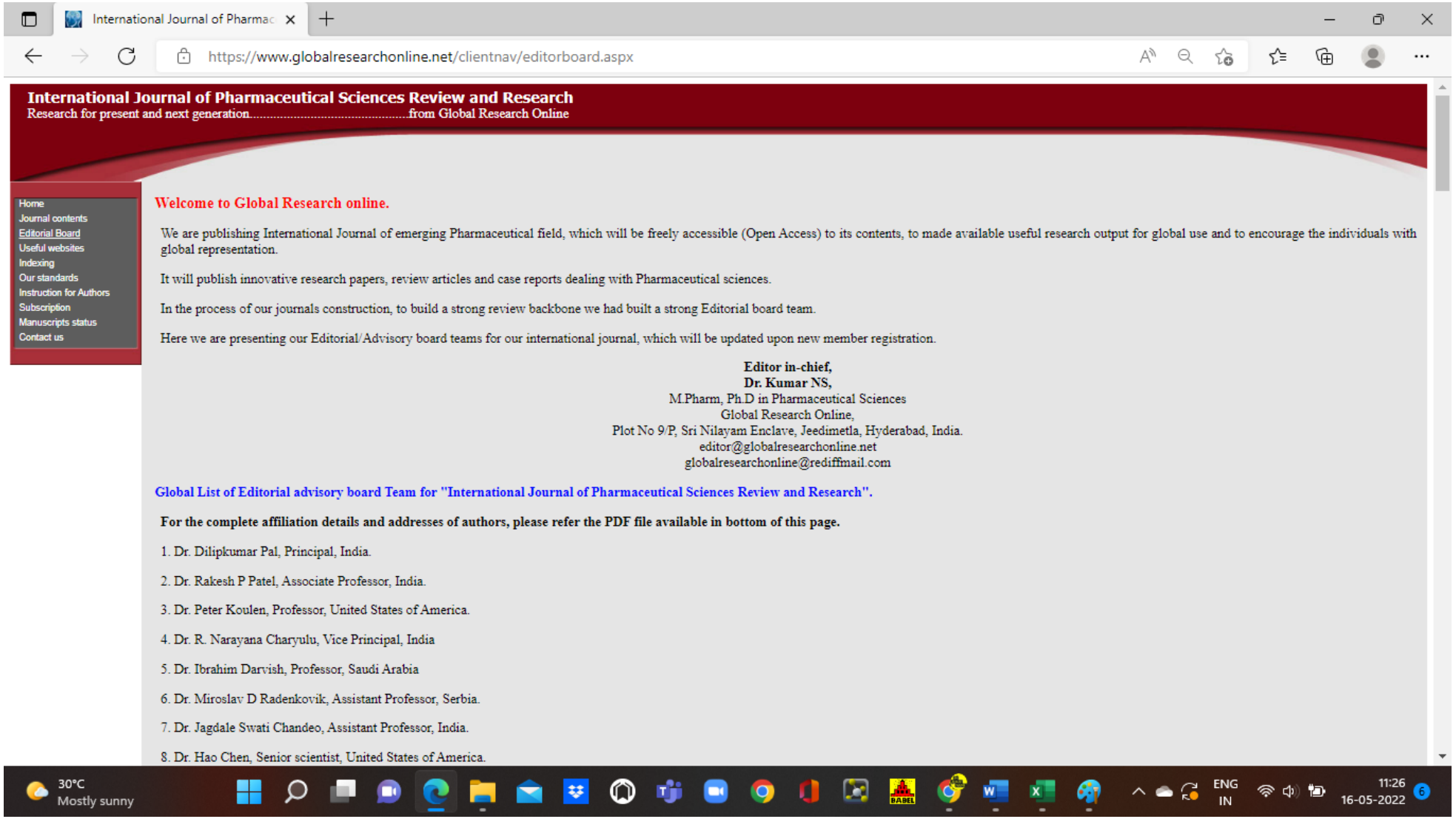


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Int. J. Pharm. Sci. Rev. Res., 56(1), May - June 2019; Article No. 06, Pages: 30-37 ISSN 0976 – 044X

Research Article

# A New Validated RP-HPLC Method for Simultaneous Estimation of Lumacaftor and Ivacaftor in Pharmaceutical Dosage Form

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**ABSTRACT**

A simple, selective, linear, precise and accurate reverse phase high performance liquid chromatography method was developed and validated for the simultaneous estimation of Lumacaftor and Ivacaftor in tablet dosage form. The chromatographic separation was achieved on Symmetry C18 4.6×150mm, 5µ column using a mobile phase consisting a mixture of Methanol: Water in the ratio of 65:35 v/v at a flow rate of 1ml/min at an ambient temperature and detection was carried out at 270 nm. The clear chromatography peaks were identified with retention times of 2.460 min for lumacaftor and 4.312 min for ivacaftor. The proposed technique was validated according ICH guidelines in respect to specificity, linearity, accuracy, precision, LOD, LOQ and robustness. The linearity was observed in the concentration range of 45-225 µg/ml for lumacaftor and 10-50µg /ml for ivacaftor. Linear regression coefficient for both drugs was 0.999. The percentage recovery of lumacaftor and ivacaftor was in between 98-102%. The %RSD for repeatability and intermediate precision was less than 2%. LOD was 0.83 and 1.3 and LOQ was 2.5 and 3.95 for lumacaftor and ivacaftor respectively. The results of validation parameters were met ICH requirements. Hence, the proposed method can be used for the determination of lumacaftor and ivacaftor in various pharmaceutical dosage forms during regular and quality-control analysis.

**Keywords:** Lumacaftor, Ivacaftor, Simultaneous estimation, RP-HPLC, tablets.

## INTRODUCTION

Cystic fibrosis (CF) is a hereditary disease affects the endocrine, gastrointestinal, reproductive, and respiratory systems. It causes the assemblage of abnormally thick mucus, leading to the obstruction. CF is caused by any one of several defects in the cystic fibrosis transmembrane conductance regulator (CFTR) protein, such as F508del mutation, G551D mutation that causes the disease.[1] This life-restriction disease requires multiple daily medications to extend the life and get a better quality of life. Many conventional regimens including pancreatic enzyme supplements, multivitamins, mucolytics, antibiotics, bronchodilators, and anti-inflammatory agents have been used for the treatment of CF. Lumacaftor (CFTR corrector) and Ivacaftor (Potentiator) are new drugs used in combination (brand name **Orkambi**) for the treatment of cystic fibrosis. Lumacaftor (LMF) is an aromatic amide, is a chemically 3-[6-[[1-(2, 2-difluoro-1, 3-benzodioxol-5-yl) cyclopropane carbonyl] amino]-3-methylpyridin-2-yl] benzoic acid, Figure 1 with the molecular formula of $C_{24}H_{18}F_2N_2O_5$ and molecular weight is 452.414. It is a white to off-white powder that is practically insoluble in water (0.02 mg/mL). Lumacaftor acts as a chaperone during protein folding and increases the number of cystic fibrosis transmembrane conductance regulator proteins which are trafficked to the cell surface by targeting the defective F508del CFTR gene. [2] Ivacaftor (ICF) is an aromatic amide, chemically it is a N-(2,4-di tert-butyl-5-hydroxyphenyl)-4-oxo-1H-quinoline-3-carboxamide, Figure 2 with a molecular formula of $C_{24}H_{28}N_2O_3$ and molecular weight is 392.499. Ivacaftor is a white to off-white powder that is virtually insoluble in water (<0.05 mg/mL). Ivacaftor is the first drug that treats the original cause rather than the symptoms of the disease. Ivacaftor is a potentiator of the CFTR protein a chloride channel present at the surface of epithelial cells in multiple organs, it increases chloride transport by potentiating the channel-open probability (or gating) of the G551D-CFTR protein.[3,4] Lumacaftor and Ivacaftor fixed-dose combination oral tablets are developed by Vertex Pharmaceuticals and both were approved by the FDA in 2015.[5] These drugs, when given in a fixed dose combination product rather than individual entities, has shown to get potential therapy in a condition of cystic fibrosis by correcting the defective protein.[6,7] Number of drugs are introducing into the market yearly. There is a time lag between the date of the prologue of a drug into the market and the date of its enclosure in pharmacopeias. Hence, standards and analytical methods either for the individual or combination of drugs may not be official in the pharmacopeias. Some analytical procedures are not accessible in the literature due to patent regulations. Analytical methods for the drugs in formulations are not available owing to the interference caused by the excipients. Therefore, it becomes essential to build up a newer analytical procedure for such drugs.

Literature survey reveals many analytical methods have been published for simultaneous estimation of Lumacaftor and Ivacaftor in bulk, pharmaceutical dosage forms and in biological samples. These methods are UV Spectrophotometric techniques, HPLC methods, UPLC method, stability indicating methods, and LC-MS/MS methods.[8-27] The objective of our study is that High-





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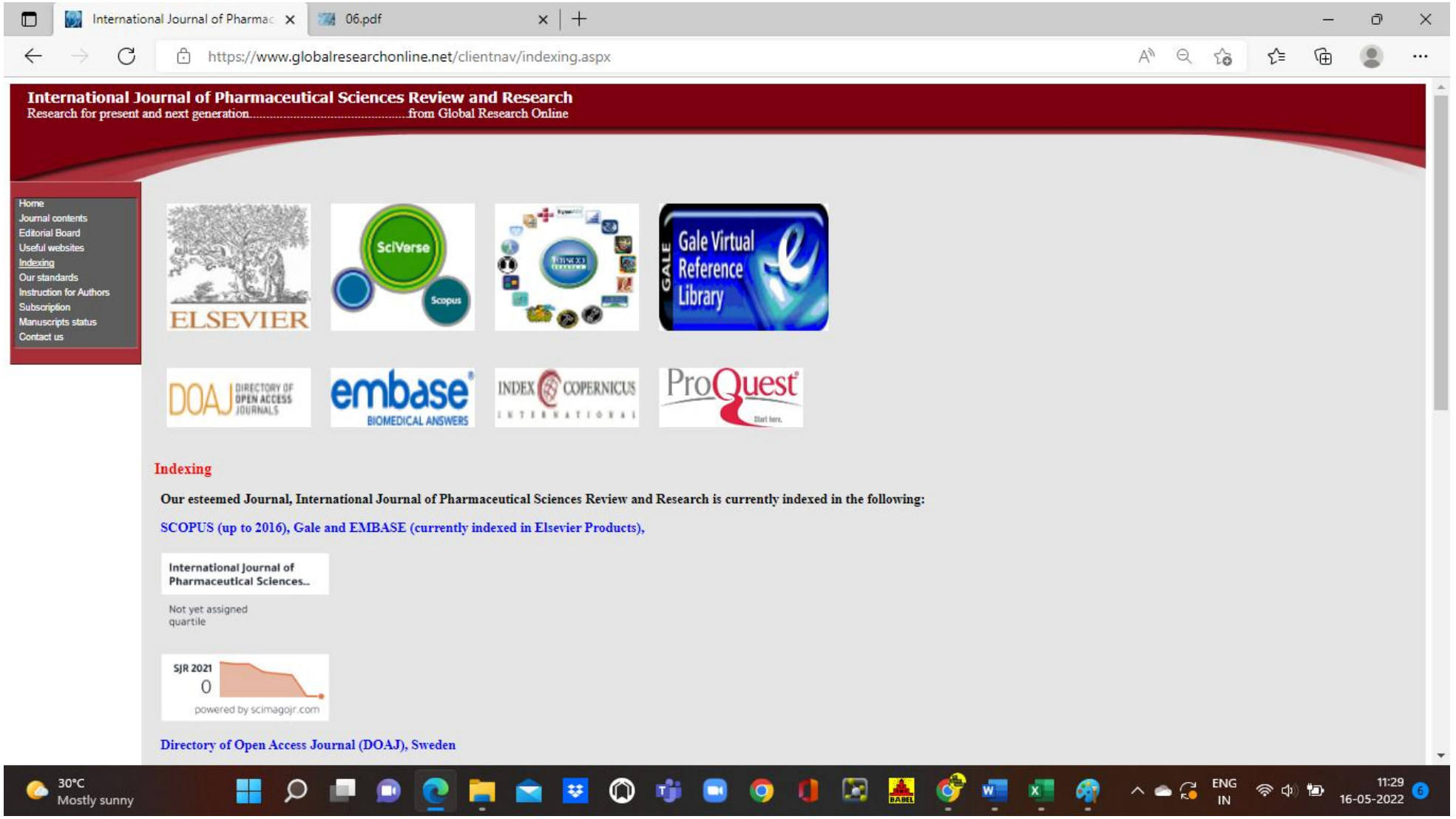


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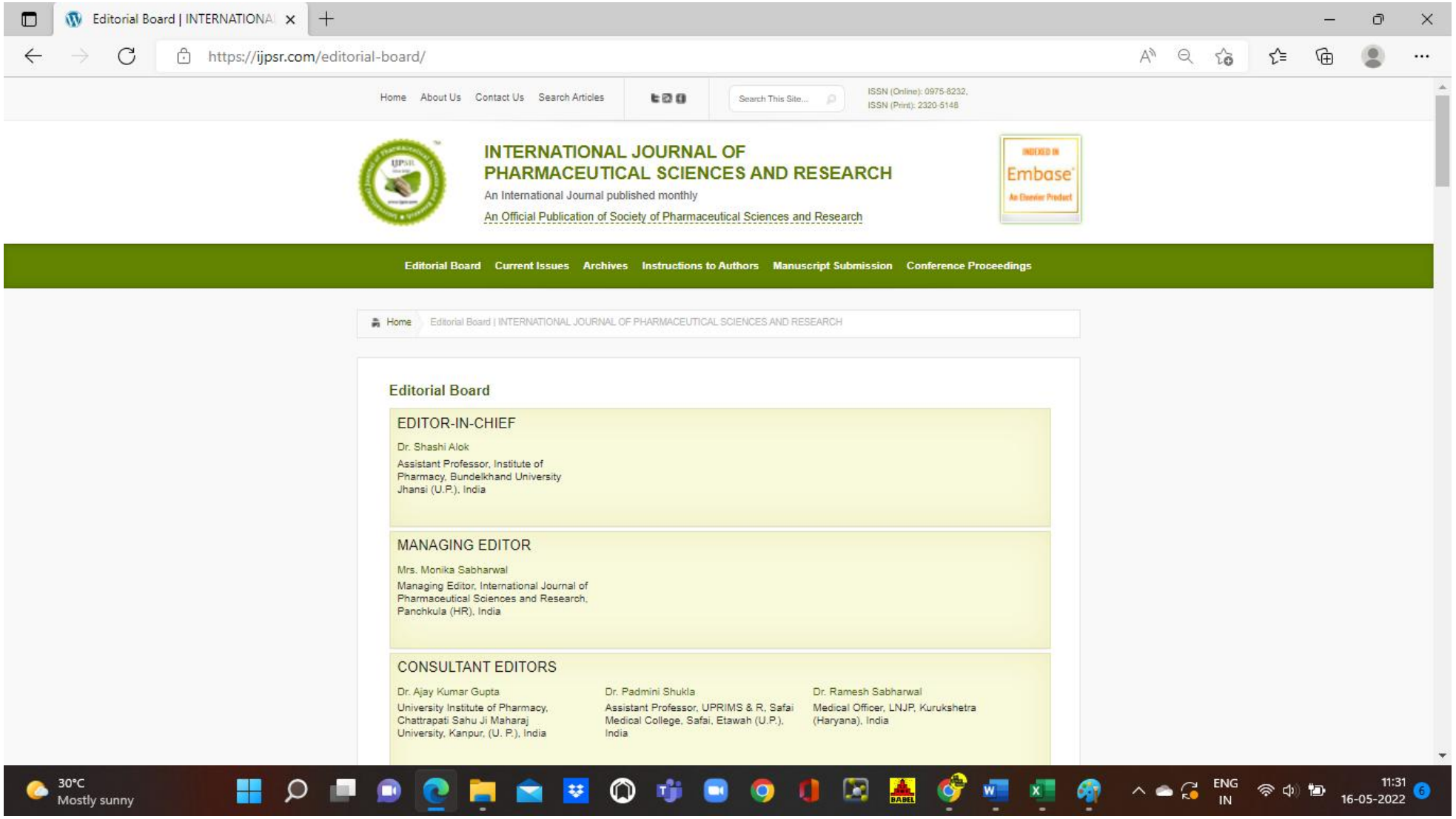


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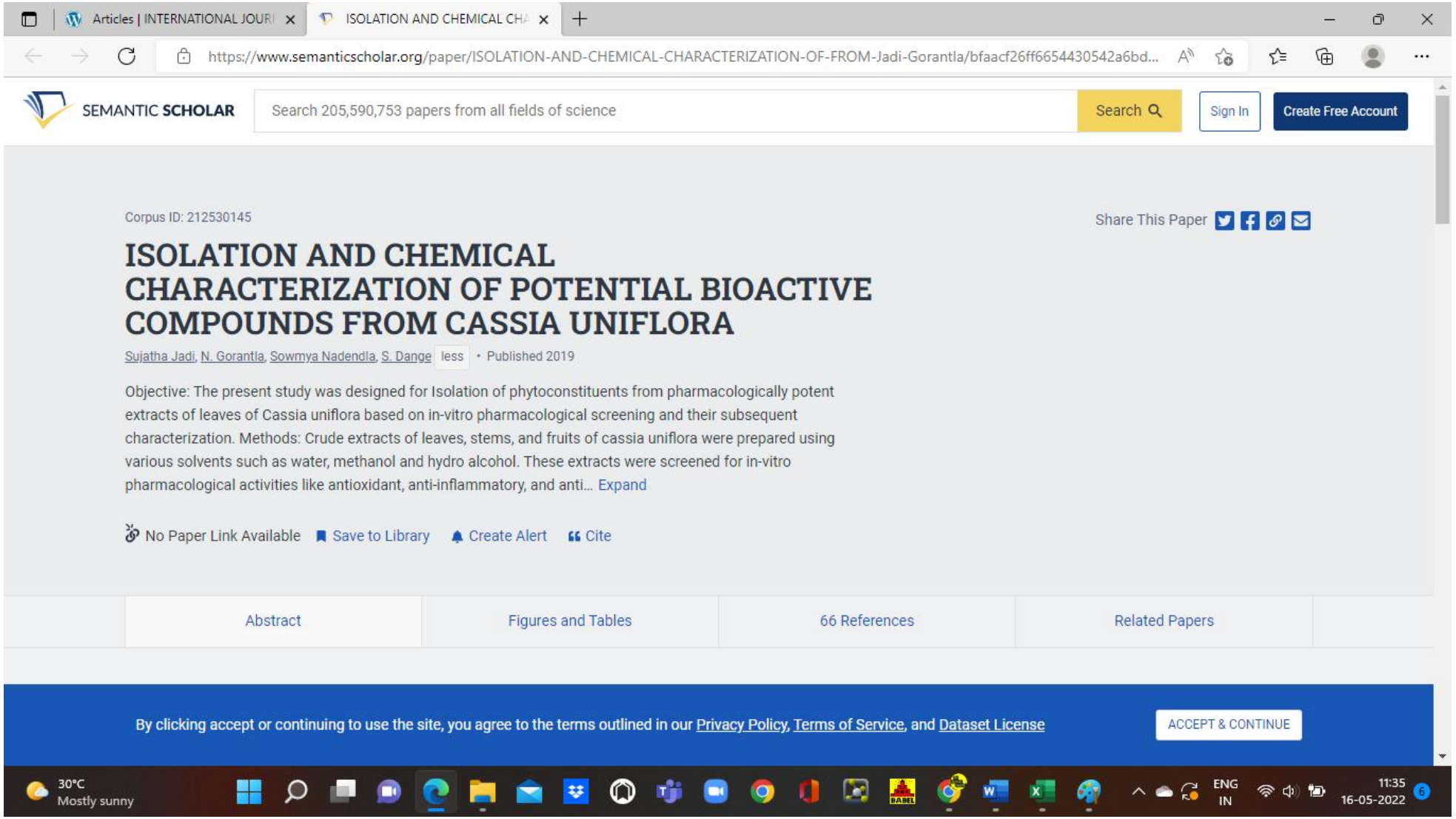


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Original Research Article

# Development and In-Vitro Anticancer Evaluation of Dual Loaded Nanoparticles on Human Glioblastoma Multiforme Cell line T98G

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## Abstract

Cancer treatment suffers with the failure of chemotherapeutic agents because of multi drug resistance. Investigation of new molecules involves huge expenditure and time. Present investigation aims at the dual loading of anticancer agent Imatinib Mesylate along with Piperine on to bovine serum albumin nanoparticles in order to overcome multi drug resistance and to achieve the maximum therapeutic effect. Desolvation method with the addition of acetone is used to prepare the nanoparticles. Drugs and polymer are subjected to differential scanning calorimetry. Nanoparticles are evaluated for encapsulation efficiency, particle size, zeta potential and drug release studies. In-vitro anticancer activity of the nanoparticles against Human Glioblastoma Multiforme (GBM) cell line T98G is determined. Results indicated compatibility in DSC, an encapsulation efficiency of 52.456%-88.254%, particle size of 208.3nm -497.3nm, zetapotential of -16.5mV to -43.2mV and drug release of 86.256% to 94.56% in 24H. In in-vitro anticancer activity % of cell death is 68.257% to 79.658%. Results suggest increased anticancer activity with the nanoparticles dual loaded with Imatinib mesylate and Piperine.

