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Mr. Sagar Ashok Jadhav /In silico Pharmacokinetics and Docking Analysis of Active Biomolecules from 5-Amino-Salicylic Acid against Cyclin Dependent Kinase II.

In silico Pharmacokinetics and Docking Analysis of Active Biomolecules from 5-Amino-Salicylic Acid against Cyclin Dependent Kinase II.

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Abstract:

Docking is a crucial tool in molecular design and development because it predicts the supported path of one particle to the next when they are bonded together to form a stable and flighty complex. As a result, information about the supported bearing can be used to estimate the strength of the connection and the binding attraction between a ligand and a target molecule. Aim: A number of possible compounds derived from the specified scheme were examined for their binding modes, interactions, and specific binding sites against Cyclin Dependent Kinase II as part of this study. Methods: In silico molecular docking of probable compounds acquired from designed scheme was executed utilizing Chemdraw, Swiss ADME, Molsoft, Molinspiration, Pymol and Autodock Vina software. Results: The current investigation was done to comprehend the drug-likeness character of novel derivatives and their binding affinity with 6GUH. Conclusion: The assessment offers confirmation to considered significant ligands auxiliaries potential Cyclin Dependent Kinase II inhibitor and further in vitro and in vivo assessments may demonstrate its remedial potential.

Key words: Docking, Autodock Vina, 5-ASA, Anticancer activity, PDB, Pymol, Cyclin Dependent Kinase II

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Introduction

Ulcerative colitis is one of two major types of inflammatory bowel illnesses. It is a flammable and progressive condition of the colon and rectal mucosa. The improvement of UC requires a continuous stimulation of mucosal immunity, which includes luminal antigens and intestinal epithelial cells, as well as cells of the inborn and adoptive immune systems that create mediators like cytokines and chemokines. Bacteria contaminate luminal segments on a regular basis, triggering a robust immunological response. Dendritic cells (DCs) in UC have higher

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Synthesis, Characterization and in vitro Anticancer Evaluation of Novel Quinoline-3-Carboxamide Derivatives as Inhibitors of PDGFR

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Abstract

Cancer cells exploit transmembrane receptor protein kinases like platelet derived growth factor (PDGF) for their survival, which leads to the development of resistance towards anticancer agents. The importance of inhibiting PDGF receptor is well established. In this article, twelve novel substituted 2-aminoquinoline-3-carboxamide derivatives were synthesized from substituted anilines using Vilsmeier–Haack reaction, producing 2-chloro-3-carbaldehyde quinolines, followed by oxidation of 2-chloro-3-carbaldehyde to the carboxylic acid and coupling this group with various anilines done by using dicyclohexylcarbodiimide (DCC) coupling reagent to form amide bonds as potential inhibitors of PDGFR is reported. The structures of the synthesized compounds were confirmed by IR, ^{1}H NMR, ^{13}C NMR and mass spectrometry. SAR studies suggested the importance of the electron-donating nature of the R group for the molecule to be toxic. The cytotoxicity assay of synthesized compounds was performed against breast cancer cell line (MCF-7) and found promising results. The results obtained in vitro cytotoxicity evaluation study revealed the superior activity of three derivatives (6a, 6b, and 6i) compared with that of imatinib. In conclusion, these experiments will lay the groundwork for the evolution of potent and selective PDGFR inhibitors for the treatment of cancer cells.

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Sagar Ashok Jadhav, Dr. Dhanya B. Sen, Dr. Ashim Kumar Sen, Mr. Ashish P. Shah/ Synthesis and Spectral analysis of some novel 5-Amino-Salicylic Acid derivatives and their In-silico ADMET studies

Synthesis and Spectral analysis of some novel 5-Amino-Salicylic Acid derivatives and their In-silico ADMET studies

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Abstract:

Aim and Objectives: Some novel 5-Amino-Salicylic Acid derivatives were synthesized by using 3-methyl-2-thiophenecarboxaldehyde as an starting material and followed by N,N-dicyclohexylcarbodiimide. **Methods:** In silico ADMET study has been applied for selection of ideal (according to Lipinski rule) novel drug moiety for synthesis. **Results:** The newly synthesized derivatives were confirmed by elemental analysis, mass, IR and NMR spectroscopy.

Key words: Lipinski rule, Schiff base, 5-ASA, N,N-dicyclohexylcarbodiimide.

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Introduction

Salicylic acid (SA) derivatives are widely used in the treatment of a wide range of diseases. Acetylsalicylic acid is the most commonly used drug in the world, 4-Aminosalicylic acid (4-ASA) was historically used as a systemic ant tuberculosis drug, and diflunisal is a powerful pain reliever and antipyretic. 5-Aminosalicylic acid (5-ASA), which was first synthesized at the end of the nineteenth century and used to make azo dyes, was later discovered to be a very valuable medicinal agent as well as a component of many biologically active agents. For pharmacological activity, 5-ASA is not metabolized to salicylic acid. It is not regarded as a true salicylate.. 5-ASA, unlike other salicylates, does not cause upper gastrointestinal (GI) side effects. Furthermore, it was discovered to be particularly beneficial in the treatment of inflammatory bowel disease (IBD). Since we are interested in this compound and its derivatives, it is unique among salicylates and has a wide range of biological activities including anti-inflammatory, analgesic, neuroprotective, and antitumor properties.

Results and Discussion

Chemistry

Scheme 1 depicts the synthetic route for novel derivatives. The formation of Schiff bases and the coupling reaction are two steps that result in novel derivatives. A Schiff base is a nitrogen analogue of an aldehyde or ketone that has the C=O group replaced by the C=N-R group. Condensation of an aldehyde or ketone with a primary amine produces it.

Because amines are basic and tend to convert carboxylic acids to their highly unreactive carboxylates, direct conversion of a carboxylic acid to an amide is difficult. The carboxylic acid

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Isolation, Phytochemical Studies and Evaluation Of *Caesalpinia pulcherrima* Mucilage as a Potant Superdisintegrant

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Research Article

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Keywords : Caesalpinia pulcherrima; Orally disintegrating tablet; Ondansetron; Natural superdisintegrant

ABSTRACT

The present work was carried out to study the phytochemical and physicochemical characteristics to explore the disintegration property of mucilage extracted from the seeds of *Caesalpinia pulcherrima* (family caesalpinaceae). Orally disintegrating tablet of Ondansetron hydrochloride dihydrate was formulated using different concentrations 2.5, 5, 7.5, 10, 12.5%w/w of isolated natural disintegrant. Ondansetron is a selective serotonin receptor antagonist used as an antiemetic in the treatment and or prophylaxis of post-operative or chemotherapy or radiotherapy induced emesis and also used in the early onset of alcoholism. The formulations were evaluated for precompression parameters such as bulk density, tapped density, compressibility index, hausner's ratio, angle of repose. Tablets were subjected to post compressional analysis such as weight variation, hardness, friability, drug content, disintegration time, dissolution studies and it was compared with marketed formulation ONDEM MD4. The formulation having disintegrant concentration 10% w/w gives shorter disintegration in 36 sec and showed 99.81% drug release within 3 minutes. Hence the present study revealed that this natural disintegrant showed better disintegrating property and act as a natural superdisintegrant.

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Concurrent oral delivery of non-oncology drugs through solid self-emulsifying system for repurposing in hepatocellular carcinoma

Rameshwar M. Ardad, Arehalli S. Manjappa, Shashikant C. Dhawale, Popat S. Kumbhar & Yogesh V. Pore

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Original Article

"Impurity Profile Study of Aspirin in Bulk and Tablet Dosage Forms"

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Abstract

Aspirin is one of the most frequently used and cheapest drugs in medicine. It belongs to the non-steroidal anti-inflammatory drugs with a wide range of pharmacological activities, including analgesic, antipyretic, and antiplatelet properties. Currently, it is accepted to prescribe a low dose of aspirin to pregnant women who are at high risk of preeclampsia (PE) because it reduces the onset of this complication. Drug produce degradation profiles essential to establish to monitor the stable formulation and provide appropriate drug shelf life valuation. Structural description of impurities and degeneracy production in bulk API has become integral part of pharmaceutical product development. The study of these minor leveled unidentified impurities and degradent are very challenging. Various regulatory bodies related International Council for Harmonisation, United States Food and Drug Administration.