**Keywords:** Piperine, Imatinib mesylate, anticancer activity, bovine serum albumin and desolvation method.



## Introduction

Even with the advents in cancer research, multi drug resistance is still a big challenge for cancer chemo therapy. This resistance may be because of multiple mechanisms like, decreased uptake of drug, more drug efflux, DNA repair mechanisms and many more [1]. This ultimately results in the failure of chemotherapeutic agents. The cancer drug resistance is a complex phenomenon and more difficult to overcome. A combination therapy which can show synergy or an additive effect with reduced drug resistance, along with anticancer drug may provide a new strategy in drug resistant cancers [2]. Imatinib mesylate (IMB) is a selective tyrosine kinase inhibitor approved for the treatment of chronic myelogenous leukemia and gastrointestinal stromal tumors. Several clinical studies reported the use of IMB in the treatment of patients with malignant glioma [3]. IMB is a substrate for multidrug resistance proteins. An increased expression of P glycol protein (PGP) plays an important role in drug resistance to IMB in treating cancer [4]. Piperine (PIP) being natural antioxidant can act as anticancer agent by detoxification of enzymes, suppression of cell self renewal and also by inhibition of cancer cell proliferation [5]. Literature also supports PIP, a substrate for PGP can prevent the efflux and can be an interesting novel modulator of multidrug resistance [6]. Present investigation aimed at dual loading of the PIP and IMB on to Bovine serum albumin (BSA) nanoparticles (NPs) in order to evaluate their anticancer activity on Human glioblastoma multiforme (GBM) cell line T98G.

## Materials and Methods

### Materials

Imatinib Mesylate is a kind gift sample from MSN laboratories, Hyderabad. Piperine and Bovine serum albumin are from Sigma Aldrich, Mumbai. All the other chemicals and reagents used are of analytical grade.

### Preparation of dual loaded NPs

BSA dual loaded NPs were prepared by desolvation method with the addition of acetone as the desolvating agent. 1% BSA solution was prepared in double distilled water. pH of the solution was adjusted by using 0.1M NaOH. 0.5g of (IMB) and (PIP) in 1:1 ratio was added to acetone. Acetone was added





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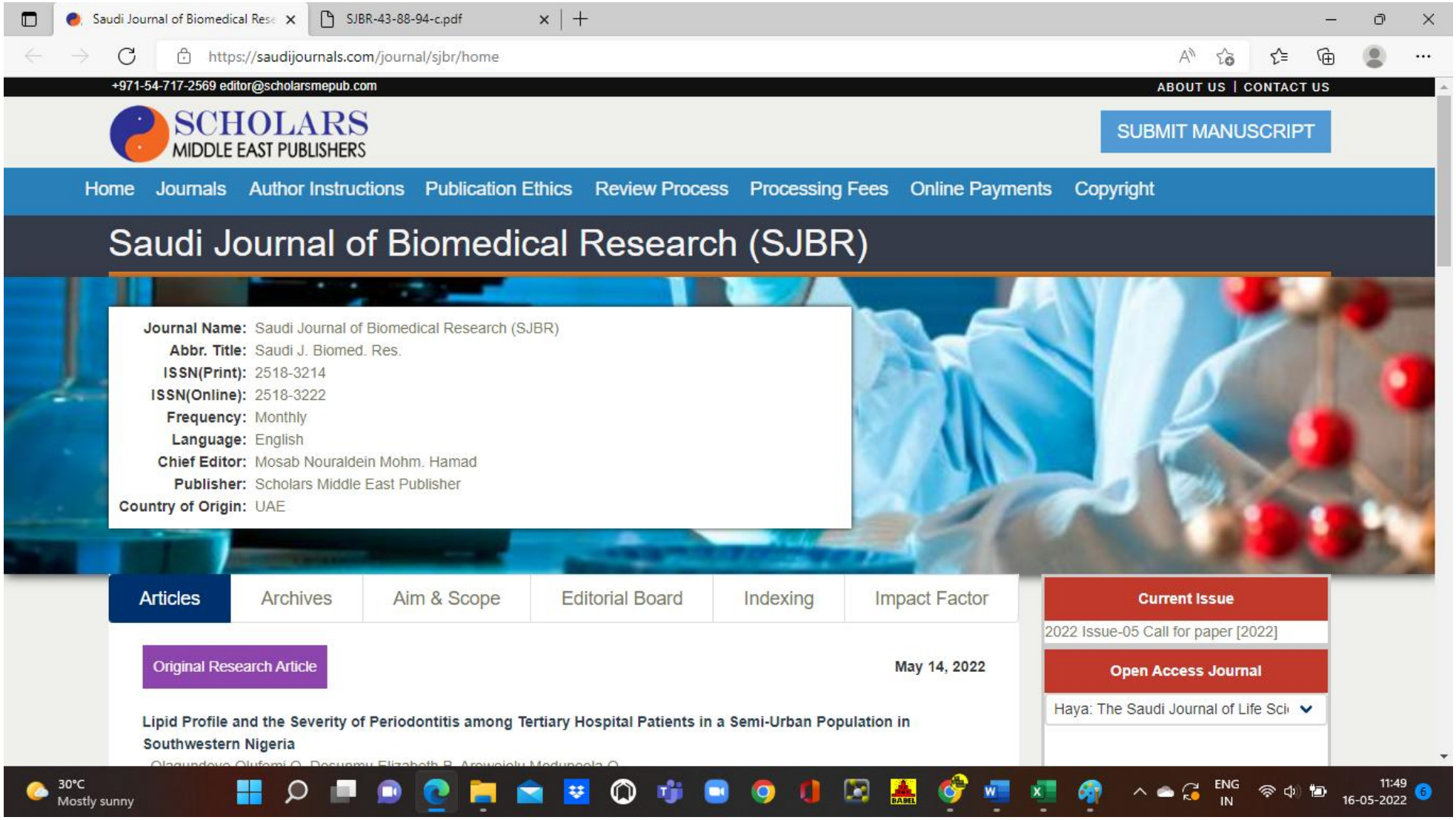


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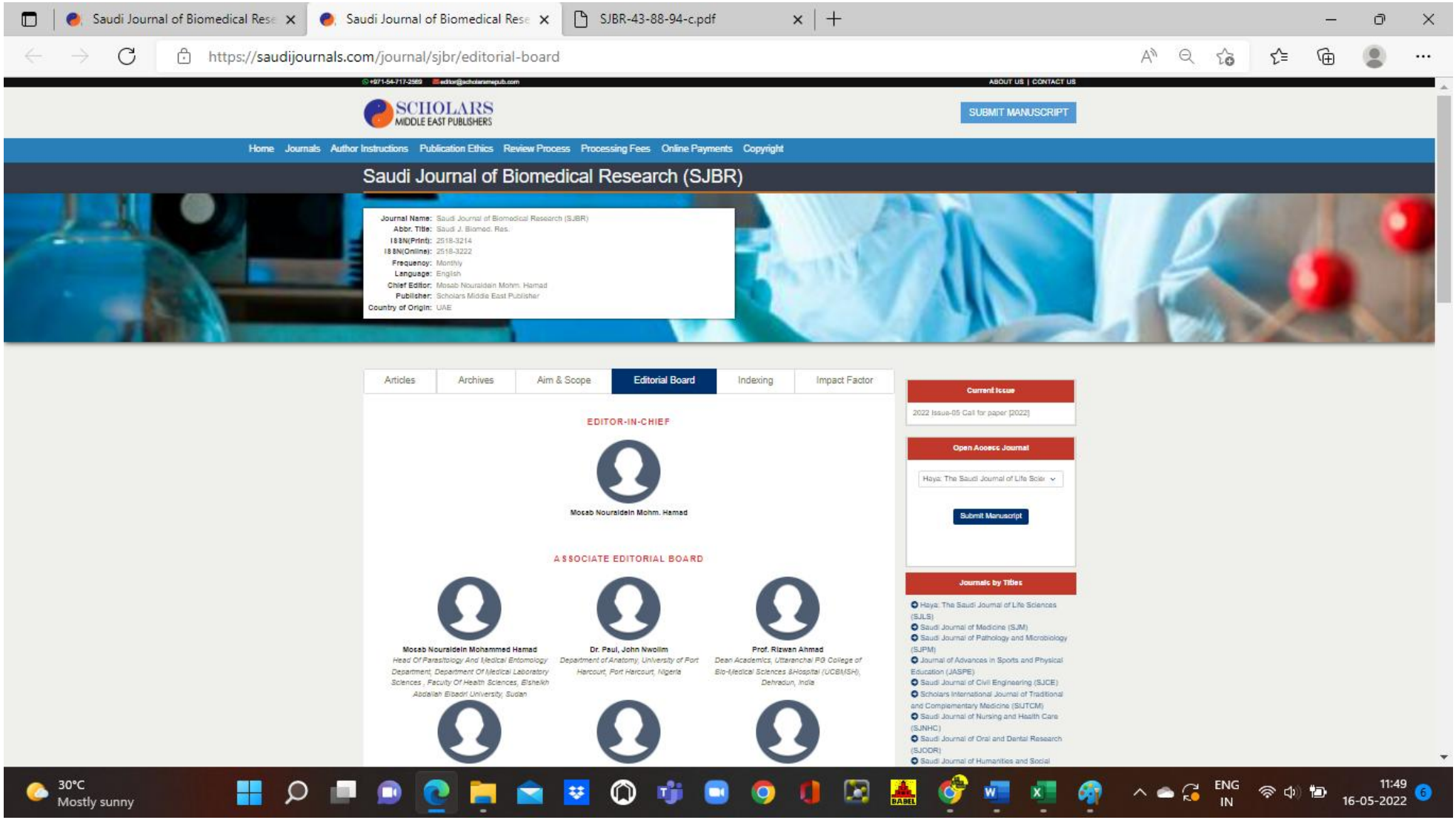


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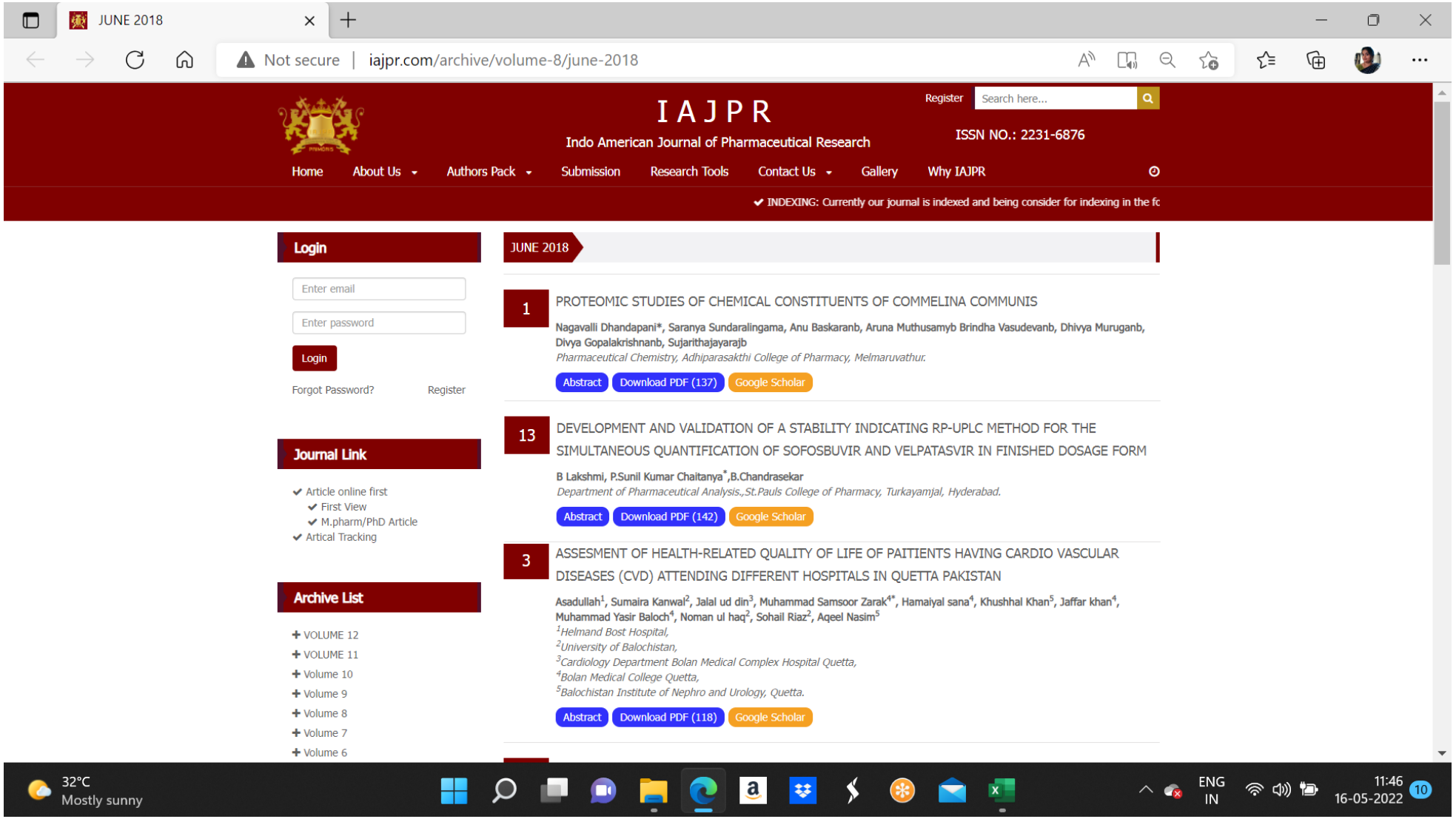

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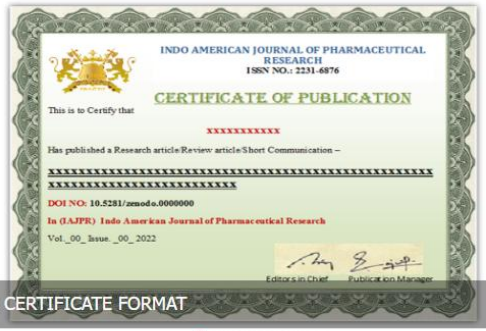


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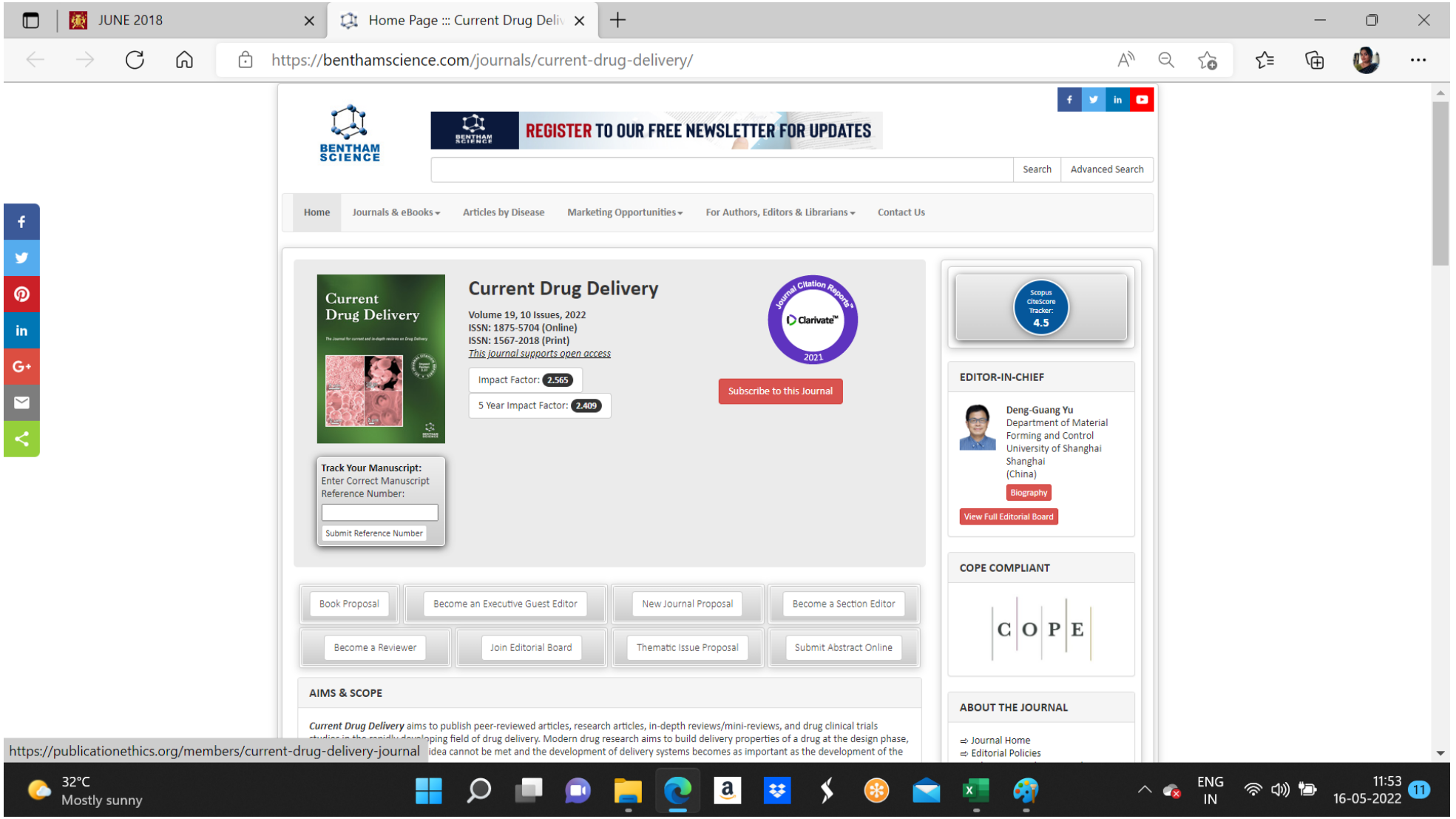


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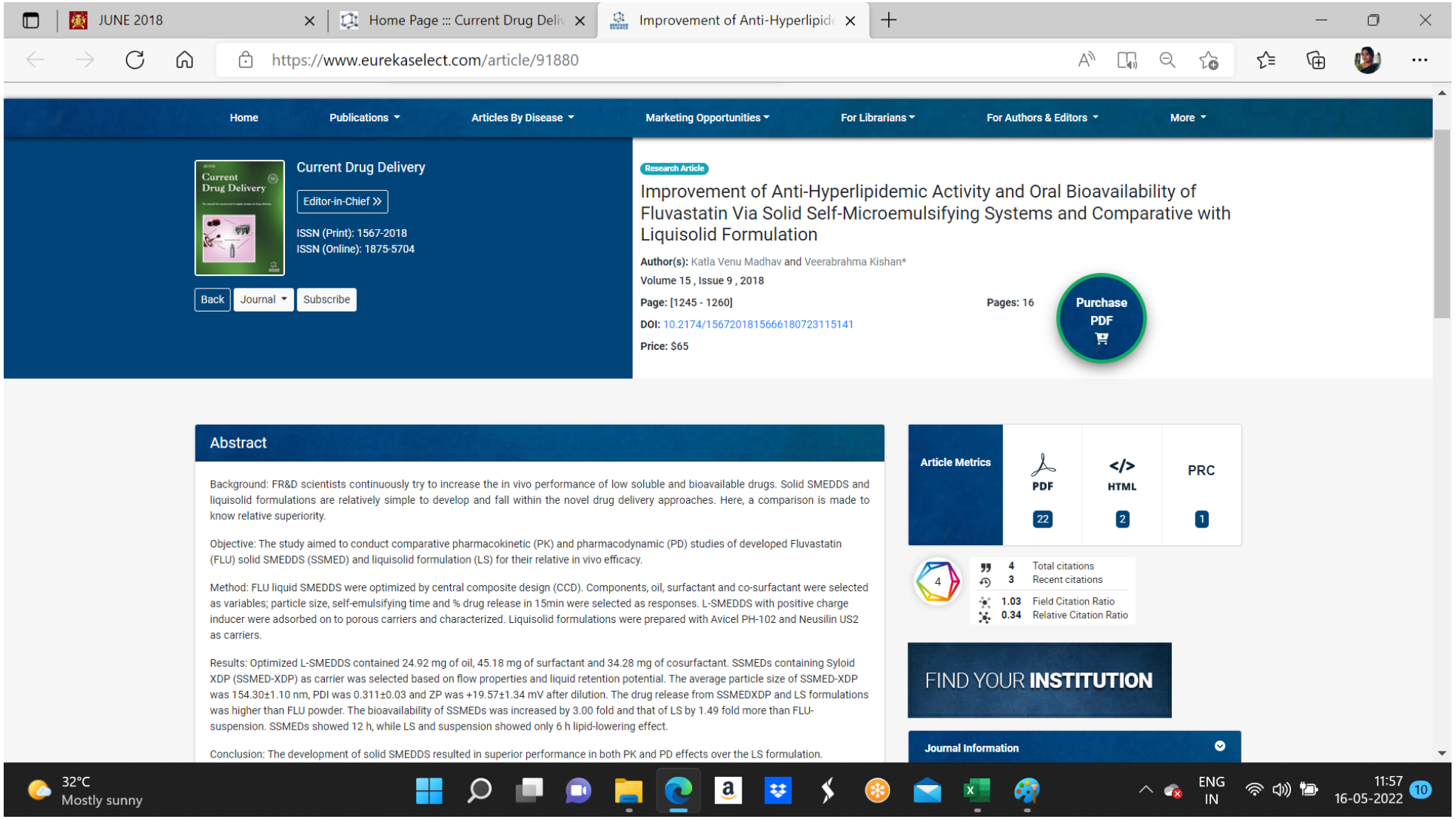


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# KINETICS & STABILITY STUDIES OF CONTROLLED POROSITY OSMOTIC PUMP TABLET OF ATENOLOL

**Ayesha Sultana[1]* and D. Varun[2]**

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**ABSTRACT**

The objective of the present study was to determine the curve fitting analysis and stability of controlled porosity osmotic pump tablet of Atenolol. The linearity of all the kinetic models was estimated. The optimized formulation follows zero order kinetics and the $R^2$ for zero order was found to be 0.999 which is considered to be the best fit model. The drug release data was obtained, quantitatively correlated and interpreted by these kinetic mathematical models which are important for optimization of the formulations. These models helps to measure significant physical parameters such as drug diffusion coefficient and model fitting on experimental data. The optimized formulation was subjected to accelerated stability studies as per ICH guidelines. The temperature was maintained at 40 ± 2°C and relative humidity of 75 ± 5%. It was observed that no significant change in the drug release by dissolution during stability testing. This testing helps in selecting the best formulation from a series of formulations.