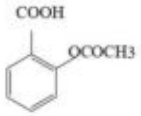
Keywords: Aspirin, Drug, Impurity, Degradation, ASA, Chemical Composition.

INTRODUCTION

Aspirin / acetylsalicylic acid (ASA) is a medicine used to lessen torment, fever, or irritation. Anti-inflammatory medicine was first disconnected Felix Hoffmann, a physicist was the German organization Bayer in 1897. Various medications that are accessible in market today were found from common sources. A significant model is the ibuprofen, which shows pain relieving movement. It is so far the world?s most popular and most all around utilized therapeutic operator. Its source is from the plant genera Salix spp. also, Populus spp. what's more, it is identified with salicin.[1]

Chemical Composition

Structural Formula -



Molecular Formula – $C_9H_8O_4$

Molecular Weight -180.00

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RESEARCH ARTICLE

In Silico Identification of Novel Quinoline-3-carboxamide Derivatives Targeting Platelet-Derived Growth Factor Receptor

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Abstract: ***Background*:** Several computer-aided drug design (CADD) methods enable the design and development of novel chemical entities. Structure-based drug design (SBDD) and the knowledge of *in silico* methods enable the visualization of the binding process of ligands to targets and to predict the key binding pocket sites and affinity of ligands to their target macromolecules.

***Objective*:** The present study was carried out to identify novel N-2-amino-N-phenyl quinoline-3-carboxamide (AQCMs) derivatives targeting Platelet-derived growth factor receptor (PDGFR) to cure cancer using *in silico* approach.

***Materials and Methods*:** AQCMs were designed using ChemAxon Marvin Sketch 5.11.5 software. SwissADME and admetSAR online webserver were used to predict physicochemical properties as well as the toxicity of compounds. Ligand-receptor interactions between quinoline-3-carboxamide derivatives with the target receptor (PDB: 5GRN) were carried out using molecular docking technique by employing various software like AutoDock 1.1.2, MGL Tools 1.5.6, Discovery Studio Visualizer v 20.1.0.19295, Procheck, ProtParam tool, and PyMOL.

***Results*:** *In silico* results reveal that all designed compounds had acceptable pharmacokinetic properties, were found to be orally bioavailable, and less harmful. Molecules from 36 to 39 showed better docking scores as compared to standard drugs sunitinib and tasquinimod.

***Conclusion*:** Increase in binding energy and the number of H-bonds established by AQCMs with below 3.40 Å distance interactions allows a valuable starting point in order to optimize compounds for further investigation. Pharmacokinetics and toxicological profile build up the applicability of quinoline-3-carboxamide moiety as a potential new candidate for the cure of cancer that could help the medicinal chemists for additional extensive *in vitro*, *in vivo* chemical, and pharmacological investigations.

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Keywords: Molecular docking, PDGFRα, pharmacokinetics, H-bond, structure-based drug design, binding affinity.

1. INTRODUCTION

Cancer is an unusual ungovernable cell cycle disease distinguished by the quick expansion of normal cells. Cancer has been ranked as the second leading cause of mortality all over the world, the first remains cardiovascular diseases [1, 2]. Besides, in 2018, approximately 18.1 million newly reported cancer patients and 9.6 million cancer-linked causalities took place worldwide. The utmost frequently identified kinds of cancer in both genders are lung carcinoma, female breast carcinoma, bowel cancer, gastric cancer, and hepatic cancer [3]. In the communication transduction path, tyrosine kinase receptor plays a vital role that modulates explanatory cellular affairs such as cell development, augmentation, distinction, relocation, and ingestion. Below biological circumstances, the native activities of receptor tyrosine kinases (RTKs) are rigorously controlled [4]. Over-expressed action of RTKs because of alterations, gene shift, or expansion has been compared with tumour growth and advancement [5]. PDGFR is a cell exterior tyrosine kinase receptor and is a member of platelet-derived growth factor (PDGF) group. PDGF subunits -A and -B are major components modulating cell development, augmentation, distinction, relocation of ingestion, and conditions, including cancer [6]. An increased proportion of PDGF has been described in many distinct human tumors. In the previous decagon, assuming consideration of the lead roles of RTKs in the tumor growth and ad-

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Covid 19 Vaccines


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ABSTRACT

Pandemic COVID-19 is an infectious disease caused by a newly discovered coronavirus SARS-COV-2 leads to mild to moderate respiratory illness and recover without entailing particular treatment. And serious infection may also occur in older people and those having medical problems such as diabetes, cardiovascular disease, chronic respiratory disease and cancer. Vaccines have a significant tool in combating the coronavirus disease (COVID-19) pandemic condition. A highly efficacious vaccine against severe coronavirus disease caused by acute respiratory syndrome coronavirus 2 (SARS-CoV-2); such as mRNA vaccine, COVISHIELD™, COVID-19 vaccine AZD1222, Janssen Ad26.COV2.S vaccine, Sputnik V (Gam-COVID-Vac), Covaxin, Novavax, Sinopharm etc. The article reveals the characteristics, interim analysis of clinical study, safety and efficacy of covid 19 vaccines evaluated during phase I/II/III and storage conditions for vials.

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THEORETICAL EXPLORATION ON DEVELOPMENT OF PROSTATITIS INFLAMMATORY MODELS IN DRUG DISCOVERY

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ABSTRACT

Reliable experimental animal models of human diseases are critically important for the discovery of molecular pathways, genetic influences, environmental factors, and successful management strategies for humans. Inflammation is an immune response to stimuli. It begins with activation of the innate immune system by infectious or noninfectious (sterile) stimuli, and inflammasomes act as sensors and effectors of these stimuli. We need to understand recent findings on the cause of inflammation, immune system responses, and possible results when prostate is inflamed. Animals experimentally affected by such diseases provide a unique opportunity to uncover disease associated pathways, which are complicated or even impossible to define in man. Prostatitis is an important worldwide health problem in men. Animal model(s) might be useful in elucidating mechanisms involved in the molecular pathogenesis of chronic nonbacterial prostatitis and chronic pelvic pain syndrome. Given that prostatitis might have a multifactorial etiology, several animal models with unique features may prove helpful. This Paper theoretically explored a number of experimental rodent models of prostatitis.

Keywords: Disease associated pathways, Immune system, Inflammasomes, Poly- and mononuclear cell infiltrates multifactorial etiology, Prostatitis models

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FOLIC ACID CONJUGATED NANOSYSTEMS: A SYSTEMATIC REVIEW

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ABSTRACT

Cancer is the leading cause of death worldwide though it can be treated by the common ways of chemotherapy, radiotherapy, and surgery. The major limitation of conventional chemotherapy is the non-selective action of chemotherapeutic agents which leads to serious side effects such as damage to normal cells that hampers the immunity of the patient to fight against the disease. Active targeting mechanism is one of the approaches through which a chemotherapeutic agent can be delivered to malignant cells more selectively to the tumor-specific tissue with the help of ligands including proteins, peptides, hyaluronic acid, folic acid, antibodies, antibody fragments, aptamer, carbohydrates, and polysaccharides, etc. Folic acid conjugated nanosystems have proved their efficiency in site-specific targeting of chemotherapeutic agents with reduced side effects as folic acid has an affinity for folate receptors which are overexpressed on several cancer cell surfaces. Various polymers have been utilized to prepare such nanomicelles in an active targeting approach including chitosan, Poly lactic-co-glycolic acid, alginates, human serum albumin, etc. In this review, active targeted nanosystems of vincristine, methotrexate, mitoxantrone, doxorubicin, genistein, 5-aminovalaevulinic acid (5-ALA), carboplatin, 6-mercaptopurine, and gemcitabine, kaempferitrin, curcumin, paclitaxel, saquinavir, 5-Flurouracil, tamoxifen, resveratrol,