**KEYWORDS:** Atenolol, Curve fitting, Optimization, Stability, Zero order.

## INTRODUCTION

The drug release mechanisms and kinetics are the two important characteristics of a delivery system in describing the drug dissolution profile. A number of mathematical models have been developed to analyze drug release. The model that best fits the release data is selected based on the correlation coefficient (r) value in these models. The model that has high "r" value is considered as the best fit of the release data. The various Mathematical Models are:

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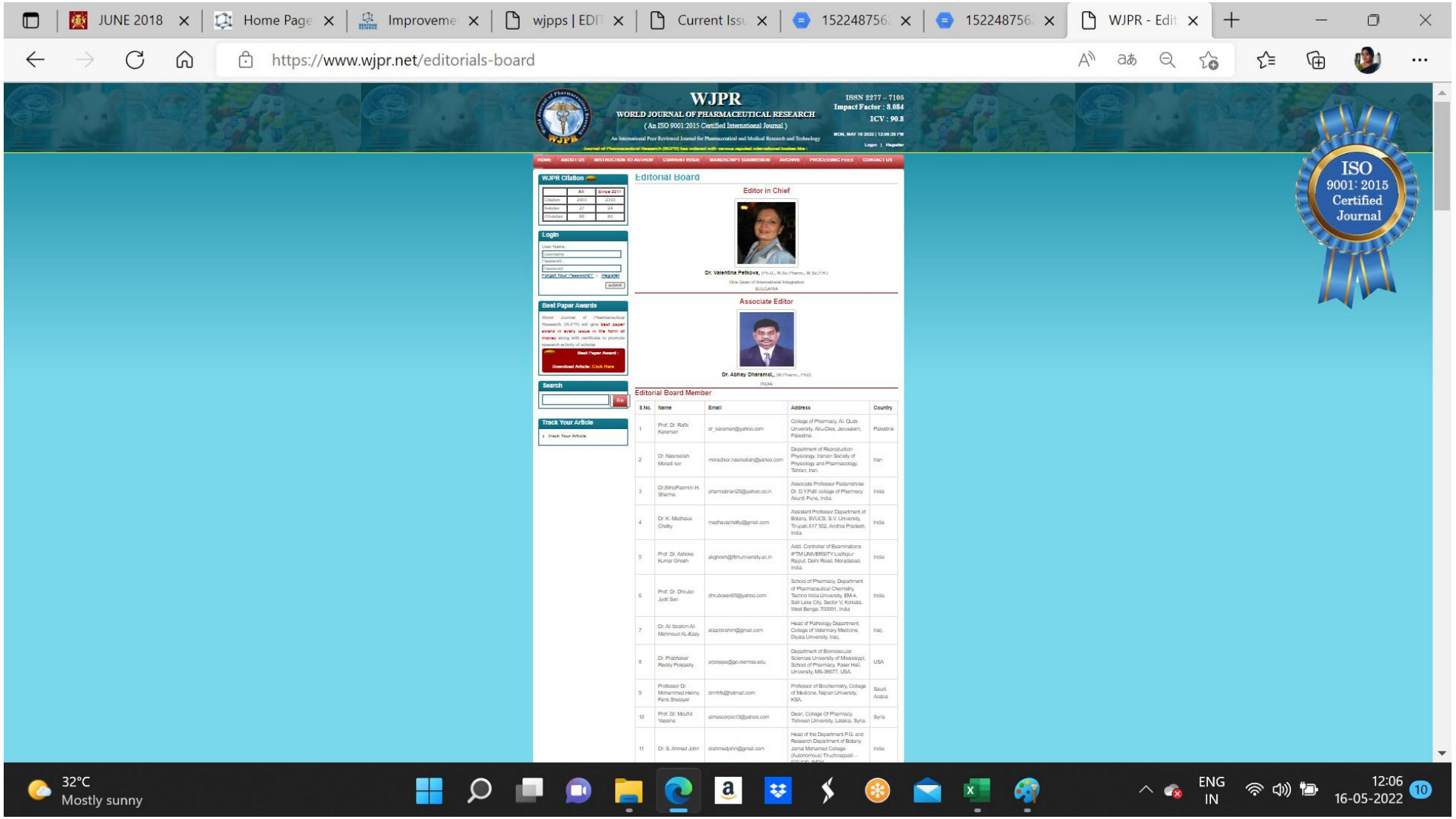


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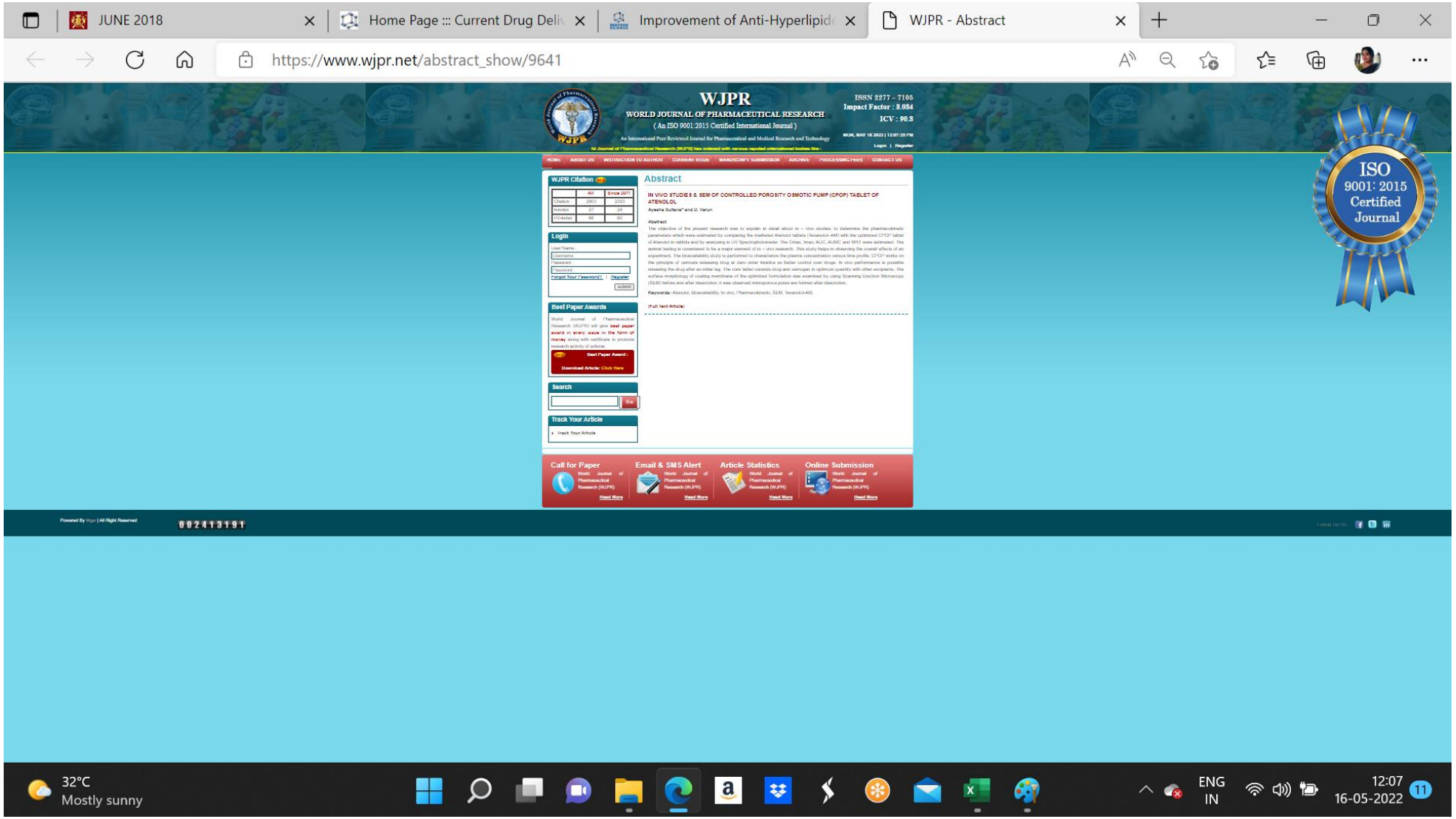


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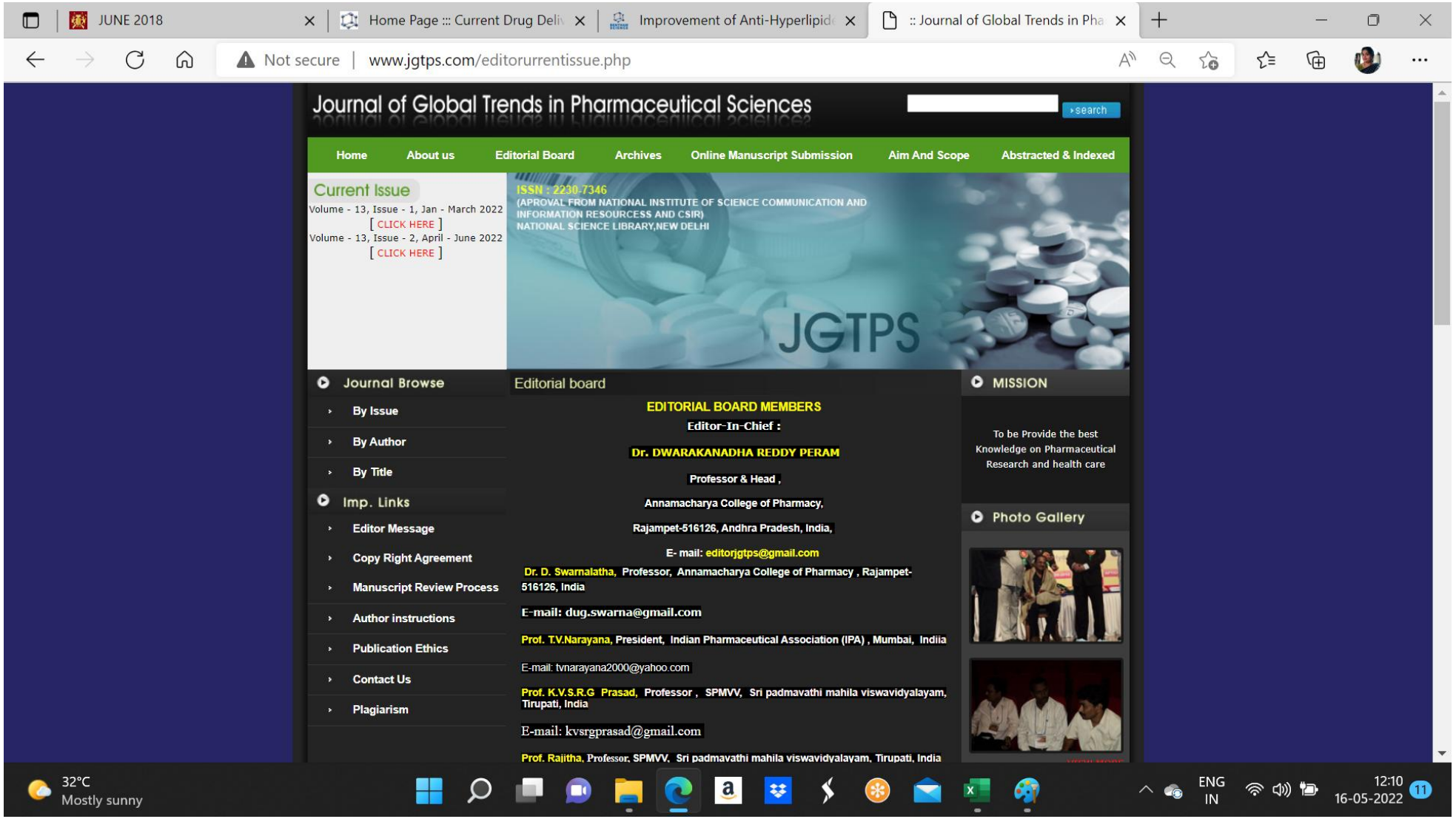


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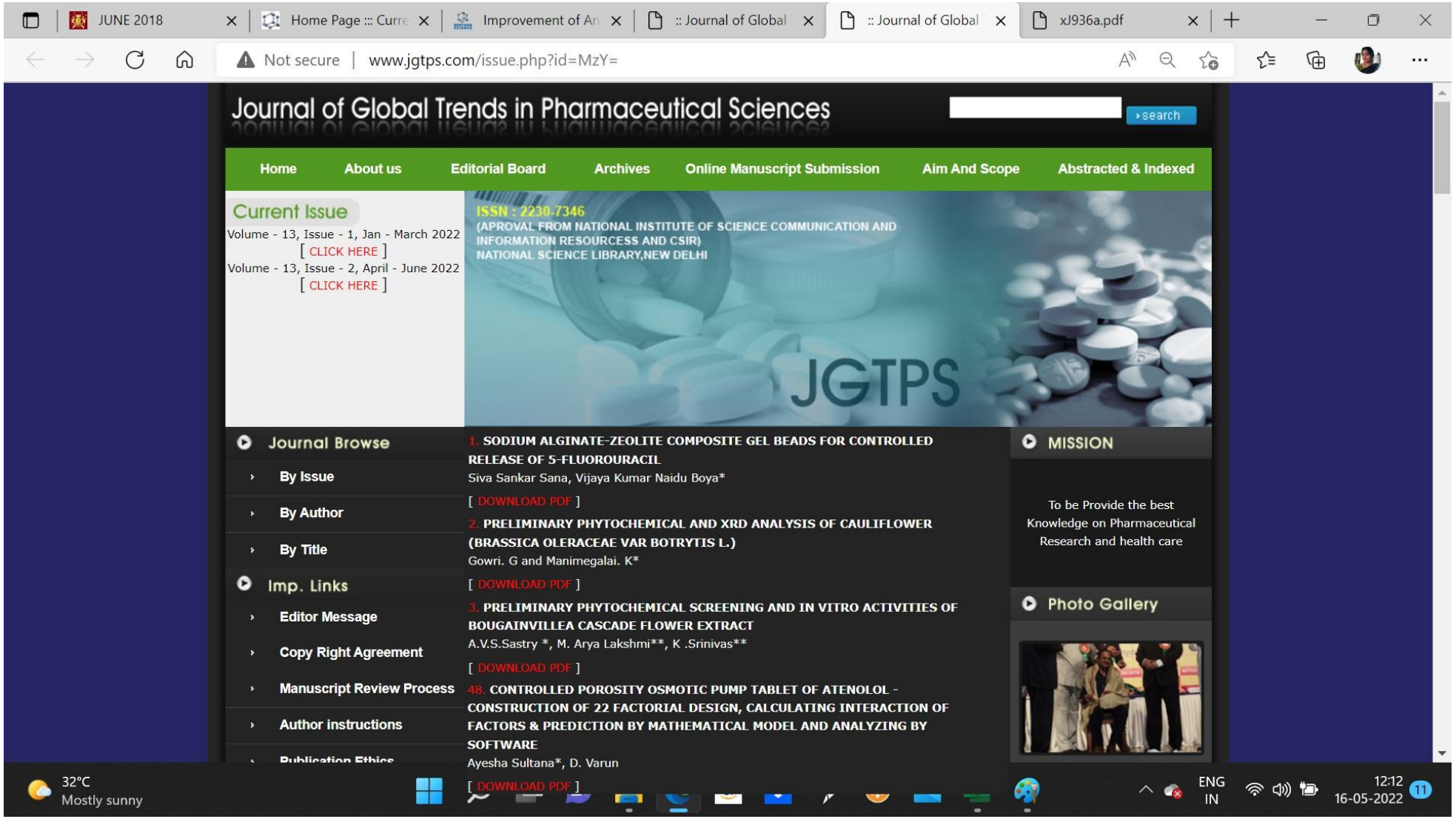


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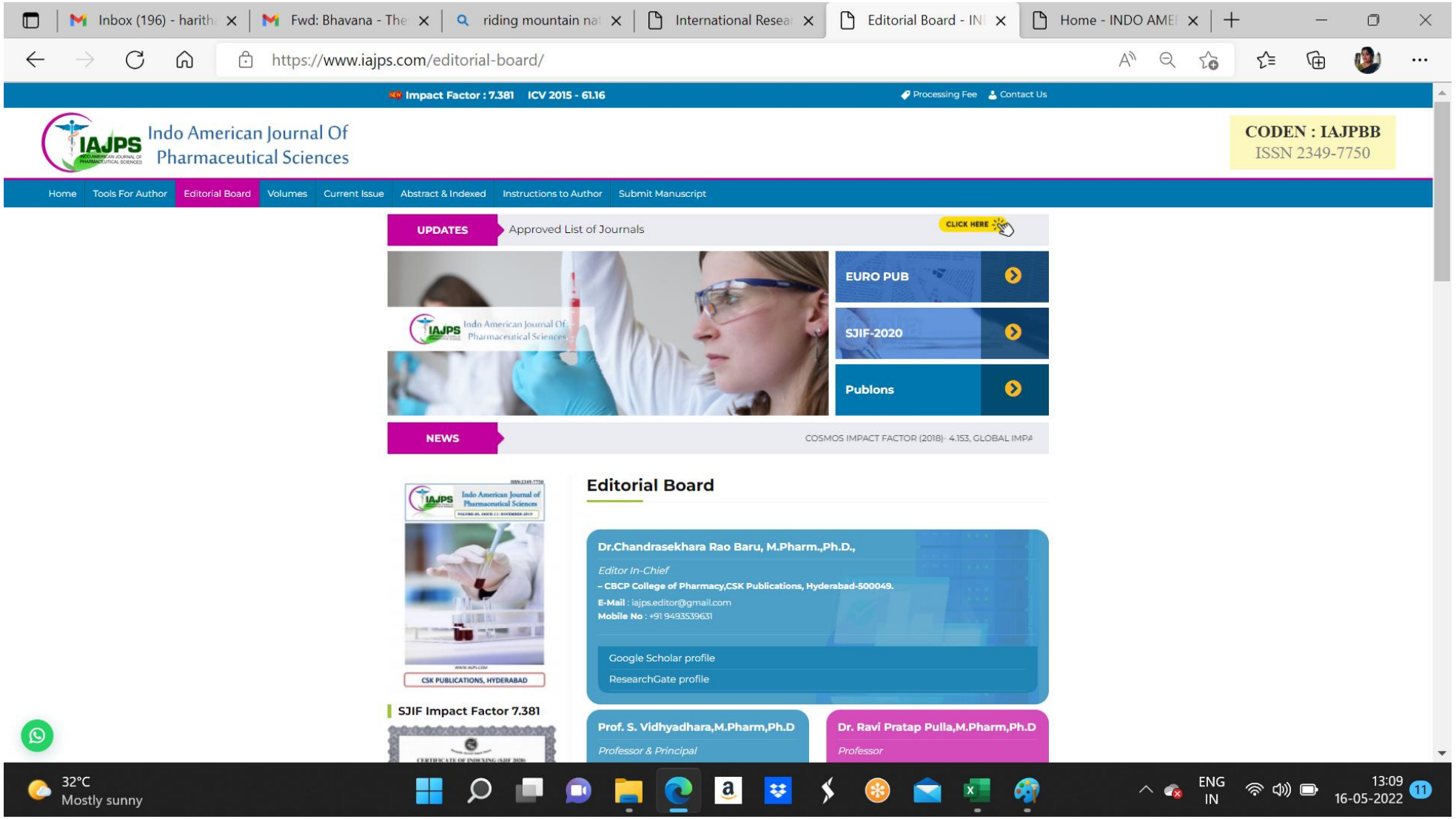


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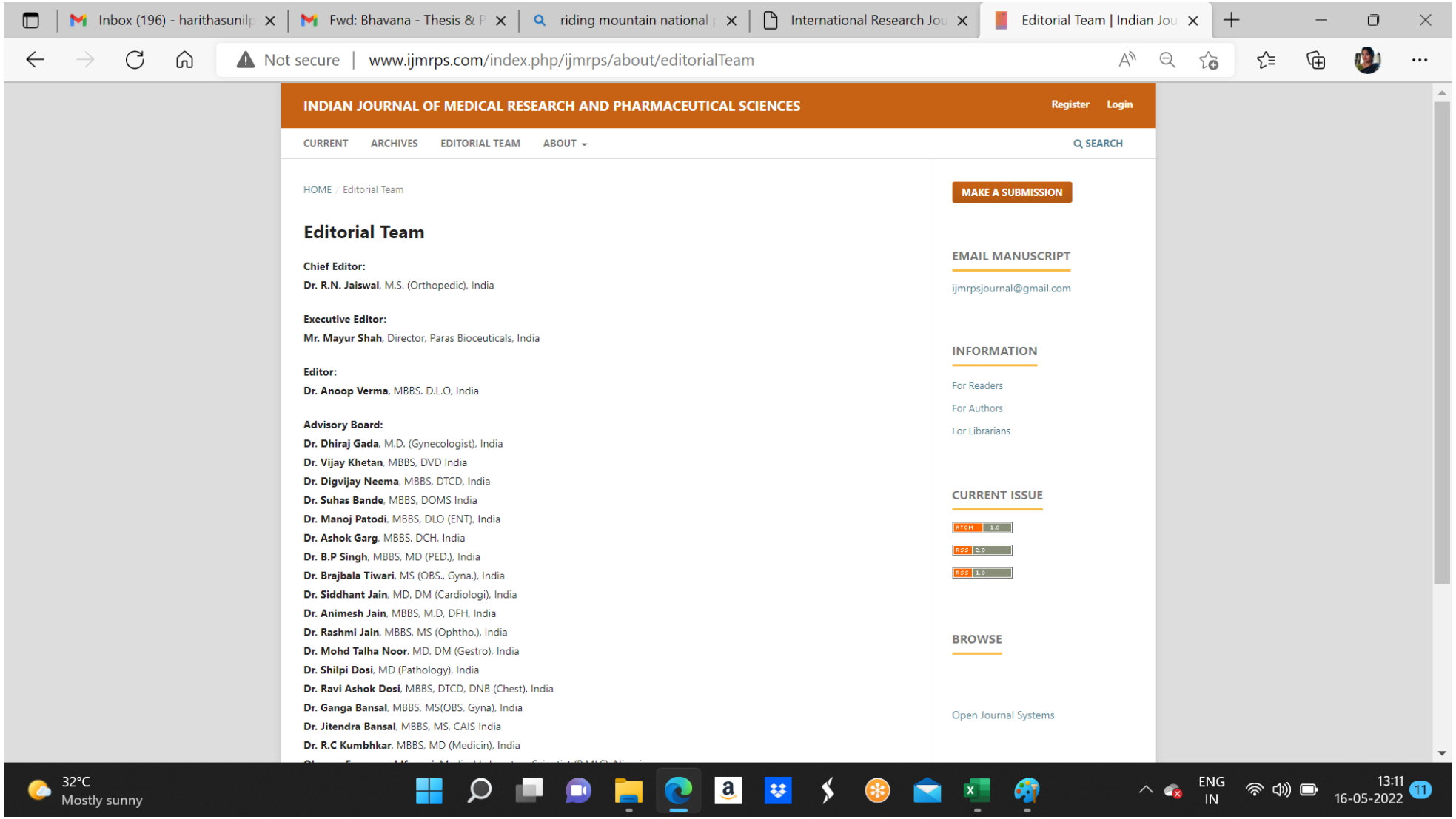


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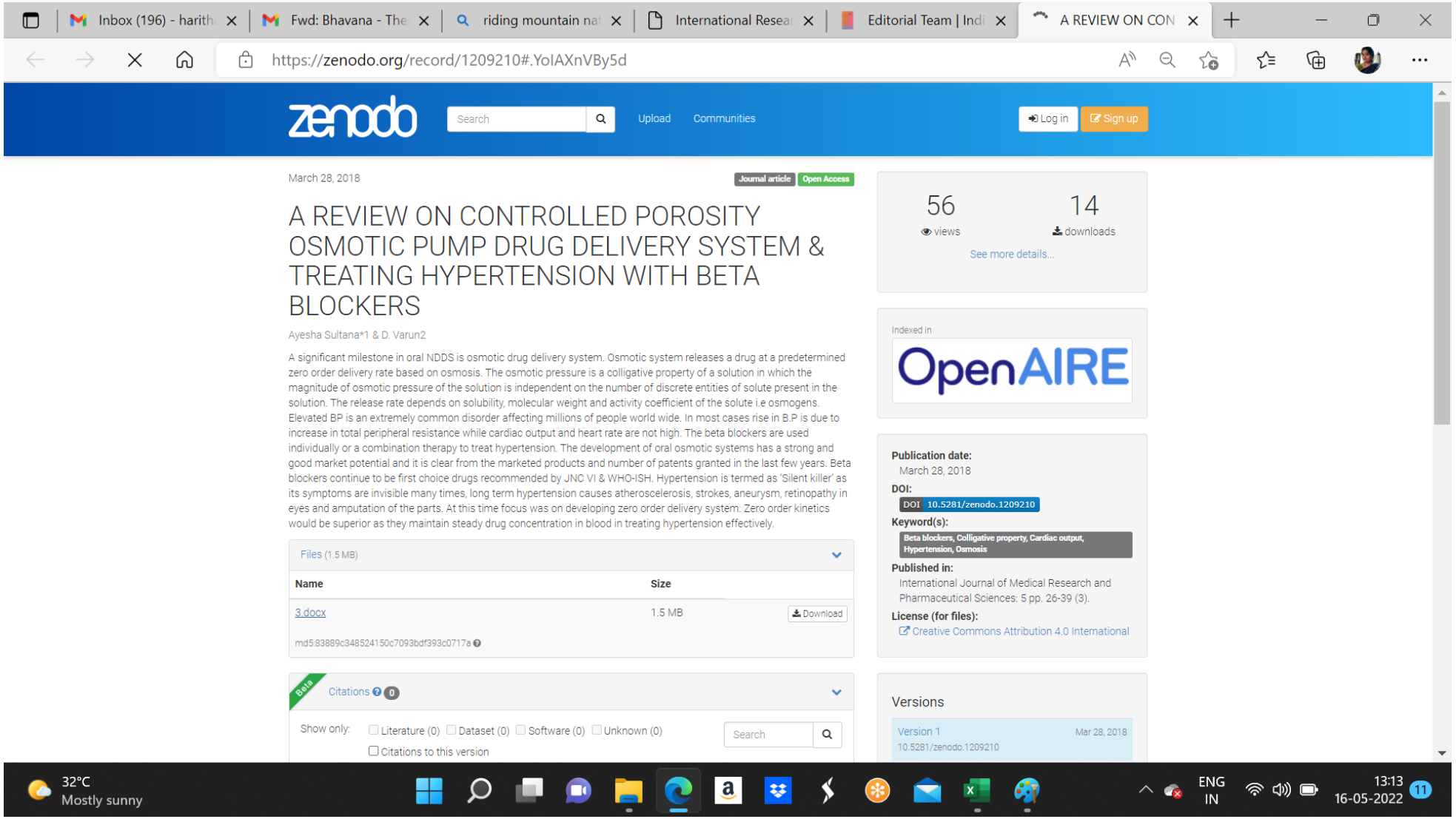

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# A REVIEW ON CONTROLLED POROSITY OSMOTIC PUMP DRUG DELIVERY SYSTEM & TREATING HYPERTENSION WITH BETA BLOCKERS

Ayesha Sultana*1 & D. Varun2

A significant milestone in oral NDDS is osmotic drug delivery system. Osmotic system releases a drug at a predetermined zero order delivery rate based on osmosis. The osmotic pressure is a colligative property of a solution in which the magnitude of osmotic pressure of the solution is independent on the number of discrete entities of solute present in the solution. The release rate depends on solubility, molecular weight and activity coefficient of the solute i.e osmogens. Elevated BP is an extremely common disorder affecting millions of people world wide. In most cases rise in B.P is due to increase in total peripheral resistance while cardiac output and heart rate are not high. The beta blockers are used individually or a combination therapy to treat hypertension. The development of oral osmotic systems has a strong and good market potential and it is clear from the marketed products and number of patents granted in the last few years. Beta blockers continue to be first choice drugs recommended by JNC VI & WHO-ISH. Hypertension is termed as 'Silent killer' as its symptoms are invisible many times, long term hypertension causes atherosclerosis, strokes, aneurysm, retinopathy in eyes and amputation of the parts. At this time focus was on developing zero order delivery system. Zero order kinetics would be superior as they maintain steady drug concentration in blood in treating hypertension effectively.

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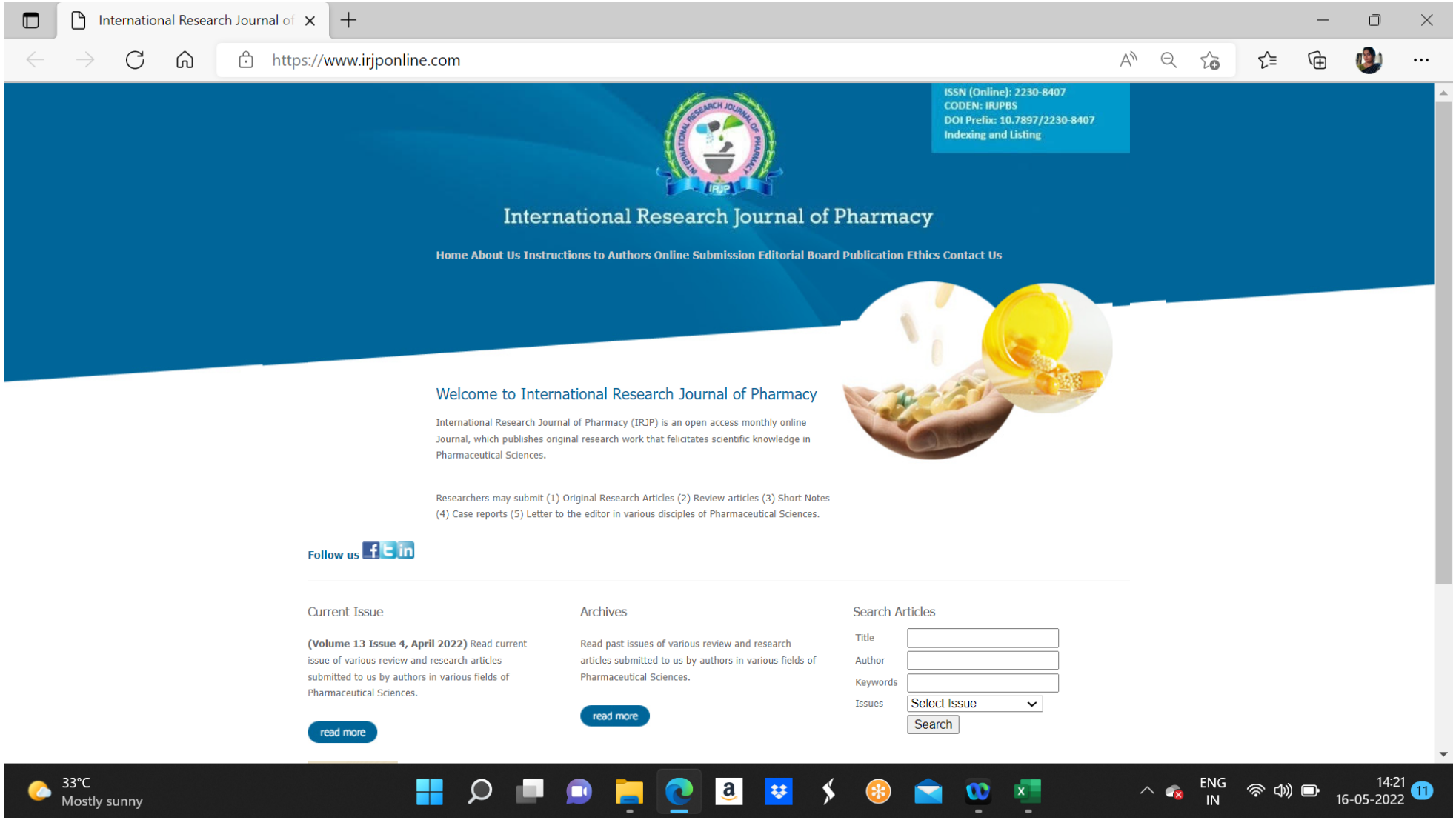


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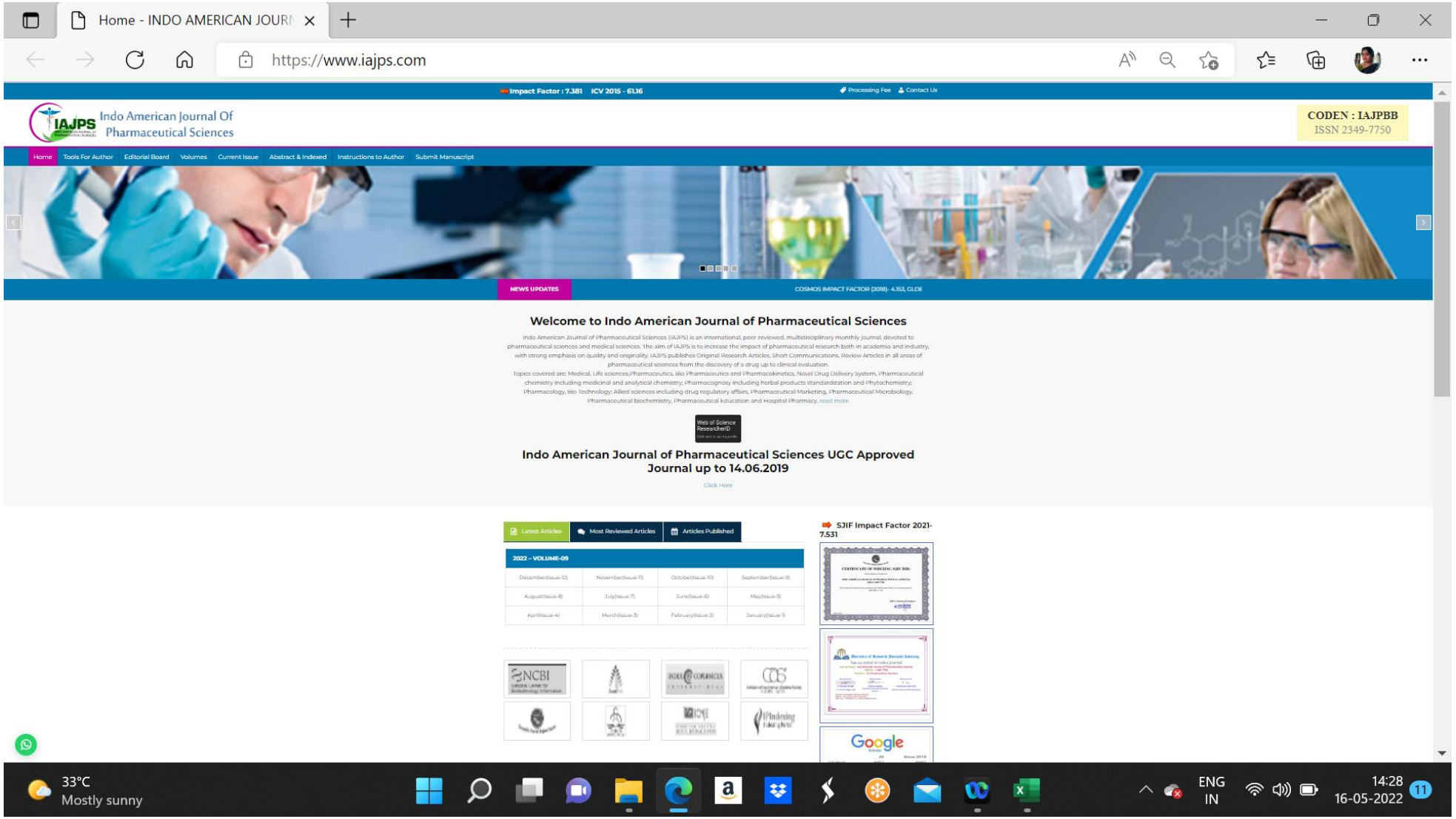


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# PREVENTION OF NEPHROTOXICITY BY CURCUMIN IN CHEMICALLY INDUCED OSTEOARTHRITIS

**Nasreen Sulthana[1,*] and K.Vijaya[2]**
[1]Research Scholar, Faculty of Pharmacy, Pacific Academy of Higher Education and Research, Udaipur, Rajasthan.
[2]Principal, TKR College of Pharmacy, Meerpet, Hyderabad, Telangana.

**Abstract:**
*Osteoarthritis is a degenerative disorder resulting in degeneration of cartilage and osteophytes formation. Non steroidal anti inflammatory drugs are commonly used drugs to alleviate the pain in most of the chronic inflammatory conditions like osteoarthritis. These drugs alleviate the pain by inhibiting the synthesis of prostaglandins. Although these drugs reduce the pain, they have several limitations as they cause nephrotoxicity. In recent years several works have been carried out to improve the therapeutic strategy in osteoarthritis. The present study was carried out to investigate the role of curcumin in osteoarthritis when it is used as an adjuvant to Diclofenac sodium. Osteoarthritis was induced by administering nalidixic acid. Animals were divided into 5 groups and were treated accordingly. Group I was considered as control, group II animals were disease control i.e they were induced with osteoarthritis and were given no treatment. Group III animals were induced with Osteoarthritis and were treated with diclofenac sodium. Group IV animals were induced with osteoarthritis and were treated with the combination of diclofenac sodium and curcumin. Group V animals were pre-treated with curcumin and then induced with osteoarthritis. Parameters like Serum creatinine levels, serum uric acid levels, serum potassium levels, serum ALP levels, blood urea nitrogen (BUN), urine potassium, urine creatinine, urine output, kidney weight were estimated. Histopathological studies were also carried out. Animals treated with curcumin along with the standard drug or animals with pretreated curcumin have shown fewer incidences of nephrotoxicity. Histopathology also supports low incidence of nephrotoxicity in those animals. It demonstrates that curcumin when used along with the conventional NSAIDs as an adjuvant therapy has a role in treating osteoarthritis effectively.*

**Key words:** *Osteoarthritis, nephrotoxicity, nonsteroidal anti inflammatory drugs, curcumin and prostaglandins.*

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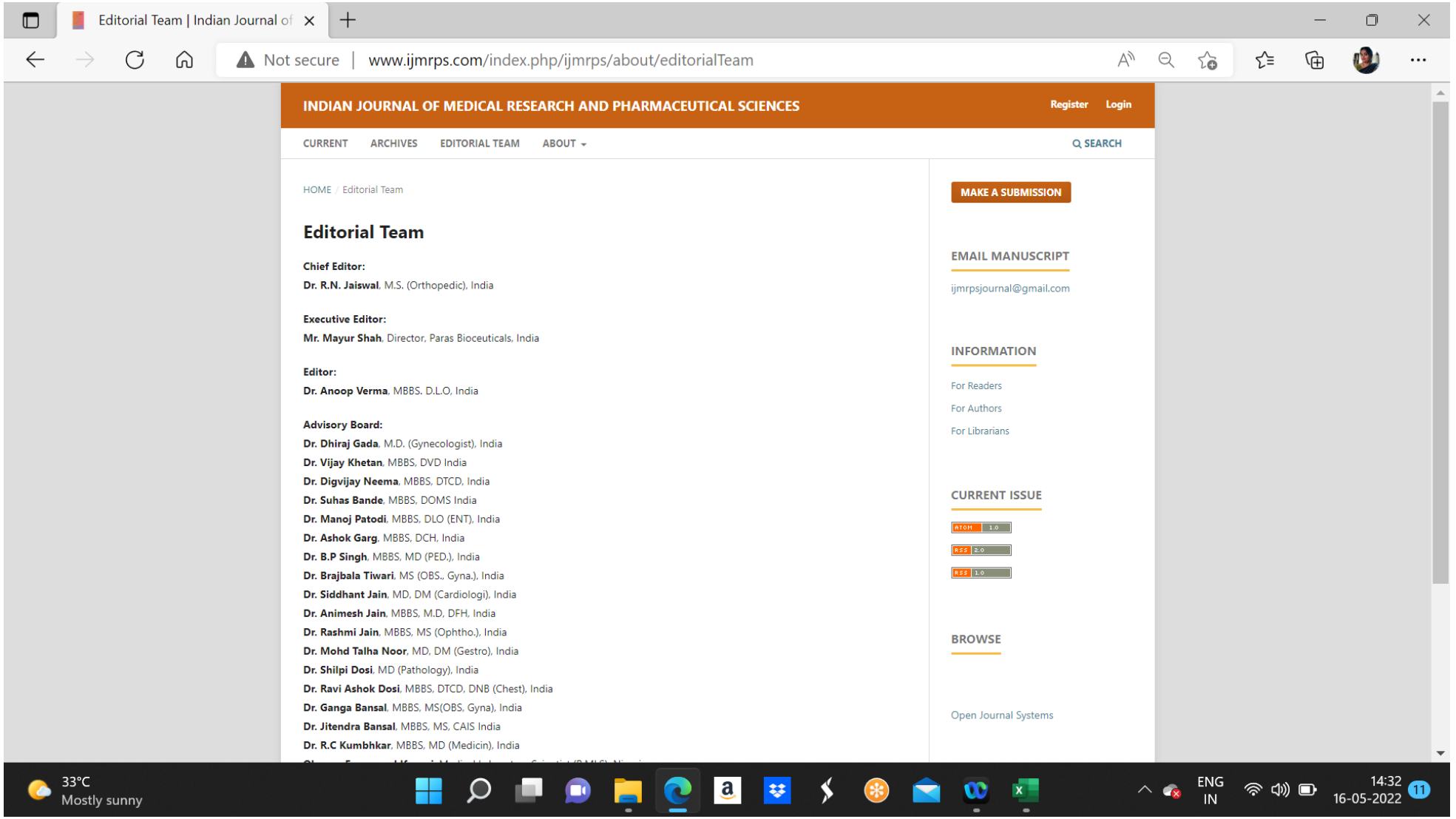


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P. Sravan Kumar , *, A. Santhosh , K. Manasa, M. Swapna , M. Sreevani , M. Bhavusingh , M. Mamatha

Published on : Apr 21, 2018

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R. Shyamsunder , G. Kalpana , K. Bhavanasindhu *