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OPTIMIZATION OF GOAT INTESTINAL PERMEABILITY OF BERBERINE CHLORIDE IN PRESENCE OF NATURAL BIOENHANCER PIPERINE USING 3^2 FULL FACTORIAL DESIGN

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ABSTRACT

Present study was aimed to exploit 3^2 full factorial design in optimizing goat intestinal permeability of poorly permeable berberine chloride (BBC) on pre-treatment with bioenhancer piperine. For the optimization of concentration of piperine and pre-treatment time, Design-Expert software was used to predict the response % cumulative drug release (% CDR) of BBC across membrane. Effect of piperine was investigated at 3 disparate concentrations (2, 6 and 10 mg) and 3 disparate time of pre-treatment (30, 45 and 60 min). Furthermore, apparent permeability, flux and enhancement ratio were investigated. Additionally, optimized batch was screened for *in-vitro* anticancer activity on K562, A459 and Hela cancer cell lines. It was noticed that, with decrease in both concentration of piperine and pre-treatment time has positive influence on permeability parameters of BBC. Maximum value of 63.72±1.16 %CDR was obtained at 30 min pre-treatment time with 2 mg piperine over control 8.49±1.45 %CDR. Further, optimized batch showed extremely remarkable enhancement in *in-vitro* anticancer activity over control. In brief, piperine mediated inhibition of intestinal multidrug efflux pump P-glycoprotein (P-gp) might be solely accountable for

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Formulation of Silver Nanoparticle of *Cassia angustifolia* by Using Green Synthesis Method and Screening for In-Vitro Anti-Inflammatory Activity

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ABSTRACT: The main objectives in developing nanoparticles as a delivery system are to manage particle size, surface characteristics, and the release of pharmacologically active substances to achieve the drug's site-specific action at the appropriate rate and dose. They can help boost medication stability and have helpful controlled release features, for example. Nowadays researchers are moving towards the green chemistry approach which is an alternative route that is eco-friendly, cheap and fast; in that plant extracts and microorganisms are used in the reduction of the metal salt which is fast gaining demand in the field of nanobiotechnology. In this study, silver nitrate was reduced to its "nanosilver form" through a one-step synthesis protocol using an extract of *Cassia Angustifolia*. Three different batches namely batch A, B, C of varying temperature and another three batches namely D, E, F of varying pH were synthesized. The prepared nanoparticles were optimized and characterized by practical yield determination, drug entrapment efficiency, particle size determination and measurement of zeta potential. The synthesized nanoparticles were screened for in vitro anti-inflammatory activity. Result found that the percentage practical yield of synthesized nanoparticles was within the range of 6.41-52.61%. The drug entrapment efficiency was found to be 99.875%. AgNPs inhibited protein denaturation and showed 75.52% inhibition at 500µg ml-1 whereas standard drug Aspirin exhibited 65.03% protein denaturation.

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INTRODUCTION

Nanotechnology is a new and realised field of research that has the potential to make a huge impact on society by assisting in the resolution of critical health and energy concerns. This is owing to metal nanoparticles' practical applicability in fields such as medicine [1], chemical sensing, catalysis, and electronics [2]. Nanotechnology is the control of shape and size at the nanoscale scale in the design and production of structures, devices, and systems [3]. Nanoparticles are the tiniest particles, ranging in size from 1 to 1000 nm, with exceptional properties due to their high surface area to volume ratio and small size[4]. Silver nanoparticles have drawn a lot of interest due to their appealing physical and chemical properties. More than a hundred years before the first metallic silver colloids were created. Chemical [5], electrochemical, γ-radiation[6], photochemical[7], laser ablation[8] and other processes can be used to make Ag nanoparticles. The Ag colloids were produced via chemical reduction of silver salts using sodium borohydride or sodium citrate. Even though this method of preparation is simple, extreme caution must be exercised to achieve a stable and repeatable colloid. The cleanliness of the glassware, as well as the purity of the water and reagents, are essential in the synthesis of nanoparticles. Particle size is affected by solution temperature, metal salt and reducing agent concentrations, and reaction time. Metal nanoparticles are difficult to manage in terms of size and shape[9]. Nanoparticles with size-induced properties are perfectly applied for the development of new applications or the modernization of existing methods in fields such as catalysis, optics, microelectronics, and many others. Silver nanoparticles possess unique properties not found in molecules or bulk metals. The absorption band in the invisible light area is one example. This band is caused by surface Plasmon-oscillation

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Advances in Bioresearch

ORIGINAL ARTICLE

Formulation and Characterization of a Self Nano-Emulsifying Drug Delivery System with Paclitaxel for Improved Oral Absorption

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ABSTRACT

Paclitaxel has an extremely low bioavailability due to its limited water solubility and permeability. The primary goal of the experiment was to design Paclitaxel-loaded self nano emulsifying drug delivery systems (P-SNEDDS) and assess their ability to impart Paclitaxel with better absorption and therapeutic efficacy by oral administration. The SNEDDS were described using morphological observations, droplet size, zeta potential measurements, freeze thawing, and an in vitro release investigation. This composition calls for 35 percent Capryol 90 (Propylene Glycol Monocaprylate Type II), 18.20 percent Cremophor EL, and 11.40 percent Transcutol. After 3.5 hours of in vitro drug release studies, paclitaxel was entirely released from SNEDDS. Paclitaxel absorption from SNEDDS was shown to be superior to that of commercially available Taxol. As a result of this research, paclitaxel for SNEDDS was produced.

KEYWORDS: *Paclitaxel phase diagram, self-nano emulsification drug delivery system.*

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INTRODUCTION

Paclitaxel (PTX), often known as Taxol, a widely recommended chemotherapeutic agent used to treat a variety of malignancies. [3] Ovarian cancer is not the only case; esophageal and pancreatic cancers are also examples. [3] For delivery, it is administered intravenously.[3] The most physiologically advantageous and patient-friendly method of administration is via mouth. New oral delivery strategies must be developed in order to modify the biopharmaceutical characteristics of poorly water soluble chemical moieties and impart desired therapeutic applications . The development of self-nano emulsifying drug delivery systems (SNEDDS) is most promising techniques to improve the biopharmaceutical parameters of drugs with low aqueous solubility[1,2,3]. SNEDDS has recently received a lot of interest due to its suitability in developing formulation with poorly water-soluble medications and enhancing bioavailability. For several decades, researchers have been studying SNEDDS' ability to administer a wide range of medications. Only a few scientific studies have been conducted on traditional Chinese remedies. Owing to isotropic characteristics SNEDDS comprise of oil, a suitable surfactant, along with co-surfactant, sometimes a suitable solvent and a medicinal component. A nano emulsion can be easily formed by mixing a little volume of water or aqueous solution. A nano emulsion should form naturally due to the low free energy of certain therapeutic excipients. Nanoemulsion droplets dispersed throughout the digestive system can carry medications to the intestinal wall for absorption via an undisturbed water layer due to their large surface area and capacity to quickly release drug-containing dissolved and mixed micelles. Medication dissolution aided by SNEDDS is only one component of overall drug absorption; lymphatic transport also contributes to higher bioavailability. The higher fatty acid composition in the form of lipids or oils SNEDDS may be benefitted with improved lymphatic medication delivery by increasing lipoprotein production and intestinal lymphatic liquid flux [8, 9]. Taxol's oral

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REVIEW ARTICLE

A Brief Review on Covid-19 associated Mucormycosis

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ABSTRACT:
Mucormycosis or Zygomycosis is defined as an insidious mycosis by members of the Mucorales and zygomycotic species. Mucormycosis is rare but severe invasive fungal infection. Infection with human corpuscles occurs in superficial form in the outer ear, nails, skin and visceral forms manifest in lung, gastrointestinal, and cerebral types. Mucormycosis is associated with exposure to high levels of airborne fungal contamination. In the context of COVID-19, India has seen an increasing number of incidents. The majority of the cases documented are related to the inappropriate use of corticosteroids in COVID-19 patients. Diabetes mellitus (73.5%), ma-lignancy (9.0%), and organ transplantation are among the main risk factors for mucormycosis in Indians (7.7 percent). In diabetic patients, Mucormycosis develops as a destructive and potentially fatal condition. Diabetic ketoacidosis accelerates fungal invasion. Risk factors include uncontrolled diabetes mellitus, especially ketoacidosis, steroid use, age, neutropenia Mucormycosis diagnosis involves a careful examination of clinical manifestations, magnetic resonance imaging modalities, early use of computed tomography (CT). Mucormycosis can impair the nose, sinuses, orbit, CNS, pulmonary, gastro-intestinal tract (GIT), skin, jaws bones, joints, heart, kidney, and mediastinum. Newer generation antifungal treatments such as amphotericin B, ketoconazole, itraconazole, and voriconazole. There are several formulations of amphotericin B available, including liposomal and lipid-based amphotericin, the colloidal diffusion of amphotericin for most common fungal infections. Breakthrough invasive fungal infections persist when new azoles, posaconazole, and isavuconazole are introduced, despite their anti-mucoral activity.