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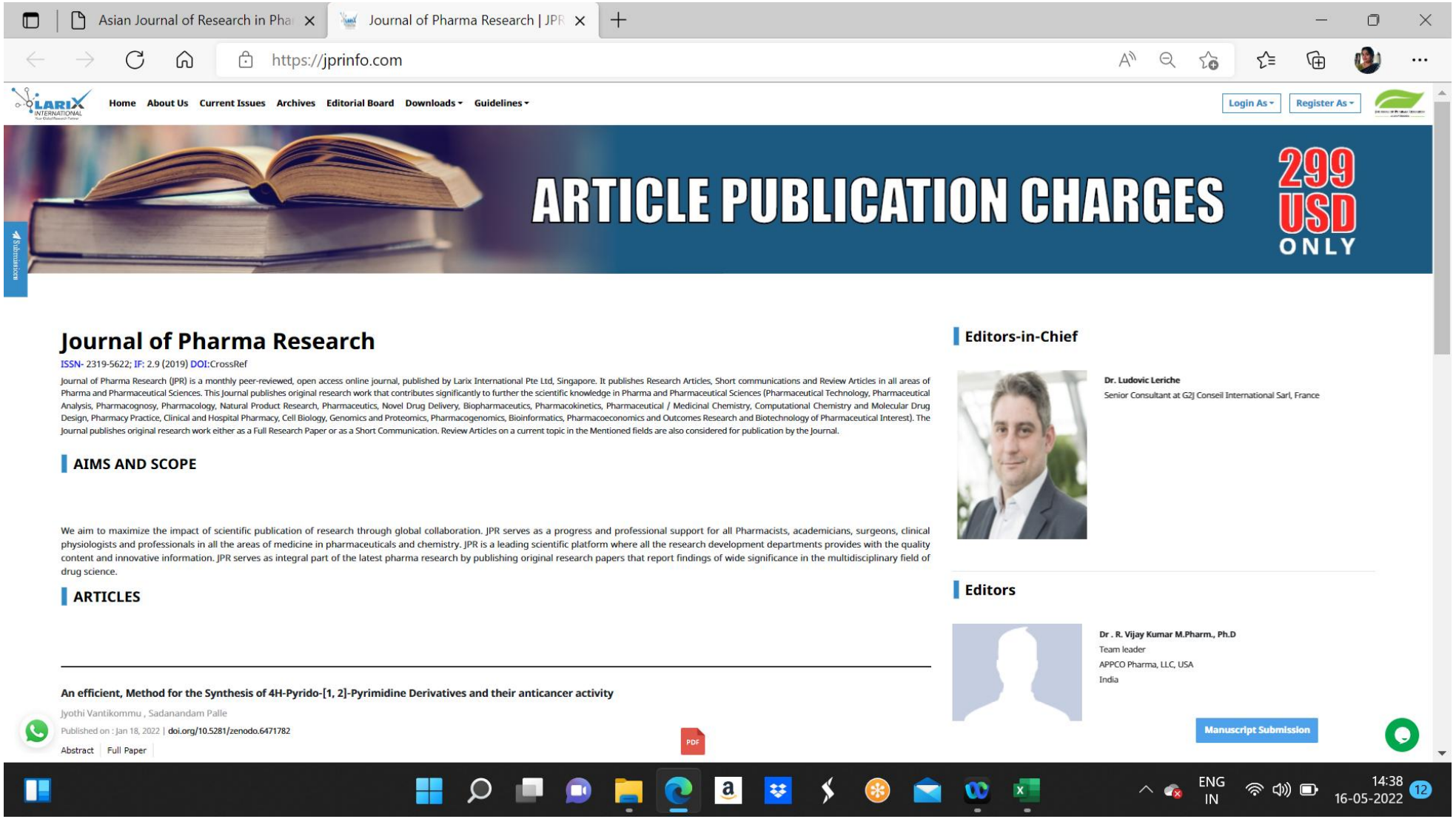


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Research Article

# IN-VITRO ANTIHELMINTHIC ACTIVITY, PHYTOCHEMICAL SCREENING AND TLC STUDIES OF ETHANOL-WATER EXTRACTION ON *IPOMEA CARNEA* FLOWER USING IN - STATE FESTIVAL OF TELANGANA (BATHUKAMMA)

**P. Sravan Kumar [1 *], A. Santhosh [2], K. Manasa, M. Swapna [3], M. Sreevani [3], M. Bhavusingh [3], M. Mamatha [3]**

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**Received on: 29-03-2018; Revised and Accepted on: 21-04-2018**

**ABSTRACT**

*India Being a Rich and Varied Flora of Medicinal Plants. It's used in Traditional Festivals of India. The Present Study deals with the In-Vitro Antihelminthic Activity, Phytochemical Screening and TLC Studies of Ethanol:Water (80:20) Extraction on Ipomea Carnea Flower using in - State Festival of Telangana (Bathukamma). Ethanol:Water (80:20) Extraction on Ipomea Carnea Flower was used evaluation of Phytochemical Screening Determination by some chemical tests and Thin Layer Chromatographic Study was carried out by using Various Soluent System of varying Polarity of Hexane, Ethyl Acetate, Acetone. Phytochemical Screening Reflects Presence of like Carbohydrates, Alkalides, Phenols, Tannins, Phytosterols, Glycosides, Flavonoids, Tannies Shows Methanol Solvents Extracts. Thin Layer Chromatographic Studies of the Ipomea Carnea Flower Parts Constituted Different Colored Phytochemical Compounds with different Rf Values. Ethanol:Water (80:20) Extractions of Ipomea Carnea Flower Various Concentrations (25, 50, 100mg/ml) of all Extracts were Tested and Results were Expressed in Terms of time for Paralysis and time for Death of Worms. Piperazine Citrate (10 mg/ml) was used as a Reference Standard and Distilled Water as a Control Group. Treatment with Concluded that the Ethanol:Water (80:20) Extract of Ipomea Carnea Flowers showed Potent Anthelmintic Activity and was Equipotent to Standard Anthelmintic drug. The Potent Anthelmintic Activity could be due to Presence of Glycosides, Flavonoids and Sterols. So, from the above Findings, it was Concluded that Ethanol:Water (80:20) Extract of Ipomea Carnea Flowers Posse's Significant Wormicide Activity Property.*

**KEYWORDS:** *Ipomea Carnea, Anthelmintic, Phytochemicals, TLC Profile.*

## INTRODUCTION

Herbal medicines have recently attracted much attention as alternative medicines useful for treating or prevent in life style related disorders and relatively very little knowledge is available about their mode of action. There has been a growing interest in the analysis of plant products which has stimulated intense research on their potential health benefits [1].

The earth is created with many incredible things which are supporting the life of human beings; we found our life in the nature which gives everything we want like water, food, and shelter etc. and everyone pray for these things to remain forever with us. This nature looks more beautiful with different flowers, each flower has a unique fragrance which attracts everyone and these flowers were used for celebrations and other occasions, we also see various plants in the nature and each plant has its own importance [4].

Grate India is known for its traditions and celebrations of festivals. Every festival has a scientific reason to support its celebration. in this regard, present study is planned to evaluate pharmacological activity of flowers used in bathukamma festival which has been recently declared as state festival of newly formed telangana state [4]. It is a floral festival in which every day various colored flowers are arranged row after row in a brass plate, called as bathukamma, placed in front of diety and daily worshipped for a week. In the evening it is carried to nearby pond or any water body and released in it.

Helminthes parasite infections are global problems. The diseases affect the health status of a large fraction of the human population as well as animals. Some type of dangerous helminthes infections like filariasis has only a few therapeutic modalities at present [4]. In addition, after treatment with albendazole or mebendazole, several side effects [5]. Helminths are the most common infectious agents of humans and produce a global burden of disease and contribute to the prevalence of malnutrition, anaemia, eosinophilia, and pneumonia. The disease is highly prevalent particularly in poor countries. Plant derived drug serve as a prototype to develop more effective and less toxic medicines [6-7].

In India many times used in traditional medicine system. It is a common weed throughout india and used in traditional medicine for *ipomea carnea* flower is most important flower used in this festival. It is commonly known pink morning glory, is a species of morning glory, besharam in hindi, thutu kada in telugu, morning glory flowers are also known as ipomea, it is belongs to family convolvulaceae [8].

The recent studies displayed that *ipomea carnea* possessed a wide range of therapeutic activities which were proved that this plant have a potential regenerator capacity of various cells, glycosidase inhibitory activities, anti-inflammatory activity, antioxidant activity, wound healing activity, antidiabetic activity, immunomodulatory

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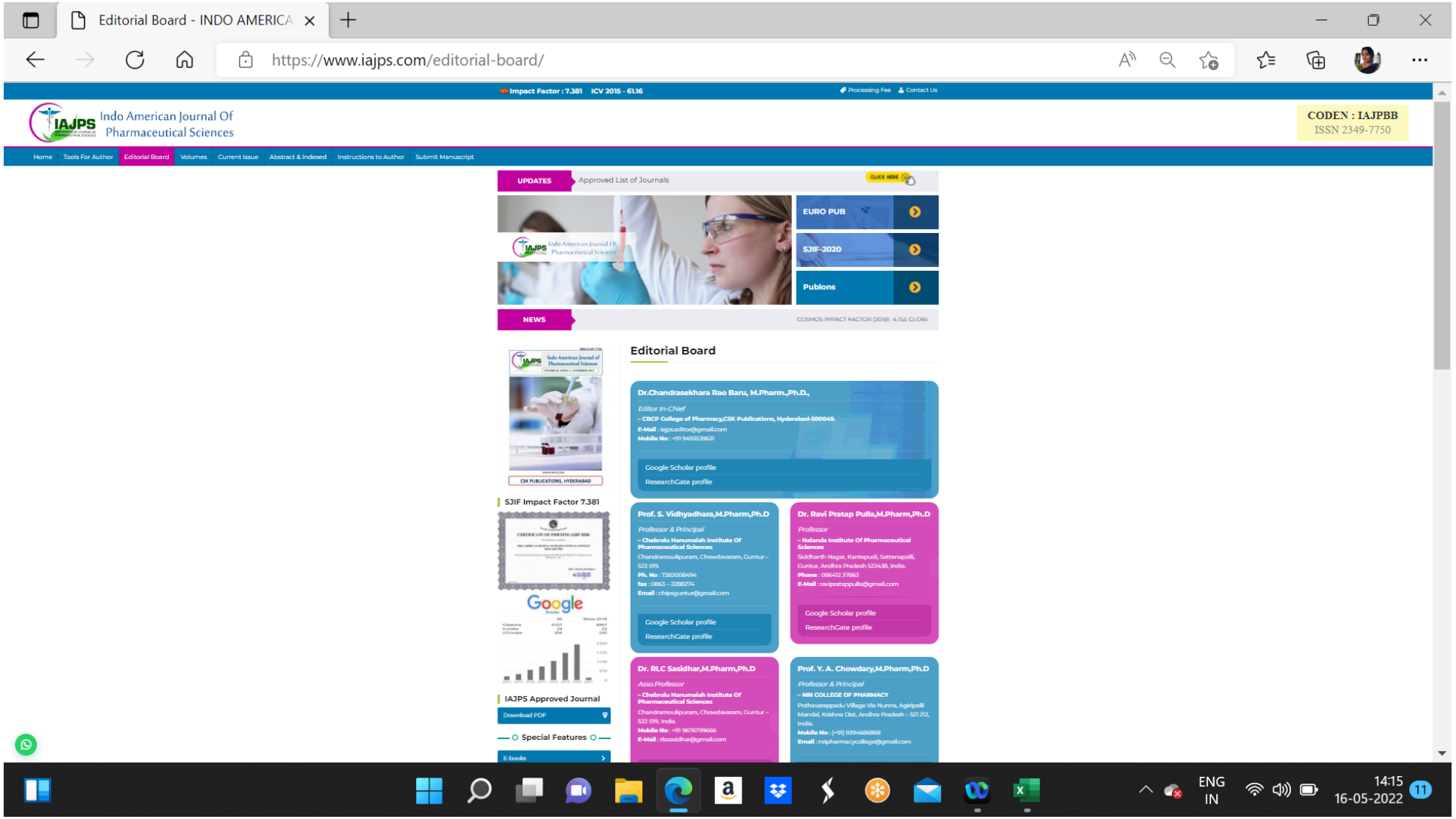


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Table 1
Table 2

Biomedicine & Pharmacotherapy
Volume 101, May 2018, Pages 174-180

# Crocin attenuates cyclophosphamide induced testicular toxicity by preserving glutathione redox system

Ajay Godwin Potnuri [a], Lingesh Allakonda [b], Mangala Lahkar [c]

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## Abstract

Chemotherapy induced testicular toxicity is an emerging reason for azoospermia and impotency in males. Cyclophosphamide (CP) is a widely used chemotherapeutic agent to manage neoplastic and non-neoplastic autoimmune diseases. Testicular toxicity along with bladder and hepatotoxicity are its widely reported adverse effects. Crocin (CR) is the digentiobiosyl ester of crocetin, found in the fruits of gardenia (*Gardenia jasminoides* E.) and dried stigmas of saffron (*Crocus sativus* L.) possess antioxidant, anti-depressant, anti-tumor and aphrodisiac properties. In the light of these reports, the present study aimed to investigate protective effect of CR administration (10 mg/kg and 20 mg/kg per day for eight weeks) on CP induced (15 mg/kg per week for eight weeks) testicular toxicity in male Sprague dawley rats by analysing the Glutathione redox cycle, Sperm quality, spermatogenic and steroidogenesis hormonal axis, caspase 3 activity and histological investigations. Administration of CR preserved the glutathione redox cycle, sperm quality, hormonal mediators associated with sperm production. It also decreased testicular apoptosis as evident from the reduction of caspase 3 activity. These biochemical findings were well reflected on the histo-pathological investigation. Conclusively, the results of this study indicate that administration of CR can dose dependently attenuate the toxic effects of CP on testis.

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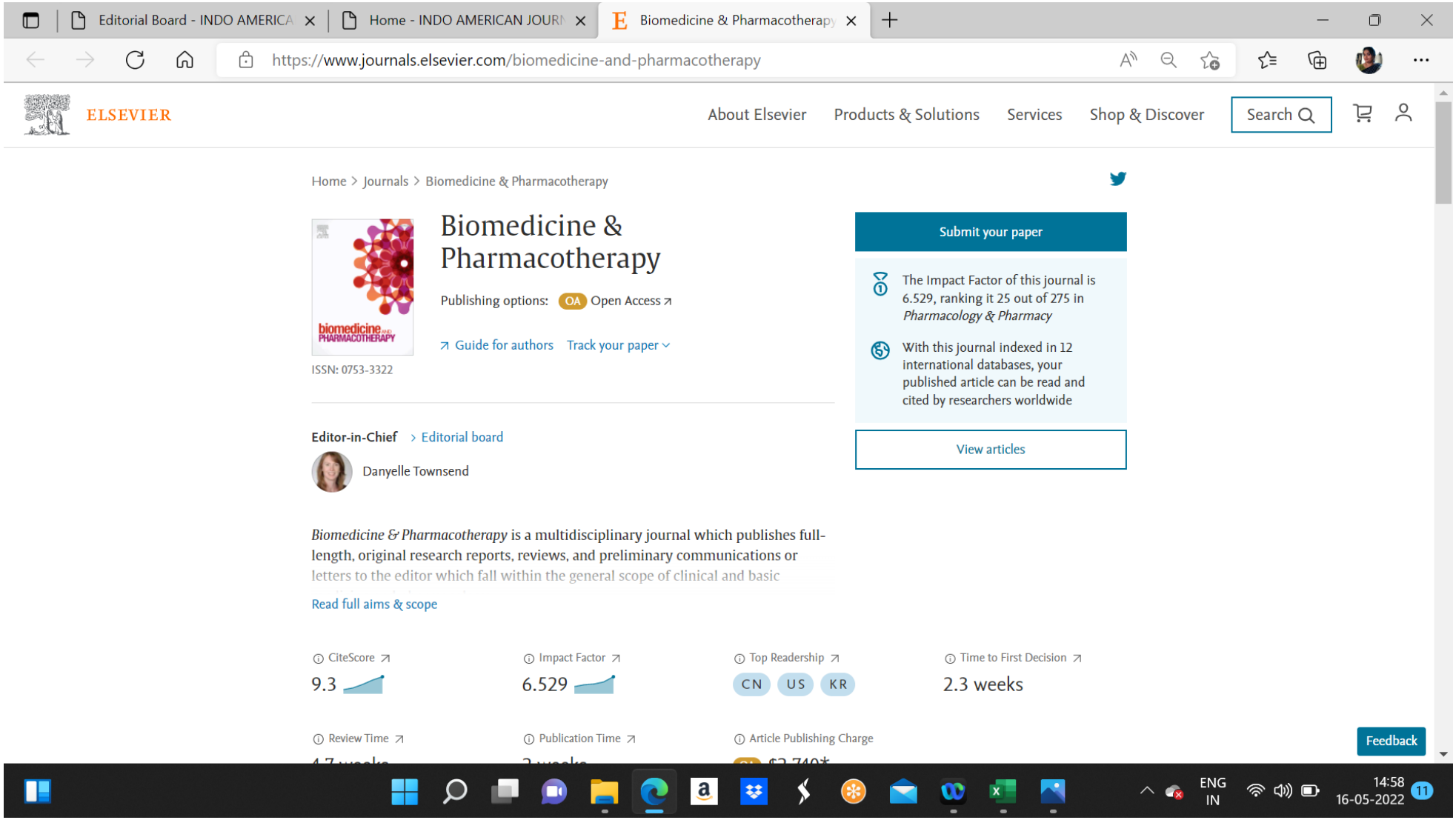


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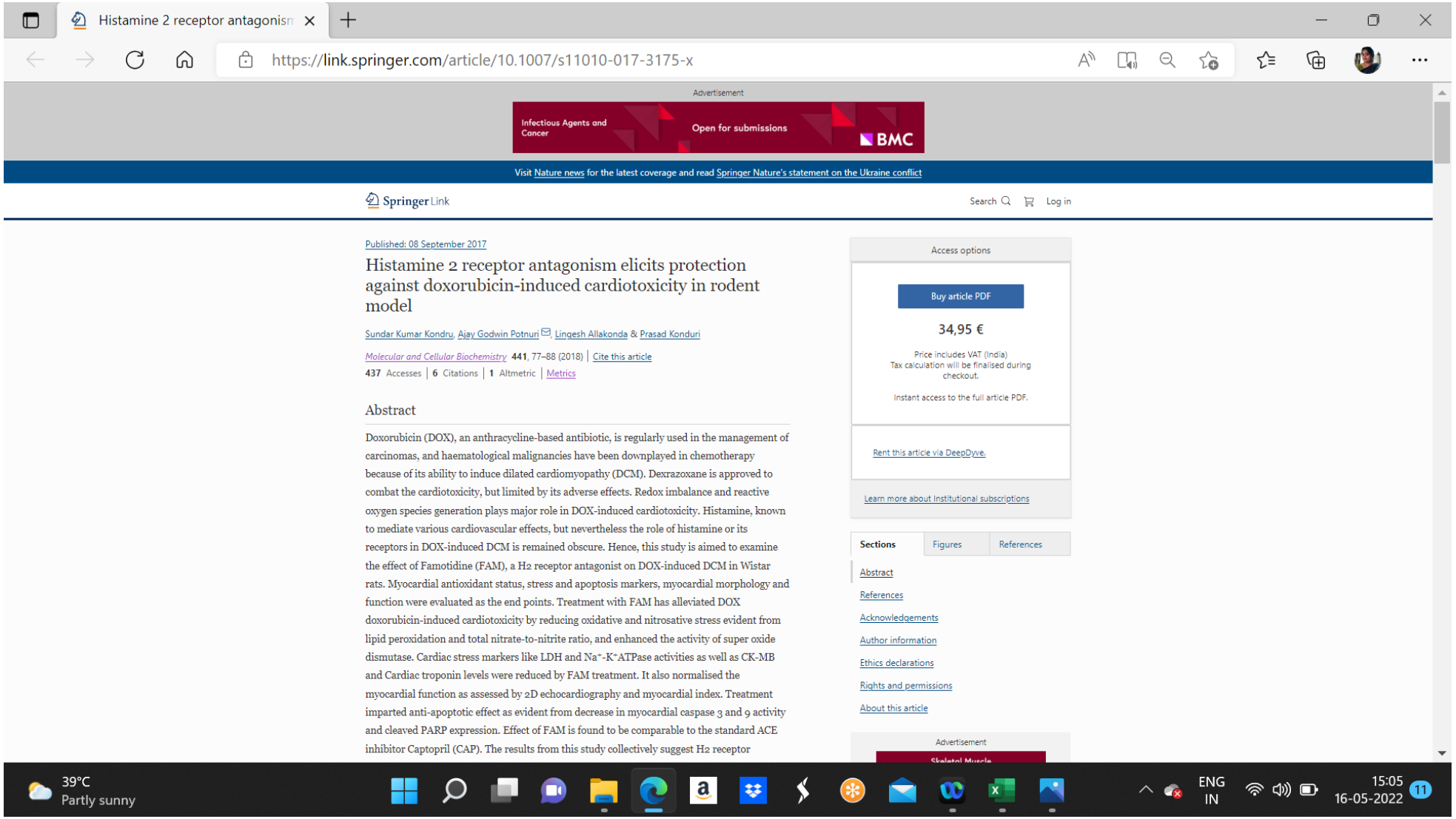

Histamine 2 receptor antagonism

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Published: 08 September 2017

# Histamine 2 receptor antagonism elicits protection against doxorubicin-induced cardiotoxicity in rodent model

Sundar Kumar Kondru, Ajay Godwin Potnuri, Lingesh Allakonda & Prasad Konduri

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## Abstract

Doxorubicin (DOX), an anthracycline-based antibiotic, is regularly used in the management of carcinomas, and haematological malignancies have been downplayed in chemotherapy because of its ability to induce dilated cardiomyopathy (DCM). Dexrazoxane is approved to combat the cardiotoxicity, but limited by its adverse effects. Redox imbalance and reactive oxygen species generation plays major role in DOX-induced cardiotoxicity. Histamine, known to mediate various cardiovascular effects, but nevertheless the role of histamine or its receptors in DOX-induced DCM is remained obscure. Hence, this study is aimed to examine the effect of Famotidine (FAM), a $H_2$ receptor antagonist on DOX-induced DCM in Wistar rats. Myocardial antioxidant status, stress and apoptosis markers, myocardial morphology and function were evaluated as the end points. Treatment with FAM has alleviated DOX doxorubicin-induced cardiotoxicity by reducing oxidative and nitrosative stress evident from lipid peroxidation and total nitrate-to-nitrite ratio, and enhanced the activity of super oxide dismutase. Cardiac stress markers like LDH and $Na^+$-$K^+$ATPase activities as well as CK-MB and Cardiac troponin levels were reduced by FAM treatment. It also normalised the myocardial function as assessed by 2D echocardiography and myocardial index. Treatment imparted anti-apoptotic effect as evident from decrease in myocardial caspase 3 and 9 activity and cleaved PARP expression. Effect of FAM is found to be comparable to the standard ACE inhibitor Captopril (CAP). The results from this study collectively suggest $H_2$ receptor