KEYWORDS: Mucormycosis, COVID -19, Diabetes mellitus, Corticosteroids, Amphotericin B.

INTRODUCTION:

R.D. Baker, an American physician, introduced the name Mucormycosis. Zygomycosis is another name for this disorder. Members of the Mucorales and zygomycotic species commonly refer to it as an insidious mycosis[1]. The cellular structural arrangement of the fungus is unique, and it contains a higher content of carbohydrate as a polymer of N-acetyl glucosamine than peptidoglycan in most bacteria. Rhizopus, Abydia and Cunningham Ella are the main mucus species. Uncontrolled diabetes mellitus is the focal point for accelerating myocorrhosis[1,2].

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Zygomycosis and Mucormycosis occur in the soil and their aerobic ovulation causes infection. The main symptoms here are thrombosis and tissue necrosis in mycosis. Mycorrhizae is a rare but severe invasive fungal infection, described primarily in immune diseases[3]. Mucormycosis has the feature of invading the angiogenesis causing thrombosis and tissue necrosis. Diagnostic and treatment approaches, including the early involvement of a multidisciplinary medical, surgical, radiological, and laboratory-based team, need needed to increase survival rates. PCR-based procedures can detect and accurately identify Mucoral fungi in clinical samples. Improved survival is generally associated with early, multi-disciplinary treatment modalities involving prior diag.nosis and non-invasive surgery[1,4]. Mucorals are not vesicular organisms and grow on a temperature background (25°C - 5°C); The optimum temperature for

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SYNTHESIS OF SOLID LIPID NANOPARTICLES USING DOUBLE EMULSION- SOLVENT EVAPORATION METHOD FOR RITONAVIR LOADED DRUG DELIVERY SYSTEM

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ABSTRACT

A large number of techniques like physical, mechanical, chemical and hybrid are available to synthesize different types of nanomaterial. Solid lipid nanoparticles (SLN) are sub- micron colloidal carriers ranging from 50 to 1000 nm introduced in 1991. SLNs are generally composed of biodegradable and biocompatible solid lipid as solid core, coated by nonhazardous surfactants/ co- surfactant as the outer shell. This is used for the controlled and targeted delivery of drugs & for incorporation of hydrophilic and lipophilic. Protease inhibitors used in the AIDS found to influence the glycoprotein synthesis independently which in turn inhibits the growth of HIV, one of the potential protease inhibitor could also acts as a substrate for efflux pump that is ultimately preventing its solubility in the gastric fluid by preparation of solid dispersion.

KEYWORDS: Nanotechnology, Double emulsion method, Solid lipid nanoparticles (SLN), Ritonavir, Poloxamer.

INTRODUCTION

In general, nanotechnology can be understood as a technology of design, fabrication and applications of nanostructures and nanomaterial. Nanoparticles are solid colloidal particles in which the active principles are dissolved, entrapped &/ or absorbed or attached. Based on the type of the inactive ingredient used, there are four classes of nanoparticles: lipid based nanoparticles, polymeric nanoparticles, metal based nanoparticles & biological nanoparticles.

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SYNTHESIS AND DEVELOPMENT OF MOBILE PHASE BY THINLAYER CHROMATOGRAPHY OF BENZIMIDAZOLE

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ABSTRACT

Benzimidazoles are bicyclic compounds consists of the fusion of benzene and imidazole ring. It having many pharmacological properties like antidiabetic, anticancer, antimicrobial, analgesic, and antihistaminic. Chromatography is the method of separating mixture of components into individual components. Thin layer chromatography is a chromatographic technique used to determine purity of substance and also used to monitor the progress of reaction.

Keywords: O-Phenylenediamine, Benzimidazole, chromatography

1. INTRODUCTION

Benzimidazoles are heterocyclic aromatic compound. These are bicyclic compound consists of the fusion of benzene and imidazole ring with acidic and basic nitrogen. Benzimidazole moiety shows many potent pharmacological properties like antidiabetic, anticancer, antimicrobial, antiparacytic, analgesic, and antihistaminic. It is also used in cardiovascular disease, neurology, endocrinology, ophthalmology etc. Benzimidazoles containing anthelmintic drugs are commonly used in veterinary practices to treat gastro-intestinal infections and animal fattening purposes. Benzimidazole moiety is very popular due to its excellent properties like bioavailability and significant biological activity.

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OPTIMIZATION OF MOBILE PHASE OF BENZOCAINE BY THIN LAYER CHROMATOGRAPHY

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ABSTRACT

This is the method of selection of mobile phase for TLC. Thin layer chromatography is an easy, inexpensive method which is used to determine number of components in mixture, purity of compound and main aim is to monitor progress of reaction. This process allows you to optimize resolution and to predict capacity factor. Mobile phase selection is based upon solubility parameter

Keywords: Para amino benzoic acid, Benzocaine, Chromatography

1. INTRODUCTION

Benzocaine is a local anesthetic which is poorly soluble. It is an ester of para-aminobenzoic acid. Its formulation used for skin creams, dry powder in skin ulcer, throat lozenges also in teeth formulation.

Benzocaine is derivative of procaine. Because it is poorly soluble in aqueous fluids, it remains at site of application. Hence not easily absorbed into systemic circulation. As it is low toxic, benzocaine specially used for anesthesia of large surface area. Benzocaine formulation is available in form of gels, liquids, lozenges, sprays, aerosols.

2. THIN LAYER CHROMATOGRAPHY

Chromatography is a technique which is used for separation of mixture. This consist of two phases; one is stationary phase which is supported on solid phase and other is mobile phase. Mobile phase flows over stationary phase and carries components of mixture with itself. Separation is depended upon affinity of molecule between mobile and stationary phase.

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Advances in Bioresearch

ORIGINAL ARTICLE

In-Vitro Calcium Oxalate Stone Reducing Potential of Selected Commercial Samples From Indian Market

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ABSTRACT

Urolithiasis is a multistep bio-chemical process with high recurrence rate. Epidemiological studies discovered that urolithiasis is more seen in men than in women and is more widespread between the ages of 20 to 40 in both sexes. In ayurvedic system of medicine and also in herbal medicaments numerous actives/extracts are used for the management of urolithiasis.The present study was carried out with an objective to find out comparative evaluation of the kidney stone dissolving potential of some of the marketed preparations by using calcium oxalate crystals-titration method to know their actual efficacy. Four marketed products were evaluated for its anti-urolithiatic activities in vitro. The inhibitory activity against calcium oxalate (CaOx) via aggregation assay and dissolution using titrimetric method were evaluated. The % dissolution of calcium oxalate stones by four formulations were estimated by redox titrations and the effects of four formulations on slope of nucleation and aggregation as well as CaOx crystal growth were evaluated spectrophotometrically.Cystone® Syrup showed the highest inhibitory activity against aggregation of CaOx crystals (80.60 ± 1.75 %) and the same product had the most effective dissolution effect on CaOx crystals (56.07 ± 1.14 %).The other promising formulation UT-Star™ Syrup had also shown acceptable results with respect to inhibition (65.20 ± 1.22 %) as well as dissolution (52.47 ±1.14 %) of calcium oxalate crystals in in-vitro studies. Present study has given a fare idea about the efficacy of four marketed polyherbal liquid formulations which are used in the management of kidney stones.

Key words: *In vitro, Antiurolithiatic, Dissolution, Inhibition, Comparative evaluation, Kidney stones*

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INTRODUCTION

Urolithiasis is a multistep bio-chemical process with high recurrence rate. Epidemiological studies discovered that urolithiasis is more seen in men than in women and is more widespread between the ages of 20 to 40 in both sexes. Calcium comprising uroliths are recognized as brushite, whewellite, weddellite, whitlockite and carbonate apatite. Struvite and newberyite are magnesium containing whereas ammonium acid urate, mono sodium urate monohydrate, uric acid anhydrous, uric acid mono and dihydrate are commonly existing urate stones [1,2]. After urolithiasis treatment, there is 50% chance of stone formation within seven years if left untreated. Therefore, prophylactic management is of great importance and advisable, especially in such individual subject. Crystallogenesis is the first and essential step in stone formation which is based on three steps nucleation, growth and aggregation. Uroliths (calculi) are generally composed of calcium as calcium oxalate monohydrate and calcium hydrogen phosphate dihydrate (75-90%), magnesium and ammonium magnesium phosphate hexahydrate (10-15%), uric acid and urates (3-10%), and 0.5-1% is composed of cystine, hippuric acid, L-tyrosine and xanthine [3]. Medicinal plants are considered as a rich source of therapeutic agents due to the belief and observations regarding their traditional use for the prevention of various ailments. Various research findings and data from different part of the globe are contributing and helping the scientific community in evaluating and establishing the pharmacological activities of these plants. In ayurvedic system of

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ACADEMIC JOURNALS
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Full Length Research Paper

Anticancer activity of terpenoid saponin extract of *Psidium guajava* on MCF-7 cancer cell line using DAPI and MTT assays

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***Psidium guajava* (Guava) could be an ancient remedy used for a variety of health conditions. Research suggests that guava fruits and leaves might have a variety of advantages. Guava is the tropical tree with yellowish-green skin fruits, and widely grown in Central America and Asia. Individuals use guava leaf tea as a treatment for gastric symptoms in many countries, together with India and China. In different countries, like India and Mexico, individuals have historically used the flesh of the fruit and leaves to heal wounds. Guava leaves extract had shown anticancer, antidiabetic, antispasmodic and anthelmintic effects in various research studies. In our present study, terpenoid saponin, a novel molecule isolated from the fraction of guava leaf extract studied for anticancer activity using 4', 6-diamidino-2-phenylindole (DAPI) and 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assays against MCF-7 breast cancer cell line. Terpenoid saponin fraction had shown >60% apoptotic activity using DAPI staining assay against normal cell line activity and shown >99% average %inhibition activity at 400 µg/ml which is a significant result. Thus, we suggest further cell line studies of terpenoid saponin extract of guava leaf for potential anticancer effects and usage.**

Key words: Guava leaves, *Psidium guajava*, terpenoid saponin glycoside, 4', 6-diamidino-2-phenylindole (DAPI), 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT), assay.

INTRODUCTION

Psidium guajava is a small tree belonging to the Myrtaceae family popularly known as guava. It is widely available in tropical areas of Southern Mexico, Northern South America and in Asia. Many countries grow guava trees for its fruits allowing mass cultivation in suitable climatic conditions. The fruits are edible and have many medicinal properties and rich in Vitamins like A and C. The leaves are rich in flavonoids and saponins. Many folk

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Article

Investigating the Antioxidant and Cytocompatibility of *Mimusops elengi* Linn Extract over Human Gingival Fibroblast Cells

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Abstract: Background—chlorhexidine (CHX) is most commonly used as a chemical plaque control agent. Nevertheless, its adverse effects, including teeth discoloration, taste alteration and calculus build-up, limit its use and divert us to medicinal herbs. The purpose of the study was to evaluate the phytochemical composition, antioxidant potential, and cytotoxic effects of *Mimusops elengi Linn* extract (ME) over normal human cultured adult gingival fibroblasts (HGFs). Methods—in vitro phytochemical screening, total flavonoid content, antioxidant potential by DPPH and Nitric Oxide (NO) radical scavenging activity, and cytotoxic effects of ME extracts over HGF were explored. The viability of HGF cells was determined using 3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyl tetrazolium bromide (MTT), neutral red uptake, and trypan blue assay after treatment with different concentrations of CHX and ME (0.3125 to 10 µg/mL). Results—ME showed some alkaloids, glycosides, saponins and flavonoids exhibited relatively moderate-to-good antioxidant potential. Increasing the concentration of CHX and ME from 0.3125 to 10 µg/mL reduced cell viability from 29.71% to 1.07% and 96.12% to 56.02%, respectively. At higher concentrations, CHX reduced the viability of cells by 52.36-fold compared to ME, revealed by MTT assay. At 10 µg/mL concentration, the mean cell viability of CHX and ME-treated cells was 2.24% and 57.45%, respectively, revealed by a neutral red assay. The viability of CHX- and ME-treated HGF cells estimated at higher concentrations (10 µg/mL) using trypan blue assay was found to be 2.18% and 47.36%, respectively. A paired t-test showed significance ($p < 0.05$), and one-way ANOVA difference between the mean cell viability of CHX- and ME-treated cells at different concentrations. One-way ANOVA confirmed the significant difference between the viability of CHX- and ME-treated cells. Conclusions—The cytoprotective and antioxidant effects of ME emphasize its potential benefits. Therefore, it could emerge as a herbal

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Microwave Assisted Extraction of Berberine and Preparation of Berberine Hydrochloride from Berberis Aristata Variety of Nepal, and Quantification using RP-HPLC and HPTLC Methods

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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RESEARCH ARTICLE

In vitro antioxidant potential and anticancer activity of *Ceratophyllum demersum* Linn. extracts on HT-29 human colon cancer cell line

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ABSTRACT:
Objective: To decide the phytochemical constituents, antioxidant and anticancer potential of *Ceratophyllum demersum* Linn. extracts on HT-29 human colon malignant growth cell line. **Methods:** The whole plant was exposed to Hot Soxhlet continuous extraction with expanding polarity of solvents viz., pet ether, chloroform, ethanol, and aqueous maceration. Phytochemical screening was finished utilizing distinctive phytochemical tests. The antioxidant potential was tried utilizing 2, 2-diphenyl-1-picrylhydrazyl, ferric ion reducing power assay and phosphomolybdenum assay. In vitro anticancer action tried on HT-29 human colon malignant growth cell line and it was assessed by (3-(4, 5-dimethyl thiazole-2yl)- 2, 5-diphenyl tetrazolium bromide) MTT test. **Results and Discussion:** Preliminary Phytochemical screening affirmed the presence of phytoconstituents like alkaloids, flavonoids, glycosides, saponins, sterols, tannins, and reducing sugar. Antioxidant potential was demonstrated most noteworthy in ethanol extracts dependent on the test performed. The ethanol extracts were seen as specifically cytotoxic to HT-29 human colon malignant growth cell line. **Conclusion:** The outcomes show that *Ceratophyllum demersum* Linn. was a promising antioxidant; and anticancer agent for HT-29 human colon malignancy cell line. In any case, further examinations are expected to presume that the particular constituent liable for its antioxidant action and cancer prevention agent.

KEYWORDS: Phytochemical; antioxidant; anticancer; colon cancer; *Ceratophyllum demersum*

1. INTRODUCTION:

Cancer is a disease described by uncontrolled engendering of cells that have changed from the typical cells of the body. The malignant growth cells can attack the neighbouring and distant tissues via the circulation. In advanced stages, a malignant growth patient may die because of either ill-advised finding or treatment disappointment. Malignancy is one of the push zones for which powerful medications at reasonable costs are not accessible until now presumably because of an absence of understanding the disease pathophysiology. For such a ghastly infection hostile to malignancy drugs have been created from an assortment of sources extending from normal items (plants and organisms) to synthetic particles.