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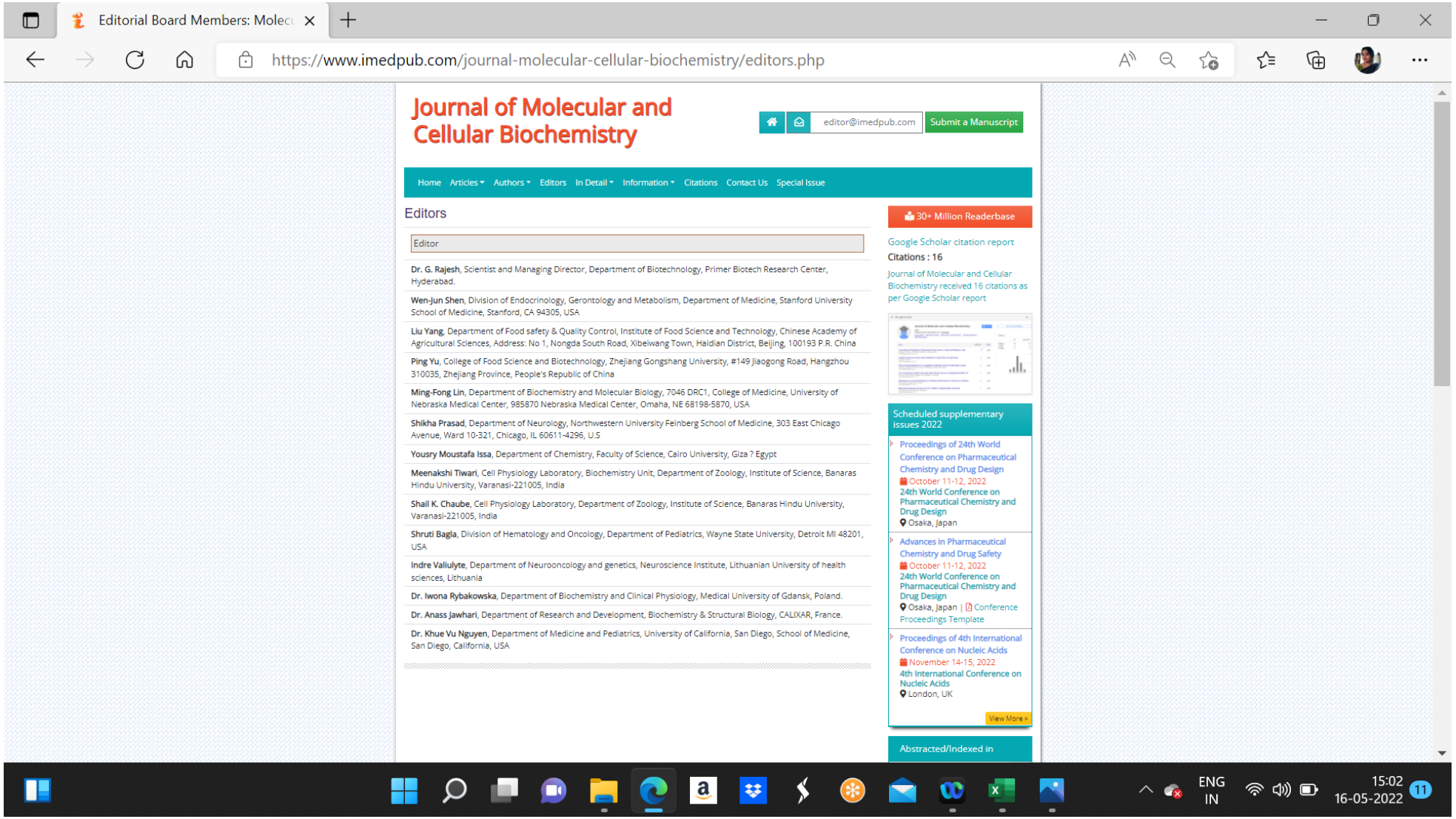


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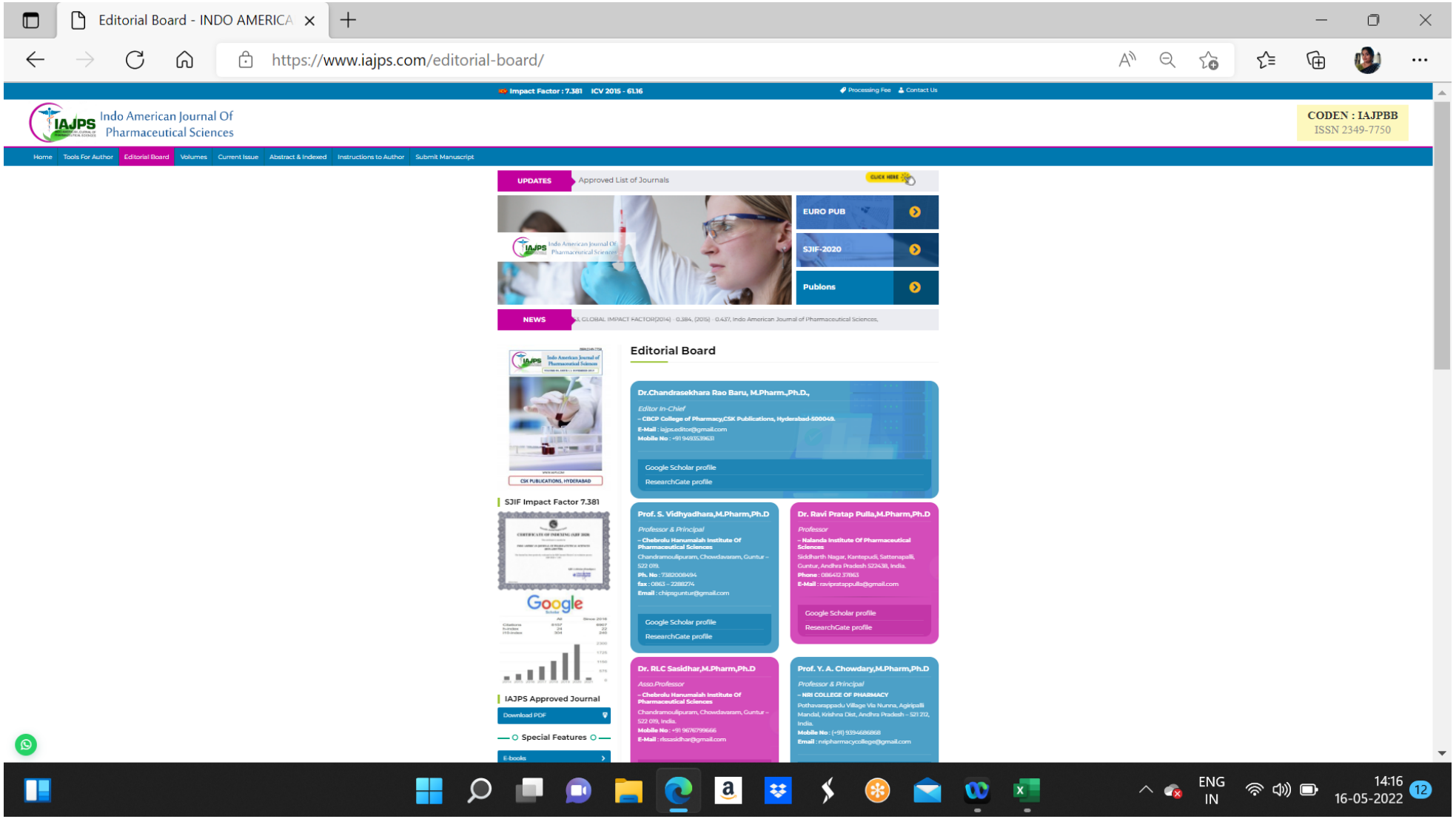


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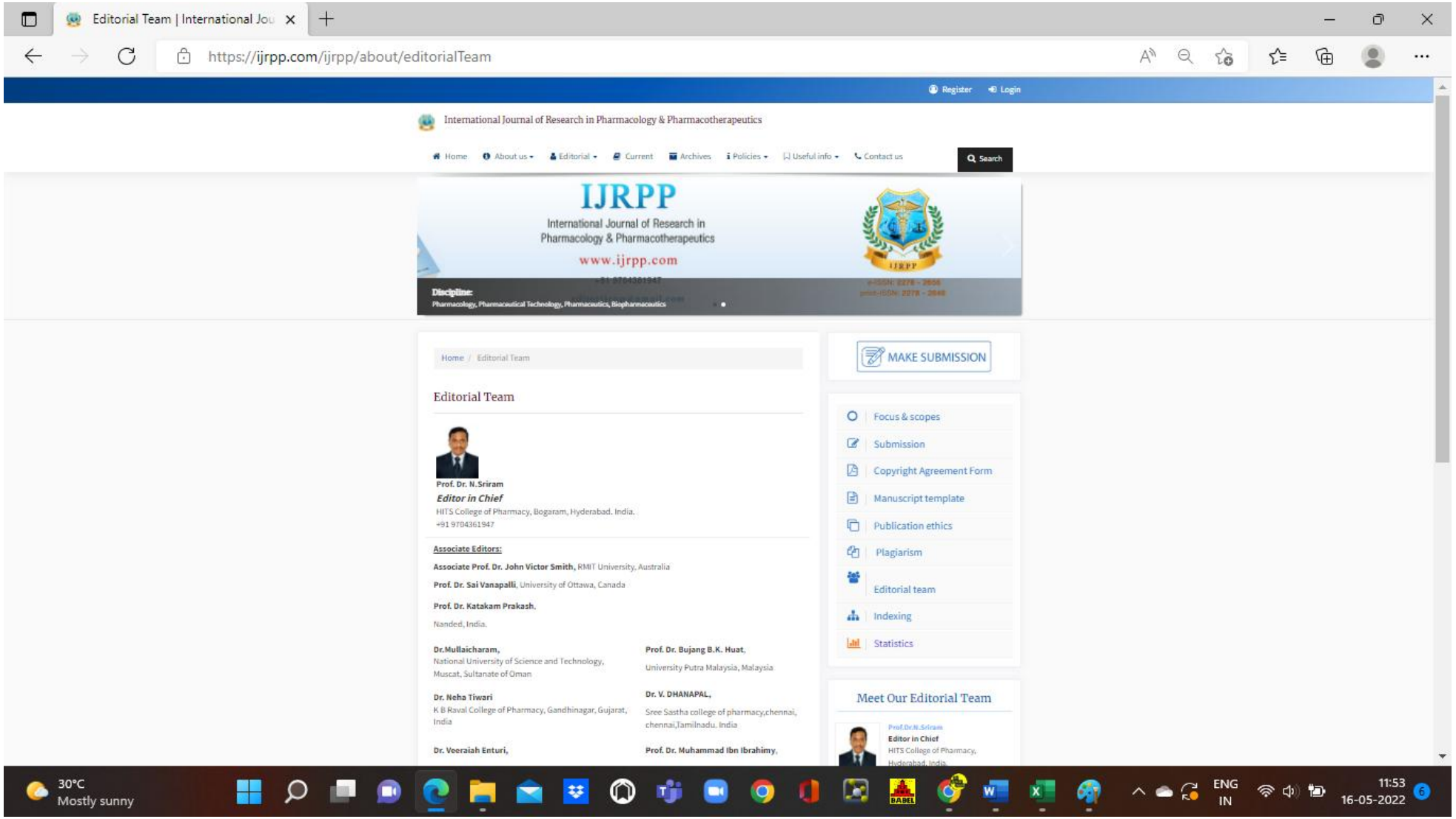


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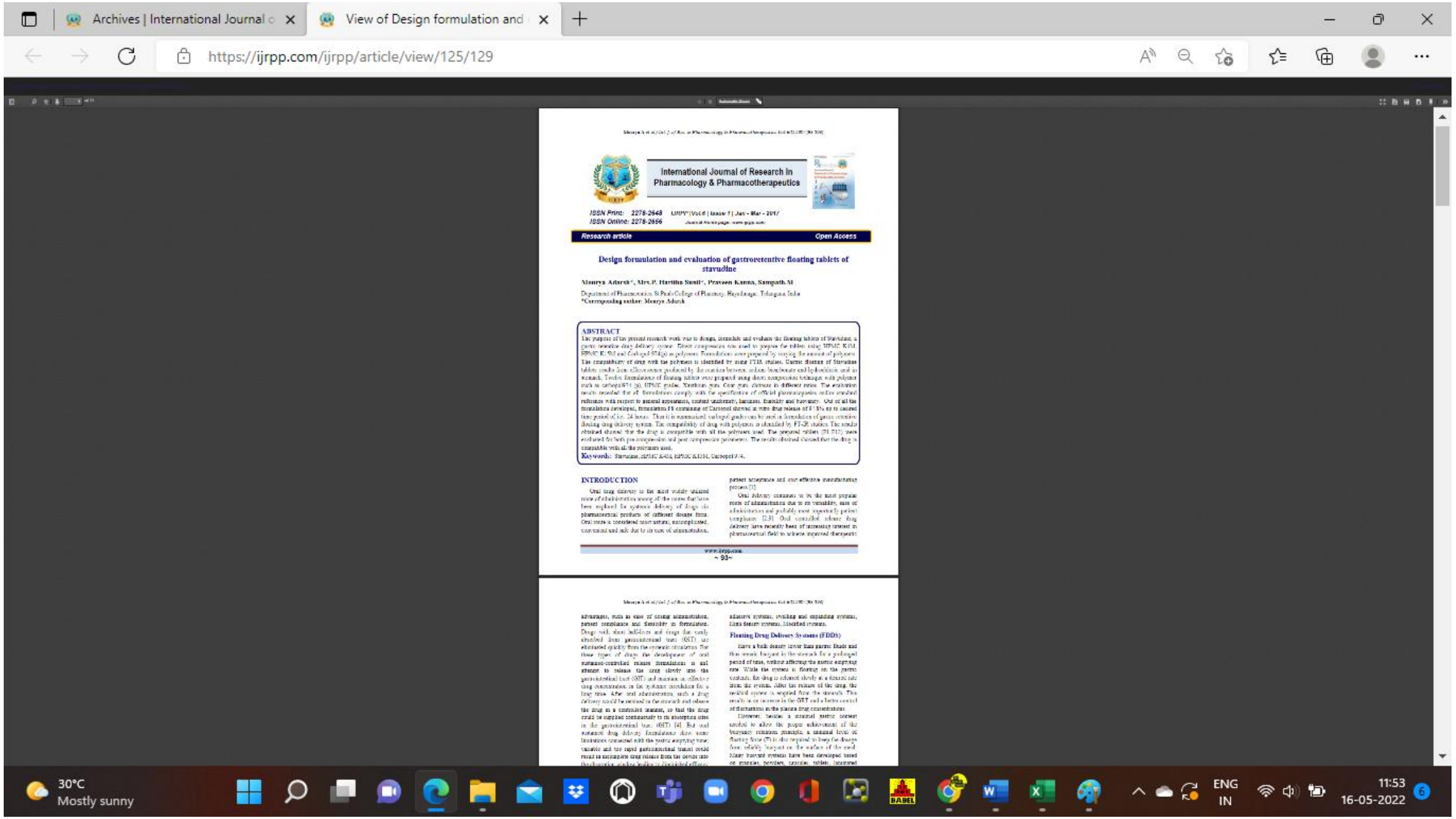


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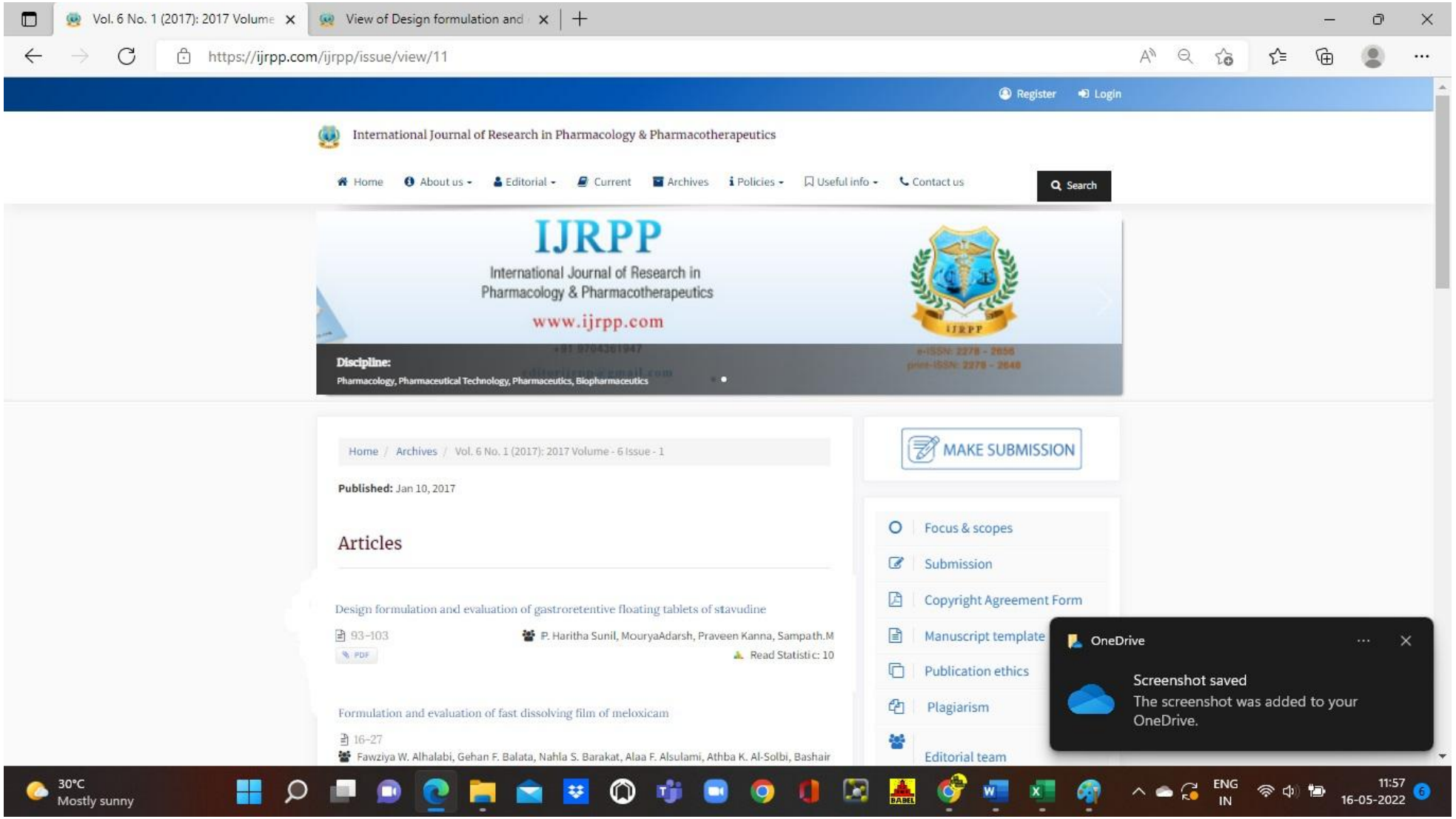


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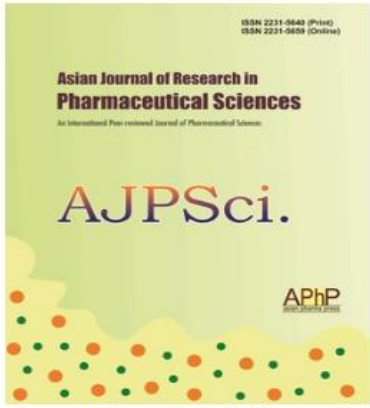


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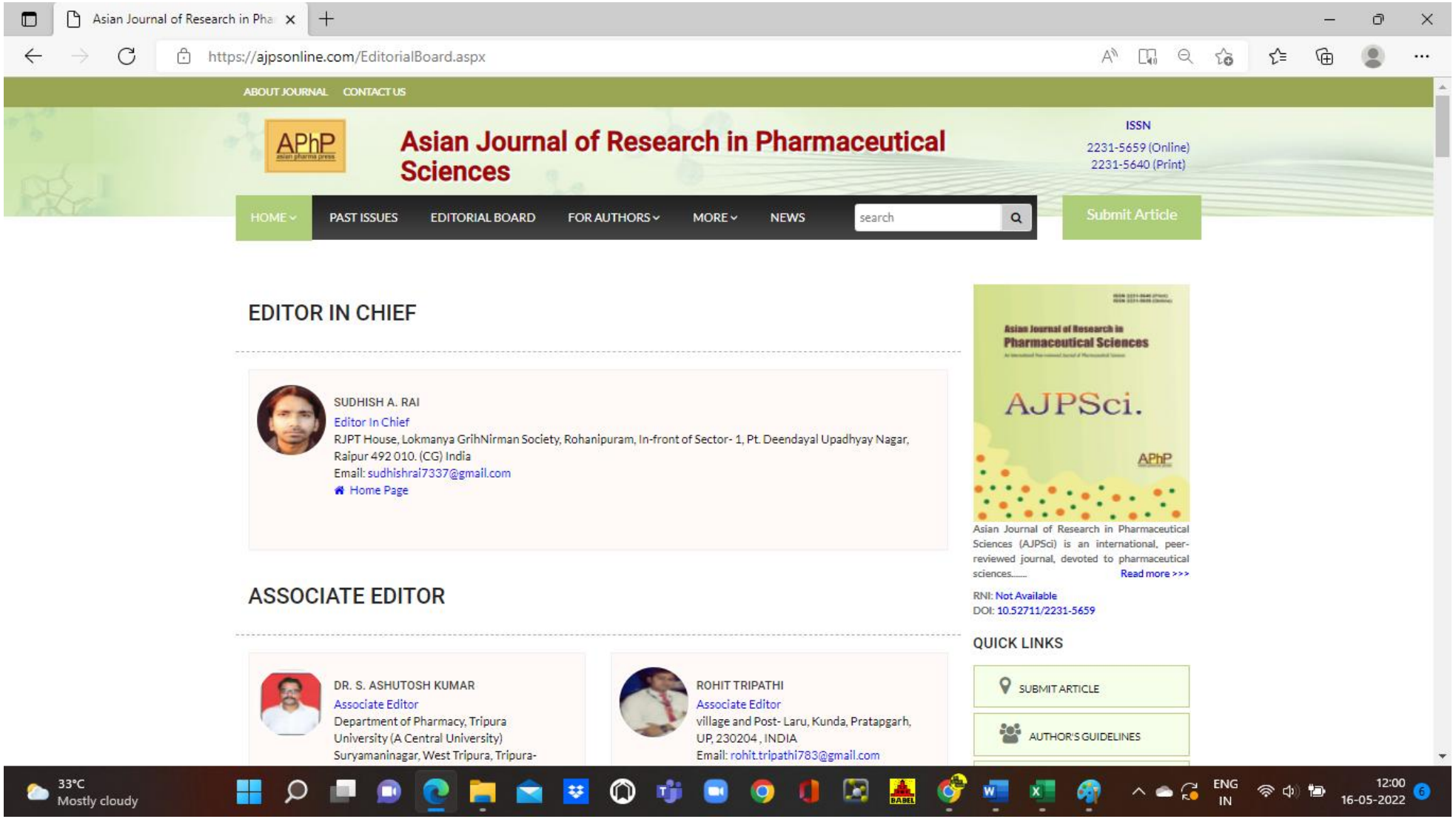