The broadly utilized medications that are malignant growth chemotherapeutic specialists experience the ill effects of the downside of high danger, for example, bone marrow concealment, alopecia, queasiness and spewing and are not inside the compass of a typical man [1,2].

Medicines acquired from plants have assumed a central job in the social insurance of ahead of schedule and late societies. Ayurveda, the Indian arrangement of medication for the most part utilizes plant based medications or formulations to treat different sicknesses including malignancy. About 60% of medications allowed for cancer treatment are of natural source. Vincristine, Etoposide, Irinotecan, Taxanes and Camptothecines are instances of plant-derived anti-cancer compounds. [3,4]

A few malignancies inquire about investigations accompanied using traditional medicinal plants in

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RESEARCH ARTICLE

Chemopreventive potential of adrenergic blocker in behavioral stress accelerated prostate cancer development in rats

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ABSTRACT:
Psychosocial stress increasingly recognized as an important health issue in development and progression of cancer. Prostate cancer patients have increased levels of stress and anxiety. Several studies suggest that environmental factors are important in prostate cancer development. Patients with prostate cancer reportedly show higher levels of anxiety compared with other cancer patients. Based on psychoneuroimmunology we report that stress promotes prostate cancer in rats through stress response system. The sympathetic nervous system potentially regulate tumour α and β-adrenergic signalling both via circulating adrenaline/nor-adrenaline and via local nor-adrenaline release from SNS nerve fibres. Activation of the sympathetic nervous system promotes cancer progression via β-adrenoreceptor–mediated activation of protein kinase A and exchange protein activated by adenylyl cyclase signalling pathways. Stimulation of α receptor leads to the activation of Ca^{++} permeable no selective cationic channels and transient receptor potential (TRP) channel family, which are responsible for cell proliferation, which leads to prostate cancer progression. Certain adrenergic blockers can exert anticancer activity by blocking α and β adrenergic pathway. Thus current study examined association between prostate cancer progression and behavioural study. Our findings could be used to new clinical and treatment strategies in cancer therapy.

KEYWORDS: stress, cancer, signalling pathway, kinase A, TRP channel family.

INTRODUCTION:

Clinical and epidemiological studies have identified that stress, chronic depression and lack of social support are considered as risk factors for cancer progression.[1-2] Psycho emotional stress activates hypothalamic-pituitary-adrenal axis (HPA) and sympathetic nervous system (SNS) that leads to release of glucocorticoids from adrenal gland, adrenaline and nor-adrenaline from adrenal medulla and sympathetic neurons.[3-4]

According to Reiche E. 2004hypothalamus secretes corticotrophin - releasing factor (CRF) and arginine vasopressin, which activate the HPA axis, leading to release of adrenocorticotrophic hormone, enkephalins, and endorphins.

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The activation of the sympathetic nervous system by CRF is mediated by direct innervation of the locus coeruleus in the brainstem, which leads to widespread release of nor epinephrine throughout the brain and peripheral tissues. Activation of the sympathetic nervous system also stimulates the release of CRF by hypothalamic parventricular nuclei. Thus, activation of one component of the system stimulates the other component.[5]

β adrenergic pathway:[6]

SNS activation regulates cancer-related molecular pathways by direct regulation of β-receptor bearing tumour cells and regulation of other β-receptor bearing cells present in the tumour microenvironment, such as macrophages and vascular cells.β_2 receptor are present on prostate gland cell. Both catecholamines bind to β_2 adrenergic receptor resulting in activation of adenylyl cyclase and subsequent conversion of ATP to cAMP.

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In vitro protein denaturation and membrane stabilizing anti-arthritic activity of aqueous extracts of bark of *Ficus benghalensis* L. against methotrexate

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Abstract
The *in vitro* anti-arthritic activity of the aqueous extract of bark of *Ficus benghalensis* L. were studied by protein denaturation inhibition assay and membrane stabilizing activity. Methotrexate, well-established and promising DMARDs which is commonly used in inflammatory conditions like rheumatoid arthritis was used as standard drug .In rheumatoid arthritis protein denaturation was the main cause of inflammation. HRBC membrane stabilization was similar to lysosomal membrane which influences the process of inflammation. The percentage of protein denaturation and membrane stabilization for aqueous extracts were done at different concentrations (100,200,400,800,1000 µg/ml).The maximum inhibition of protein denaturation and membrane stabilization of aqueous extracts of *Ficus benghalensis* L. was found to be 45.31 ±1.90 and 62.50 ±0.66 at dose of 1000 µg/ml respectively and standard inhibition of protein denaturation and membrane stabilization using methotrexate was found to be 87.50 and 81.25 at 100 µg/ml respectively. The aqueous extracts of *Ficus benghalensis* showed significant activity at the highest concentration.

Keywords: *Ficus benghalensis*, protein denaturation assay, membrane stabilizing activity, anti-arthritic activity, methotrexate

Introduction

Inflammation is the defense mechanism in living tissues to get protection from injury, irritation and infection. The mechanism of inflammation is attributed in part to release of reactive oxygen species (ROS) from activated neutrophils and macrophages. Prolonged inflammation leads to rheumatoid arthritis, autoimmune disease and other infectious diseases [1].

Rheumatoid arthritis is a common chronic inflammatory autoimmune disease of joints accompanied by progressive destruction of bones, joints and affects other organs of body. It affects an estimated 1% population throughout the world. The cause of rheumatic arthritis is due to genetic and environmental factors which results in body's immune system attacks the joints [2, 3]. Progression of the disease results in joint destruction, deformity and significant disability [4] .It is characterized by autoantibody production, bone destruction, skeletal disorders and synovial inflammation [5].

Various classes of drugs which have been used to treat pain and inflammation in rheumatoid arthritis belong to the category of NSAIDs, Corticosteroids, DMARDs and Biological. All these drugs show severe side effects like ulceration, malignancies and infections [6]. Therefore, there is need to find new effective, economical, beneficial and safe alternative treatment for rheumatoid arthritis. The traditional plants used worldwide remains major source of active constituents for curing various diseases .World's most population relies on traditional medicine for primary healthcare needs and involves use of plant extracts or their components. The traditional medicine remains an alternative to modern medicine. The combination therapies of herbal products with DMARDS are gradually and widely accepted in management of rheumatoid arthritis. Various plants have been used for curing pain and inflammatory conditions like arthritis. Plants are excellent sources of antioxidants, anti-arthritic and anti-inflammatory agents [7].

Proteins lose its structure or become denatured when there is activation of various enzymes, migration of tissues and break down of tissues occurs [8, 9]. The hypo tonicity and heat induced hemolysis of erythrocytes is commonly used method for assessing anti-inflammatory activity.

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Investigation of *in vitro* anti-arthritic activity of aqueous extracts of leaves of *Vitex negundo* L. using methotrexate as DMARDs

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DOI: https://doi.org/10.22271/phyto.2021.v10.i2m.13926

Abstract
The aim of the study was to investigate the aqueous extracts of *Vitex negundo* L. for its *in vitro* anti-arthritic activity by protein denaturation inhibition assay and membrane stabilization method. Methotrexate is one of the most popular and effective drug used worldwide for the treatment of inflammatory conditions like rheumatoid arthritis. The main cause of inflammation in rheumatoid arthritis is protein denaturation. Production of auto antigen in certain rheumatic disease was important for inflammation as well as arthritis. HRBC membrane stabilization was similar to lysosomal membrane which influences the process of inflammation. Methotrexate was used as a standard drug. The percentage of protein denaturation and membrane stabilization for aqueous extracts were done at different concentrations (100, 200, 400, 800, 1000 µg/ml). The maximum inhibition of protein denaturation and membrane stabilization of aqueous extracts of *Vitex negundo* was found to be 65.62 ±1.10 and 71.87 ±1.46 at dose of 1000 µg/ml respectively and standard inhibition of protein denaturation and membrane stabilization using methotrexate was found to be 87.50±7.02 and 81.25±3.51at 100 µg/ml respectively. The aqueous extracts of *Vitex negundo* L. showed significant activity at the highest concentration.