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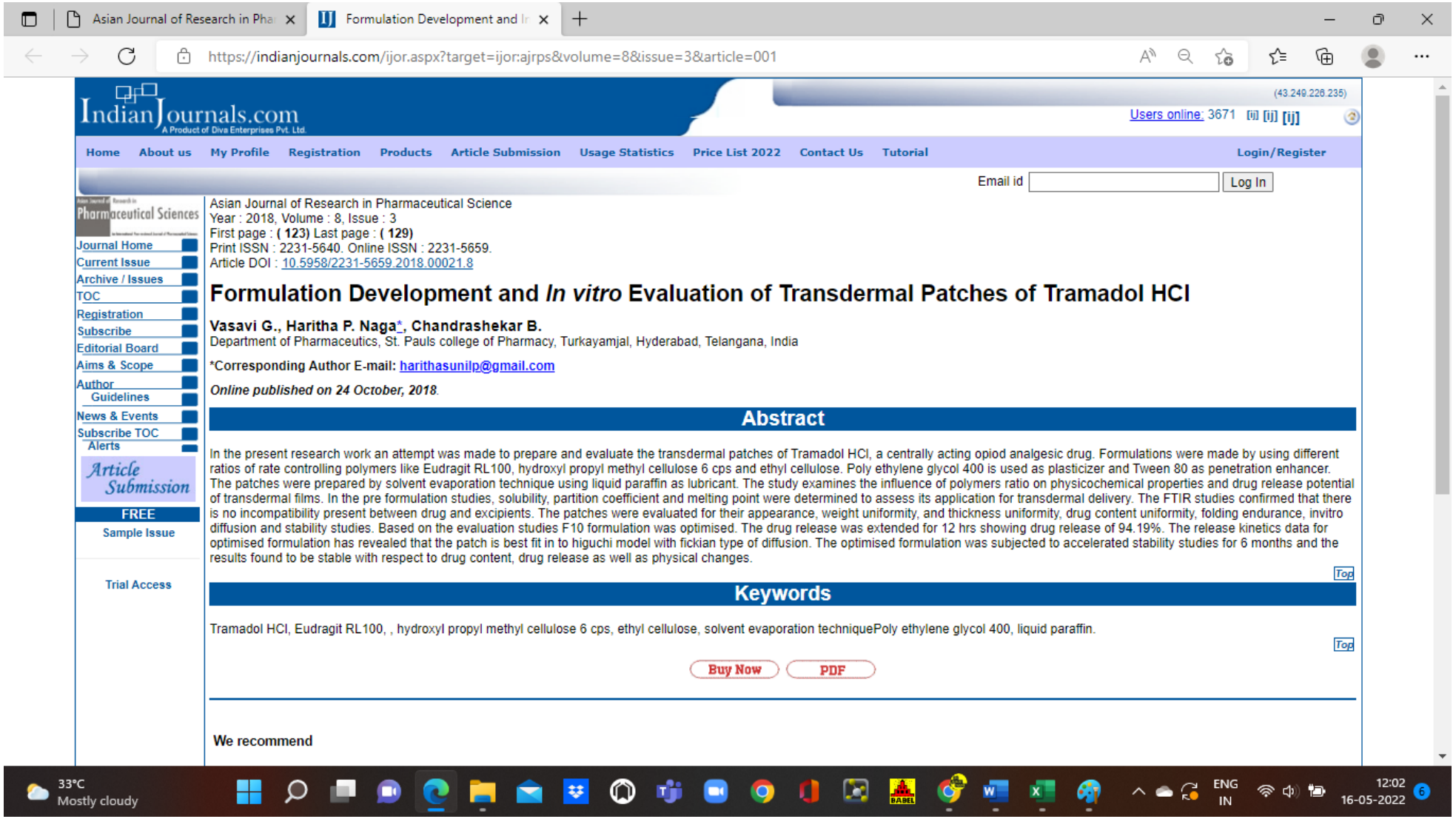



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# Formulation Development and *In vitro* Evaluation of Transdermal Patches of Tramadol HCl

**Vasavi G., Haritha P. Naga*, Chandrashekar B.**
Department of Pharmaceutics, St. Pauls college of Pharmacy, Turkayamjal, Hyderabad, Telangana, India

*Corresponding Author E-mail: harithasunilp@gmail.com

*Online published on 24 October, 2018.*

## Abstract

In the present research work an attempt was made to prepare and evaluate the transdermal patches of Tramadol HCl, a centrally acting opiod analgesic drug. Formulations were made by using different ratios of rate controlling polymers like Eudragit RL100, hydroxyl propyl methyl cellulose 6 cps and ethyl cellulose. Poly ethylene glycol 400 is used as plasticizer and Tween 80 as penetration enhancer. The patches were prepared by solvent evaporation technique using liquid paraffin as lubricant. The study examines the influence of polymers ratio on physicochemical properties and drug release potential of transdermal films. In the pre formulation studies, solubility, partition coefficient and melting point were determined to assess its application for transdermal delivery. The FTIR studies confirmed that there is no incompatibility present between drug and excipients. The patches were evaluated for their appearance, weight uniformity, and thickness uniformity, drug content uniformity, folding endurance, invitro diffusion and stability studies. Based on the evaluation studies F10 formulation was optimised. The drug release was extended for 12 hrs showing drug release of 94.19%. The release kinetics data for optimised formulation has revealed that the patch is best fit in to higuchi model with fickian type of diffusion. The optimised formulation was subjected to accelerated stability studies for 6 months and the results found to be stable with respect to drug content, drug release as well as physical changes.

Top

## Keywords

Tramadol HCl, Eudragit RL100, , hydroxyl propyl methyl cellulose 6 cps, ethyl cellulose, solvent evaporation techniquePoly ethylene glycol 400, liquid paraffin.

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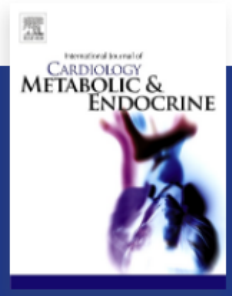


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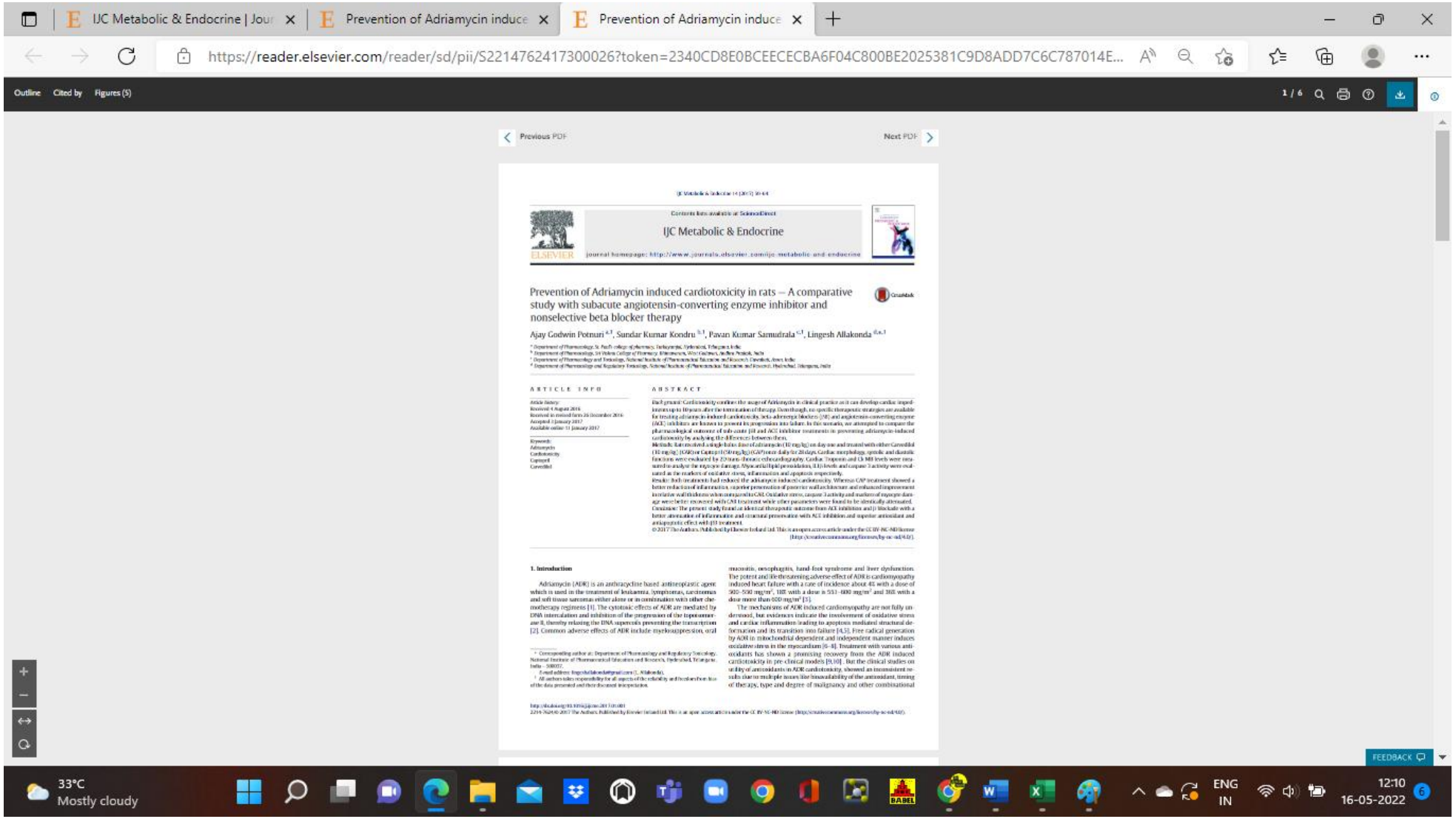

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# Prevention of Adriamycin induced cardiotoxicity in rats – A comparative study with subacute angiotensin-converting enzyme inhibitor and nonselective beta blocker therapy

Ajay Godwin Potnuri [a,*], Sundar Kumar Koodru [b,1], Pavan Kumar Samudrala [c,1], Lingesh Allakonda [d,e,1]

ARTICLE INFO

ABSTRACT

1. Introduction

Adriamycin (ADR) is an anthracycline based antineoplastic agent which is used in the treatment of leukaemia, lymphomas, carcinomas and soft tissue sarcomas either alone or in combination with other chemotherapy regimens [1]. The cytotoxic effects of ADR are mediated by DNA intercalation and inhibition of the progression of the topoisomerase II, thereby relaxing the DNA supercoils preventing the transcription [2]. Common adverse effects of ADR include myelosuppression, oral mucositis, oesophagitis, hand-foot syndrome and liver dysfunction. The potent and life threatening adverse effect of ADR is cardiomyopathy induced heart failure with a rate of incidence about 4% with a dose of 500–550 mg/m², 18% with a dose is 551–600 mg/m² and 36% with a dose more than 600 mg/m² [3].

The mechanisms of ADR induced cardiomyopathy are not fully understood, but evidences indicate the involvement of oxidative stress and cardiac inflammation leading to apoptosis mediated structural deformation and its transition into failure [4,5]. Free radical generation by ADR in mitochondrial dependent and independent manner induces oxidative stress in the myocardium [6–8]. Treatment with various antioxidants has shown a promising recovery from the ADR induced cardiotoxicity in pre-clinical models [9,10]. But the clinical studies on utility of antioxidants in ADR cardiotoxicity, showed an inconsistent results due to multiple issues like bioavailability of the antioxidant, timing of therapy, type and degree of malignancy and other combinational

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E-mail address: ingeshallakonda@gmail.com (L. Allakonda).
[1] All authors takes responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussed interpretation.

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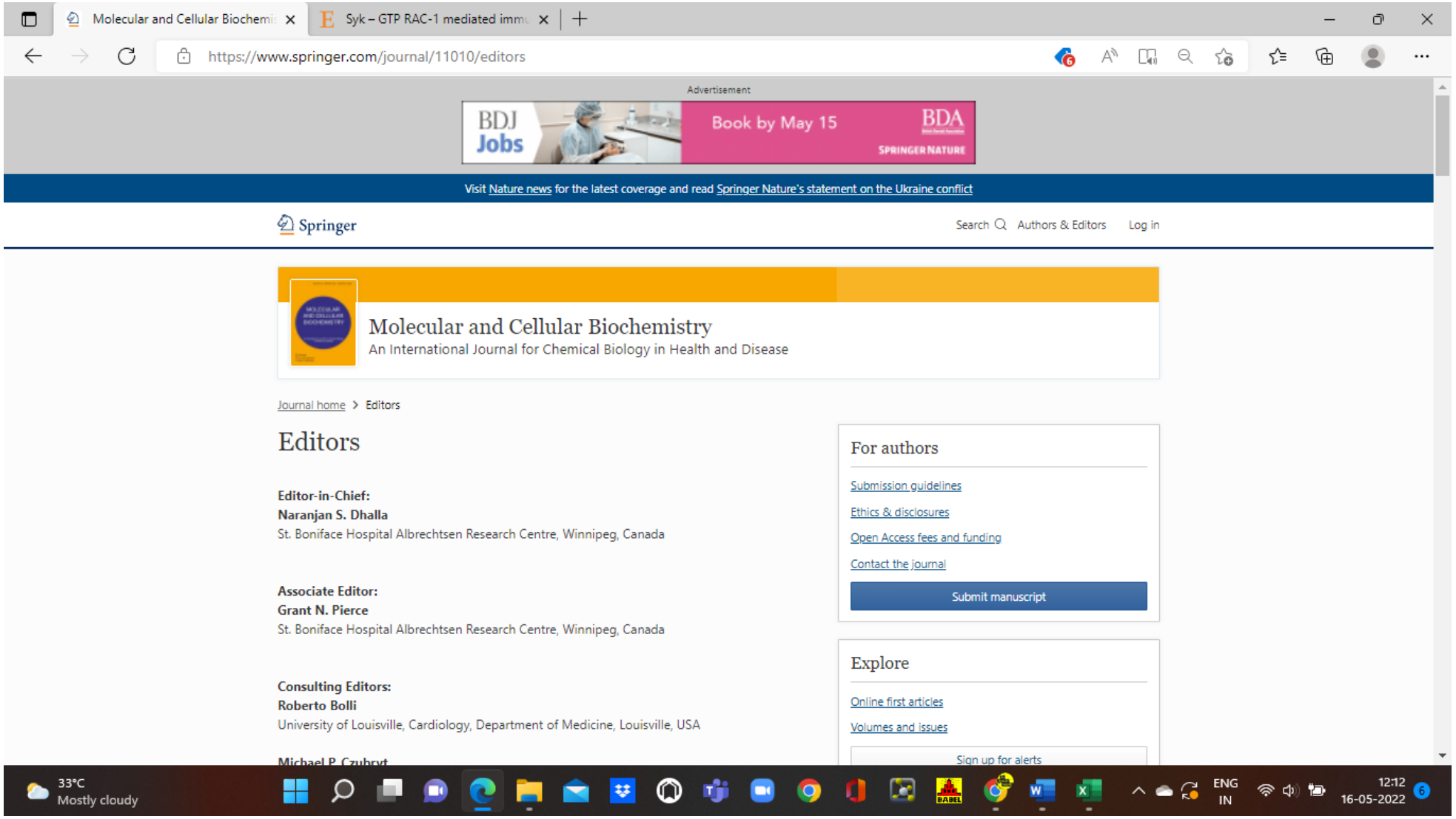


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Original article

# Syk – GTP RAC-1 mediated immune-stimulatory effect of *Cuscuta epithymum*, *Ipomoea batata* and *Euphorbia hirta* plant extracts

Vanitha Sagar Sudam [b], Ajay Godwin Potnuri [c], N.J. Prameela Subhashini [a]
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Int J Pharma Res Health Sci. 2017; 5 (2): 1668-1671
DOI:10.21276/ijprhs.2017.02.13
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Original Article

# Liposome's: Microscopic Vesicles Formulated Using Diclofenac Sodium

K Ajith*, P Hyma, Anu Tumma
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Received: 27 Mar 2017
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ABSTRACT

The present research deals with liposome are formulated with diclofenac sodium. Liposomes are sphere shaped vesicles containing one or more phospholipids bilayer, these are usually used to maintain drugs from any concentrations at target sites for alonger period of time (sustained effect) & even increase the bioavailability of the drug. The main reason to formulate diclofenac sodium into liposome is that diclofenac has a plasma t1/2 of 2-3 hours and there is a need for patients to administer the drug 2-3 times a day to persist the desired effect. We have produced liposomes using thin film hydration technique & different excipients like cholesterol, soya lecithin were used. When they were formulated as liposome it showed assumined effect when evaluated in vitro.The different evaluation studies like particle size determination, vesicular entrapment, drug release profile, SEM studies and FTIR spectrum studies were done in this research & these tests were used as parameters to determine the optimized formulation and even the sustain release effect of the system.

**Keywords**: Bilayers, Bioavailability, Cholesterol, Liposome's, Sustained effect, Soya lecithin,thin film hydration technique.

## 1. INTRODUCTION

Drug delivery systems are the means that carry drug to the desired parts of the body. Phospho-lipid vesicles (Liposome's) were first discovered decades ago by Bangham. The hydration of the dry lipid film was found to lead to the formation of the enclosed spherical vesicles, which resemble to the cellular organelles with lipid layer[1]
Oral administration of drugs is central in the development of pharmaceutical research due to its extensive application to most patients. With the aim to improve the oral bioavailability several strategies have been proposed to

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Int J Pharma Res Health Sci. 2017; 5 (2): 1668-1671

reduce dosing frequency and/or gastrointestinal side effects of many drugs. A tremendous amount of work has been done to formulate drugs in sustained and controlled release dosage forms for oral and parental administration.[2]

## 2. MATERIALS AND METHODS

Materials: The materials like diclofenac sodium, cholesterol & soya lecithin were purchased from M.H. Enterprise and all other chemicals were of analytical grade.