Keywords: *Vitex negundo*, methotrexate, protein denaturation assay, membrane stabilizing activity, anti-arthritic activity

Introduction

Inflammation is the reaction in living tissues which releases the lysosomal enzymes which produces a variety of disorders leading to tissue injury [1, 2]. The mechanism of inflammation is attributed in part to release of reactive oxygen species (ROS) from activated neutrophils and macrophages. Prolonged inflammation leads to rheumatoid arthritis, autoimmune disease and other infectious diseases [3].

Rheumatoid arthritis is a chronic inflammatory disease of joints that results in joint pain. It affects an estimated 1% population throughout the world. Progression of the disease results in joint destruction deformity and significant disability [4]. It is characterized by auto-antibody production, bone destruction, skeletal disorders and synovial inflammation [5].

The treatment of arthritis involves the use of different classes of drugs such as NSAIDs, corticosteroids and disease modifying anti-rheumatic drugs (DMARDs). In Indian traditional medicines literature describes parts of certain plants for treating pain and inflammatory conditions like arthritis. The anti-arthritic drugs showed severe side effects such as irritation of the gastric mucosa, gastric ulceration and bleeding, impair renal and hepatic functions [6]. As a result a search for other alternatives seems to be necessary which would be more beneficial

In comparison to other DMARDs methotrexate is well tolerated and used as major advancement of rheumatoid arthritis. Several studies showed that the combination of methotrexate plus other therapy was significantly better than monotherapy with methotrexate. Due to side effects and cost issues of other treatment with methotrexate it is necessary to find out other therapy which is having less side effects and cost effective. The low dose or weekly dose of methotrexate used as monotherapy or in combination with other drug is 10 to 25 mg/wk.

World's most population relies on traditional medicine for primary healthcare needs and involves use of plant extracts or their components .Arthritic conditions are treated with traditional medicine with considerable success. Although various modern drugs are used to treat these types of disorder their prolonged usage may cause severe side effects. So, there is urging to develop new herbal therapeutic agents with minimum side effects. Plants are excellent sources of antioxidants, anti-arthritic and anti-inflammatory agents [7].

Original Article

In vitro Antioxidant Potential and Cytotoxicity Study of *Asparagus aethiopicus* L. Extracts on HT-29 Human Colon Cancer Cell Line

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ABSTRACT

Objectives: To decide the phytochemical constituents, antioxidant and anticancer potential of *Asparagus aethiopicus* L. extracts on HT-29 human colon malignant growth cell line. **Methods:** The roots of plant were exposed to Hot Soxhlet continuous extraction with expanding polarity of solvents viz., pet ether, chloroform, ethanol and aqueous maceration. Qualitative phytochemical screening was completed by utilizing distinctive phytochemical tests. The antioxidant potential was tried utilizing 2, 2-diphenyl-1-picrylhydrazyl, ferric ion reducing power assay and phosphomolybdenum assay. *In vitro* anticancer action tried on HT-29 human colon malignant growth cell line and it was assessed by (3-(4, 5-dimethyl thiazole-2yl)- 2, 5-diphenyl tetrazolium bromide) MTT test. **Results and Discussion:** Preliminary qualitative phytochemical screening affirmed the presence of phytoconstituents like alkaloids, flavonoids, glycosides, saponins, sterols, tannins and reducing sugar. Antioxidant potential was demonstrated most noteworthy in ethanol extracts dependent on the test performed. The ethanol extracts were seen as an antioxidant and specifically cytotoxic to HT-29 human colon malignant growth cell line. **Conclusion:** The outcomes show that *Asparagus aethiopicus* L. having a potential of antioxidant activity and anticancer action on HT-29 human colon cancer cell line. In any case, further examinations are expected to presume that the particular constituent liable for its antioxidant action and cancer prevention agent.

Key words: Phytochemical, Antioxidant, Anticancer, Colon cancer, *Asparagus aethiopicus*.

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INTRODUCTION

Cancer is a disease described by uncontrolled engendering of cells that have changed from the typical cells of the body. The malignant growth cells can attack the neighbouring and distant tissues via the circulation. In advanced stages, a malignant growth patient may die because of either ill-advised finding or treatment disappointment. Malignancy is one of the push zones for which powerful medications at reasonable costs are not accessible until now presumably because of an absence of understanding the disease pathophysiology. For such a ghastly infection hostile to malignancy drugs have been created from an assortment of sources extending from normal items (plants and organisms) to synthetic particles. The broadly utilized medications that are malignant growth chemotherapeutic specialists experience the ill effects of the downside of high danger, for example, bone marrow concealment, alopecia, queasiness and spewing and are not inside the compass of a typical man.[1] Medicines acquired from plants have assumed a central job in the social insurance of ahead of schedule and late societies. Ayurveda, the Indian arrangement of

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RESEARCH ARTICLE

Design and Evaluation of Eudragit RS-100 Based Itraconazole Nanosuspension for Ophthalmic Application

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Abstract: ***Background***: Poor water soluble compounds are difficult to develop as drug products using conventional formulation techniques.

Objective: In the present study, the potential of Eudragit RS-100 nanosuspension as a new vehicle for the improvement of the delivery of drugs to the intraocular level was investigated.

Methods: Solvent evaporation technique has been employed for nanosuspension preparation. Surfactant concentration and drug to polymer ratio has been optimized using 3^2 factorial design to achieve desired particle size, entrapment efficiency and percent permeation responses as dependent variables. All the formulations were characterized for particle size, zeta potential, polydispersity index (PDI), Fourier transform infrared spectroscopy (FTIR), Differential scanning calorimetery (DSC), X-ray diffraction (XRD) analysis, viscosity, antifungal study and Transmission electron microscopy (TEM). Secondly, itraconazole eye drop was prepared by using sulfobuty ether-β-cyclodextrin and comparatively studying its antifungal efficacy.

Results: The nanosuspension had a particle size range of 332.7-779.2nm, zeta potential +0.609-16.3, entrapment efficiency 61.32±1.36%-76.34±2.04%. Ex vitro corneal permeability study showed that optimized Itraconazolenanosuspension produced higher permeation as compared to the market formulation and Itraconazole eye drop. Moreover, optimized nanosuspension was found as more active against *Candida albicans* & *Aspergillusflavus* compared to the market formulation and Itraconazole eye drop.

Conclusion: The nanosuspension approach could be an ideal, promising approach to increase the solubility and dissolution of Itraconazole.

Keywords: Itraconazole, eudragit RS-100, nanosuspension, *Ex-vivo* transconeal permeation.

1. INTRODUCTION

Pertinent information concerning factors affecting drug permeation or retention and eyes anatomy and physiology can be found in several reviews. To penetrate the required amount of drugs into a posterior portion of the eye is the biggest challenge to pharmaceutical scientist due to the complex physiological barrier of the eye without causing permanent tissue damage. A major problem in ocular therapy includes poor drug solubility in lachrymal fluids and repeated instillation of conventional eye drops due to drainage through the nasolacrimal duct [1].

Topical dosage form includes conventional and novel dosages to get maximum ocular bioavailability. Conventional dose forms show loss of drugs *via* nasolacrimal drainage that leads to poor ocular bioavailability such as a solution, suspension and ointment [2]. Novel drug delivery systems for ophthalmic applications such as ocular inserts [3], nanoparticles [4], nanoemulsion [5], nanocapsules [6] and liposomes [7] have been developed to prolong the residence time and improve the bioavailability.