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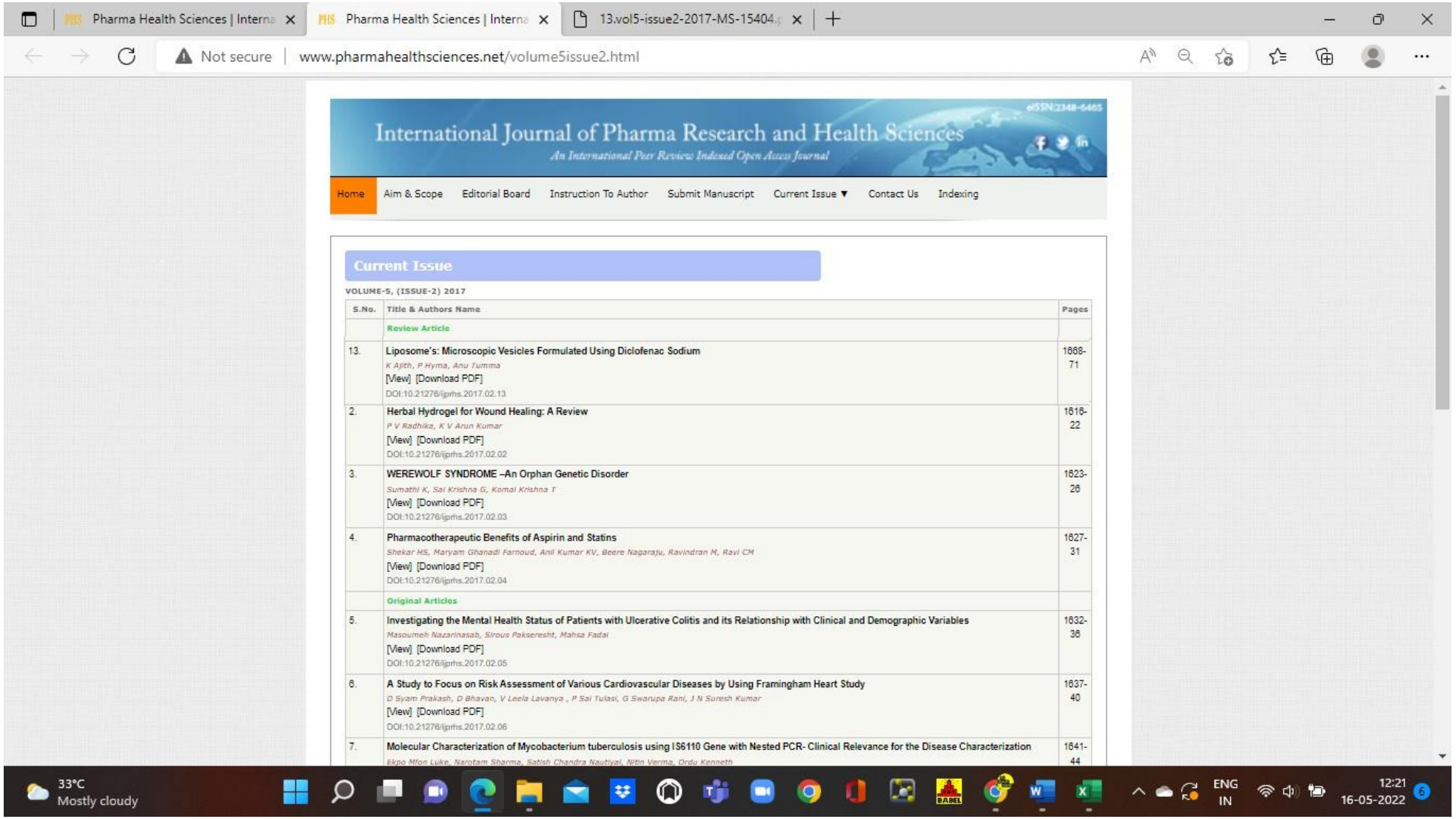

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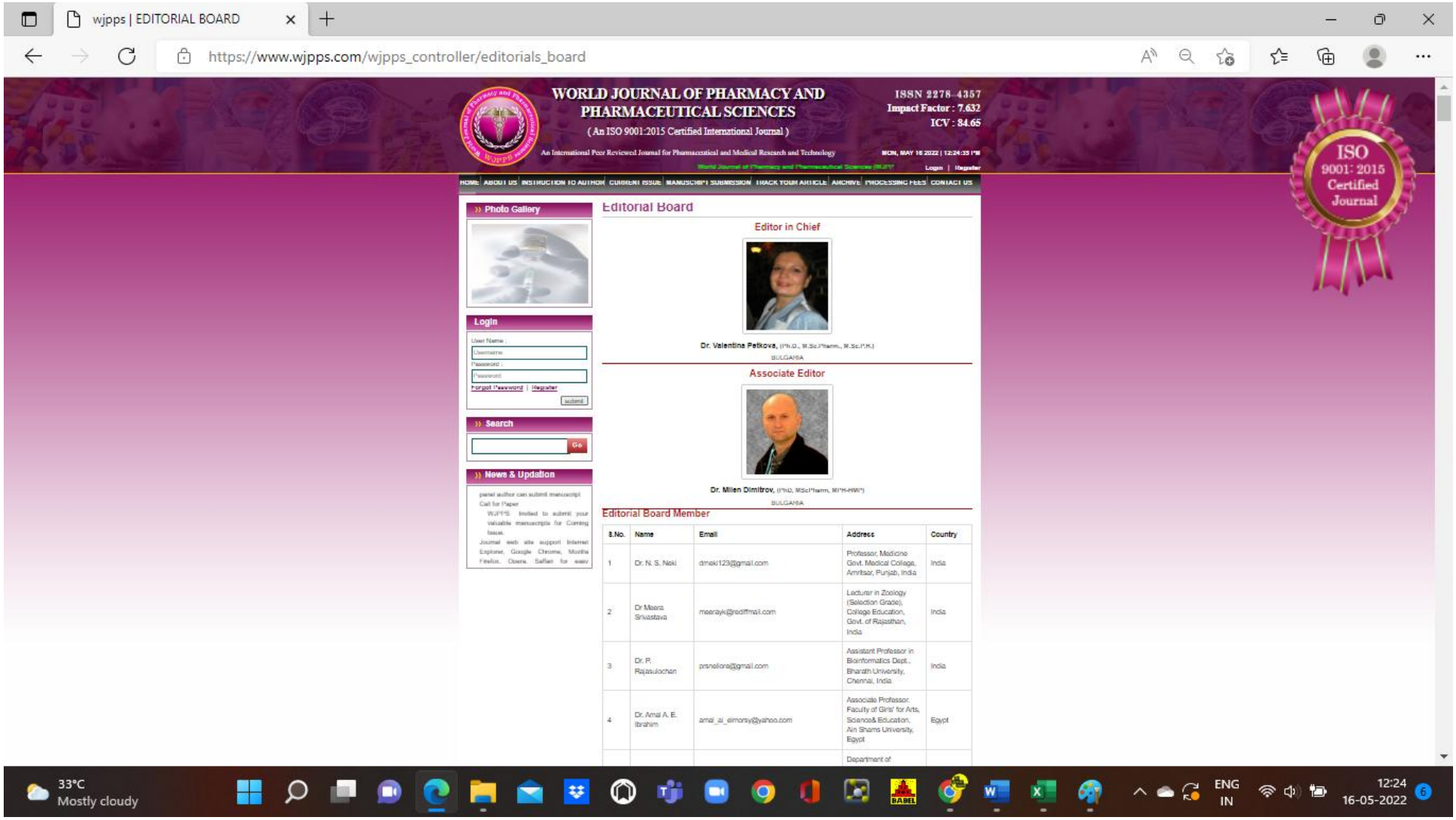


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# CONTROLLED POROSITY OSMOTIC PUMP (CPOP) -THE MOST PROMISING STRATEGY BASED SYSTEM REVIEW.

**Ayesha Sultana*[1] and D. Varun[2]**

[1]Department of Pharmaceutics, Guru Nanak Institutions Technical Campus- School of Pharmacy, Khanapur, Ibrahimpatnam, Hyderabad, R.R District-501506.

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**ABSTRACT**

Controlled drug delivery system has evolved over the last six decades, the second generation 1980-2010 progressed with the development of zero order release systems. The CPOP is extension of Elementary osmotic pumps a new innovation in oral controlled plasma drug delivery avoiding fluctuations in drug concentration offering better drug utilization and patient compliance. Osmotic systems release drugs at constant rate which is reliable. CPOP is sponge like in appearance, the drug after dissolution is released from the core by hydrostatic pressure and diffusion through pores created by dissolution of pore formers in membrane. The hydrostatic pressure is created either by osmotic agent or by drug or a tablet component after water is imbibed across the semi permeable membrane, the membrane after formation of pores is permeable to both water and solutes. This delivery system gained wider acceptance as the drug released is independent of pH, physiological conditions of GIT and spatial controlled pattern over long period of time by osmosis maintaining uniform blood concentration which is important for treatment of various chronic diseases.

**KEYWORDS:** Controlled drug delivery, Hydrostatic Pressure, Osmotic agent, Osmosis, Semi Permeable Membrane, zero order.

## INTRODUCTION

It is the most promising strategy based delivery system for controlled drug delivery. In NDDS system an existing molecule can get a new life increasing competitiveness, good





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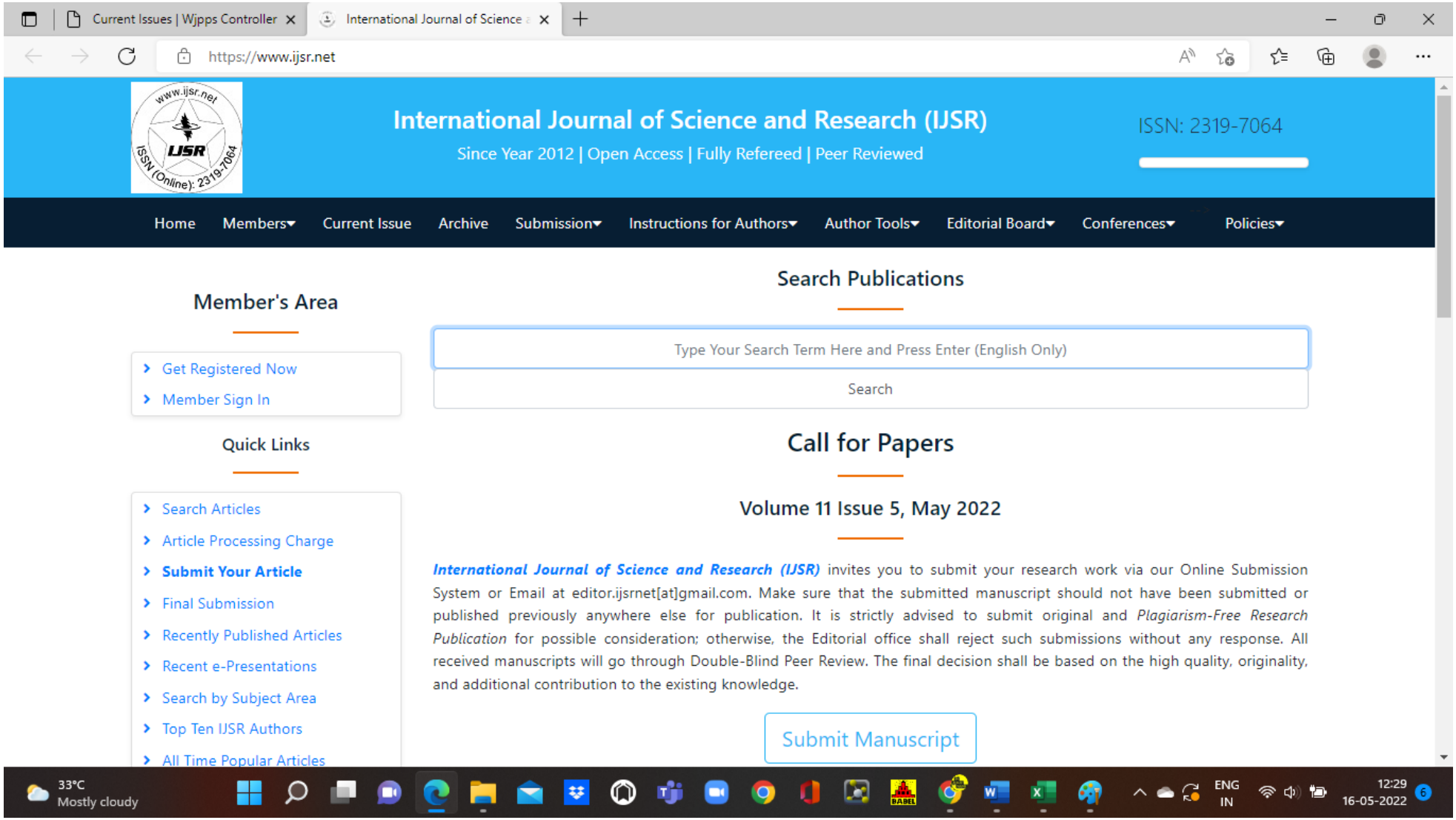


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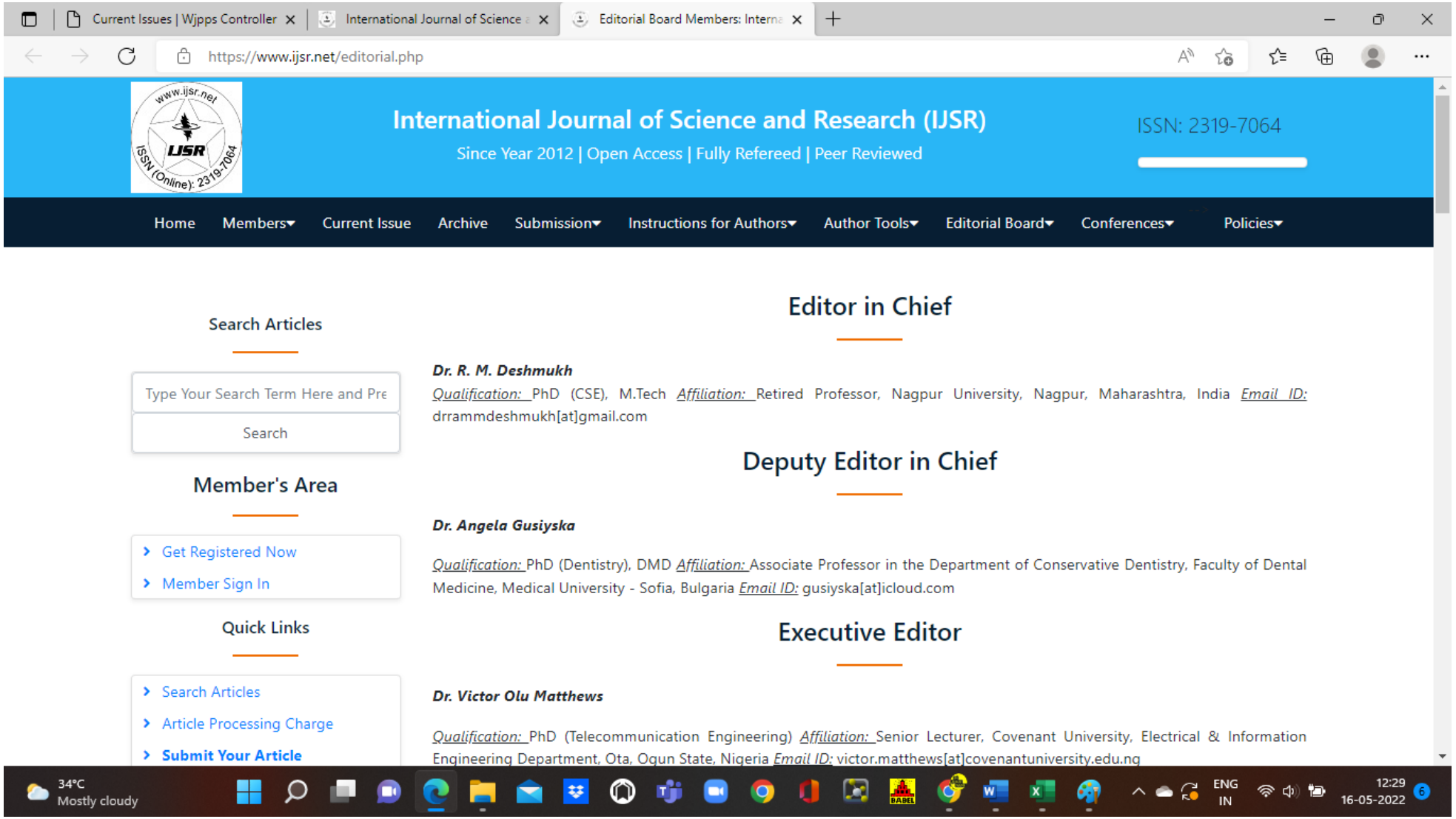


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# Inexpensive Happy Hormone ?Dopamine?-A Safe Antiangiogenic Drug & Enhancing Dopamine Levels By Mucuna Pruriens

Ayesha Sultana | K. Saraswathi [6]

**Abstract:** The research reveals that Dopamine blocks the formation of blood vessels in tumors by inhibiting the action of vascular endothelial factor and prevents the side effects associated with currently used chemotherapeutic agents. The aim of this work is to show the role of Dopamine as safe anti angiogenic agent, treating and enhancing Dopamine naturally by the tablets prepared from the powdered seed extracts of Mucuna pruriens by Wet granulation method. The tablets prepared were evaluated for pre and post compression parameters and they were within permissibe limits as per the standards. Experiments were carried out in mice and were divided into four groups. Group A-Control group, Group B-Disease induced (tumor) but no treatment, Group C-Disease induced and treatment by Standard I. V dose of Dopamine, Group D-Disease induced, it is treated with test dose of tablets of Mucuna pruriens. The tumors were induced by Benzopyrene, formation of tumors were confirmed by checking the parameters of electrolyte levels, haematology values and liver function test. The mice treated with standard dose exhibited weight gain because of retention of urine which leads to accumulation of Uric acid. Swelling and Pain is also observed at the site of injection. Mice treated with test dose showed no side effects, as Mucuna pruriens contains L-Dopa which readily crosses Blood Brain Barrier enhances Dopamine levels naturally, significantly in very economical and easy approach. The In vitro release of formulation (F3) showed 92 % drug release.

**Keywords:** Benzopyrene, Dopamine, Vascular Endothelial Factor, Mucuna pruriens

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*B. Suhasini and Nasreen Sulthana

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# SCREENING OF DAMASK ROSE ESSENTIAL OIL IN WISTAR ALBINO RATS FOR ANTIULCER ACTIVITY

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**ABSTRACT**

**Introduction:** Gastric ulcer is one of the most prevalent gastrointestinal disorders, which affects approximately 5-10% of population in their life time. In recent years; abundant work has been carried out on herbal medicine to clarify their potential efficacy in gastric ulcer prevention or management. **Objectives**: The present study was carried out to investigate antiulcer activity of *Rosa damascena mill* belonging to family Rosaceae in the albino rats. **Methods**: Pyloric ligation and alcohol induced ulceration methods were used. Ranitidine (20mg/kg) was used as the standard drug. Rose oil was preliminary subjected to the acute oral toxicity study according to OECD guidelines no: 423 based on which, two dose levels i.e. 250 and 500 mg/kg were selected for the further study. In pylorus ligation induced ulcer model, various parameters were studied viz. gastric volume, total acidity, free acidity and ulcer index. Ulcer index and percentage inhibition of ulceration were determined by alcohol induced ulcer model. **Results**: Rose oil at 500mg/kg shown 68.36% inhibition in alcohol induced ulcer model and 56.5 % in pyloric ligation induced ulcer model. **Conclusions** In conclusion, rose oil tested in this investigation deserves further attention due to its importance in prevention and treatment of gastric ulcers. Further molecular level studies are to be done for knowing its exact mechanism of action.

**KEYWORDS:** *Rosa damascene*, Ulceration, Ligation, Phytochemicals.

## INTRODUCTION

Peptic ulcer therapy has undergone many studies over past few years and a number of synthetic drugs are now available for treatment. Reports on clinical evaluation of these drugs show that there are incidences of relapses and several adverse effects and danger of drug interaction during therapy.[1,2] The development of new antiulcer drug from medicinal plants is an attractive proposition because diverse chemical compounds have been isolated from different medicinal plants with antiulcer activity[3] and have been shown to produce promising results in the treatment of gastric ulcers.[4] The bioactive molecules (generally alkaloids, glycosides, essential oils etc.) are isolated/extracted from crude drugs may be used directly as therapeutic agents or as starting materials for the synthesis of useful drugs or serve as a model for pharmacologically active compounds in the period of drugs in synthesis.[5]

## MATERIALS AND METHODS

### DRUGS AND REAGENTS

The chemicals used in the present study were analytical grade Ethanol (90%), Anesthetic ether, Sodium hydroxide, Phenaphthelien indicator, Topers' reagent, Spirit, Ranitidine, Povidone powder from.

### EXPERIMENTAL ANIMALS

Albino Wistar strain rats (either sex) weighing 100-150gms were used. The animals were maintained in well-ventilated room temperature with 12/12 natural day-night cycle, in polypropylene cages. They were fed balanced rodent pellet diet obtained from Mahaveera enterprises, Ghatkesar and tap water throughout the experimental period. The animals were housed for one week prior to the experiments to acclimatize to laboratory conditions.

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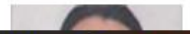

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RESEARCH ARTICLE

# PROBIOTICS AS A POTENTIAL ADJUVANT THERAPY FOR THE TREATMENT OF COLORECTAL CANCER

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**ABSTRACT**

Colorectal cancer (CRC), also known as colon cancer or bowel cancer is a cancer resultinsfrom uncontrolled cell proliferation or growth in the colon or rectum or in the appendix. 5-fluorouracil (5-FU) and Oxaliplatin are most frequently prescribed drugs for treatment of CRC. But many side effects like mucositis, diarrhea, nausea, vomiting, neurotoxicity, hand foot syndrome, tinnitus, and myelosuppression, anaphylactic reactionsetc are the problems with chemotherapy. Probiotics are bacterial cultures comprising of potentially beneficial bacteria or yeast, administered in adequate amounts confer a health benefit on the host. Lactic acid bacteria (LAB) are the most common microbes used. Probiotics are non-digestible fibre compounds that act as substrate for the probiotics and stimulates the growth of useful bacteria oflarge intestine and probiotics. The ingestion of probiotics, prebiotics or combinations of both (synbiotics) represents a navel new therapeutic option. Probiotics and prebiotics act to alter the intestinal microflora by increasing concentrations of beneficial bacteria such as *Lactobacillus* and *Bifidobacteria*, and reducing the levels of pathogenic micro-organisms. This strategy has the potential to inhibit the development and progression of neoplasia via mechanisms including decreased intestinal inflammation, enhanced immune function and anti-tumorigenic activity, binding to potential food carcinogens including toxins found in meat products, and a reduction in bacterial enzymes which hydrolyzeprocarcinogenic compounds, such as beta-glucuronidase. The present review is an attempt to explore the role of combination of probiotics with the drugs to observe the efficiency profile of the drugs in the management of CRC.



**Citation: Nasreen Sulthana and Vijay R. Chidrawar. 2016.** "Probiotics as a potential adjuvant therapy for the treatment of colorectal cancer", *International Journal of Current Research*, 8, (05), 31920-31925.

## INTRODUCTION

Cancer can be defined as a disease in which a group of abnormal cells grow uncontrollably by disregarding the normal rules of cell division. Normal cells are constantly subjected to signals that dictate whether the cell should divide, differentiate onto another cell or die. Cancer cells develop a degree of autonomy from these signals, resulting in uncontrolled growth and proliferation. If this proliferation is allowed to continue and spread, it can be fatal. In fact, almost 90% of cancer-related deaths are due to tumor spreadingv- a process called metastasis. Colorectal cancer (CRC), commonly known as colon cancer or bowel cancer, is a cancerfrom uncontrolled cell growth in the colon or rectum (parts of the large intestine), or in the appendix.

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CRC results from the cumulative effects of sequential genetic alterations in proto-oncogenes, tumor suppressor genes and DNA repair genes. In sporadic (non hereditary) CRC, these alterations are acquired, and are likely to be caused by exogeneous and endogeneous carcinogens. In contrast, in cancer syndromes such as familial adenomatous polyposis (FAP) and hereditary non-polyposis CRC (HNPCC), critical genetic alterations that predispose to malignancy are inherited. For example, in FAP, a germ line mutation in the APC gene (Groden *et al*., 1991) which occurs in every cell predisposes to adenomatous polyps, while in HNPCC, mutations in DNA repair genes result in a more rapid accumulation of genetic alterations which increases the risk of polyp formation (Oving & Clevers, 2002). There are three main approaches to treat established cancer i.e. surgical excision, irradiation and chemotherapy (Rose and Harris, 2012). The relative value of each of these approaches depends on the type of tumor and the stage of its development.



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