Another issue for lower ocular bioavailability of the drug is its less aqueous solubility. So there is a need for greater awareness about the improvement of solubility by using different techniques like solid dispersion, complexation, liquisolid, hydrotropy, sonocrystallization, self emulsifying method, spherical agglomeration. Among the above discussed various enhancement techniques; a nanosuspension is one of the versatile techniques used to overcome the solubility problem. Recently, nanosuspension, the submicron colloidal dispersion of discrete particles, has been stabilized us-

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RESEARCH ARTICLE

Eudragit RL100 Based Moxifloxacin Hydrochloride and Ketorolac Tromethamine Combination Nanoparticulate System for Ocular Drug Delivery

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ARTICLE HISTORY

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Abstract: ***Background***: Bacterial conjunctivitis is a serious ocular infection if left untreated. It is caused by several species of bacteria like pseudomonas, staphylococcus and mycobacterium.

Objective: The present investigation explores the development and characterization of moxifloxacin hydrochloride and ketorolac tromethamine combination loaded Eudragit RL 100 nanosuspension for ocular drug delivery in order to overcome the problems associated with conventional dosage forms.

Methods: The nanosuspension prepared by nanoprecipitation technique showed successful entrapment of both water-soluble drugs in the polymer matrix indicated by their % entrapment efficiencies.

Results: Formulations showed a mean particle size <200nm with narrow size distribution and positive surface charge due to the presence of quaternary ammonium groups of Eudragit RL100. FTIR study revealed compatibility among the components, while a reduction in the crystallinity of formulation was observed in the PXRD study. The release of both the drugs was found to be sustained in nanosuspension as compared to commercial eyedrops. *Ex vivo* studies showed increased transcorneal permeation of drugs from nanosuspension, where approximately 2.5-fold and 2-fold increase in the permeation was observed for moxifloxacin hydrochloride and ketorolac tromethamine, respectively. The formulation was stable at 4°C and room temperature.

Conclusion: Due to their sustained release, positive surface charge and higher transcorneal permeation, this will be a promising ocular drug delivery.

Keywords: Drug combination, eudragit RL100, ketorolac tromethamine, moxifloxacin hydrochloride, nanosuspension, ocular drug delivery.

1. INTRODUCTION

Ocular drug delivery is a challenging task due to the unique anatomical, physiological and biochemical features of the eyes. The presence of various barriers prevents the passage of foreign substances as well as drugs into the eyes [1]. Ocular pathological conditions requiring drug delivery to the anterior segment of the eyes are frequently treated with topical instillation of eye drops. Most of the ophthalmic dosage forms are available in the form of solutions for the ease of formulation

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ORIGINAL RESEARCH ARTICLES

ASSESSMENT OF PERMEABILITY BEHAVIOR OF BERBERINE CHLORIDE ACROSS GOAT INTESTINAL MEMBRANE IN PRESENCE OF NATURAL BIOPOTENTIATOR CURCUMIN

Sarika Narade[a]* and Yogesh Pore[b]

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ABSTRACT

The present study investigates the influence of co-administration of different concentrations (2, 6, and 10 mg) of curcumin on goat intestinal permeability of berberine chloride (BBC) using Franz diffusion cell. Data obtained in triplicate from permeability studies were used to calculate percentage cumulative drug release (% CDR), apparent permeability (Papp), flux (J) and enhancement ratio (ER). Co-administration of 6 mg concentration of curcumin with BBC was found to be optimum to enhance the permeability of BBC up to 23.92 ± 0.78 % CDR, over control (8.49 ± 1.45 % CDR). At the optimized concentration of curcumin, permeability characteristics were improved significantly compared to control. The present study reveals the beneficial effect of co-administration of curcumin (6 mg) to promote membrane permeability of BBC which would be expected to improve its bioavailability, thereby therapeutic efficacy. The effect could be attributed to curcumin-mediated inhibition of intestinal efflux pump P-gp, acting as an absorption barrier for BBC.

Keywords: Berberine chloride, permeability studies, curcumin, biopotentiator, co-administration

INTRODUCTION

The natural product berberine chloride (BBC) is a protoberberine alkaloid, having diverse and promising pharmacological actions. It is most widely used since thousands of years in Ayurveda and traditional Chinese medicine for its antiprotozoal, antidiarrheal anti-inflammatory and antimicrobial properties. Recent research has reported that BBC possesses potential therapeutic effects such as antidiabetic, hypolipidemic, anticancer, antiarrhythmic, antifungal, neuroprotective, as well as an anti-atherosclerotic action and improves treatment of polycystic ovary syndrome. In addition, BBC has attracted great interest due to its wide therapeutic applications, cost economy and low toxicity profile[1-5].

However, its oral use has been restricted greatly as it exhibits extremely low and variable plasma concentrations having very poor oral bioavailability (less than 1 %)[2,6]. The low oral bioavailability of BBC might be due to its poor absorption (56 %) and intestinal (43.5 %) as well as hepatic (0.14 %) presystemic metabolism[6]. In addition, drug self-aggregation, decreases solubility in the gastro-intestinal tract, thus, limiting oral absorption of BBC[7]. The low effective permeability coefficient (P_{app} 0.178 × 10^{-4} cm/s across the rat intestinal mucous membrane) resulting in poor permeability[6], log *P* value -1.5[8] and hepatobiliary re-excretion are major attributions to the poor absorption of BBC[9]. Further, one of the major influencing reasons for poor permeability of BBC is the presence of intestinal multidrug efflux pump P-glycoprotein (P-gp) that acts as an absorption barrier for BBC by active transport of BBC back again into the intestinal lumen and thus, it lowers its permeability as BBC is a substrate of P-gp[10].

Thus, the potential therapeutic uses of BBC have declined significantly due to its low oral permeability and accordingly bioavailability even though it possesses a variety of pharmacological activities. Thus enhancement in the permeability and accordingly bioavailability of BBC seems to be a major challenging task to overcome the problem. This can be solved by effectively limiting the activity of the absorption barrier P-gp.

Till today, to improve permeability and bioavailability of BBC, some studies have explored the use of intestinal

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RESEARCH ARTICLE

Polymeric Nanosuspension Loaded Oral Thin Films of Flurbiprofen: Design, Development and *In Vitro* Evaluation

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ABSTRACT:
In the present investigation, effort has been made to stabilize optimized nanosuspension of flurbiprofen through oral thin film formulation. To overcome the issue of stability of nanosuspension and poor bioavailability of flurbiprofen, nanosuspension loaded oral thin films were developed by solvent casting method. Oral thin films can be prepared by simple and scalable method easily. Nanosuspension loaded oral thin films were evaluated for thickness, % moisture absorption and loss, surface pH, weight variation, folding endurance, drug content, disintegration time, *in vitro* drug release and stability. The resultant oral thin films depicted that the particles size range was retained even after their stability study for three months. The dissolution rate of all flurbiprofen oral thin films were significantly increased compared with its marketed oral formulation. Thus it can be concluded that, oral thin films have potential for stabilization of nanosuspension with improved drug release.

KEYWORDS: Oral thin film, Flurbiprofen, Solvent casting method, Nanosuspension, Stabilization.

INTRODUCTION:

Oral route is the most suitable, economical, and common route for drug delivery due high patient compliance and flexibility in the development of dosage form[1-2]. Many drugs exhibit poor aqueous solubility, and oral bioavailability[1-2]. Nanosuspension has potential to enhance aqueous solubility, and dissolution rate but with the challenge of stability[3-4]. Oral thin film (OTF) is a novel dosage form similar to postage stamp in size, shape, and thickness[3-5].These undergo quick disintegration when placed in the mouth without water ingestion or mastication; thus OTF are safe from instability due to pH variations, and enzymes in GI tract[3-6]. Oral thin films have potential for stabilization of nanosuspension with improved drug release. High viscosity of the film prevents aggregation of nanoparticles and drying enhances stability[7].

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Such modified formulation, without changing the chemical structure of drug; are significant to produce quick onset of action during emergency circumstances[7-8]. Flurbiprofen (FBF) is a BCS class II drug belongs to non-steroidal anti-inflammatory drugs (NSAID)[9-10]. It shows low aqueous solubility, and high log P value which is suitable in the development of nanosuspension[9-10]. The present study was aimed to develop stable polymeric nanosuspension loaded oral thin films of flurbiprofen.

MATERIALS AND METHODS:

Materials:

Flurbiprofen (FBF), poloxamer 188 (Pluronic F68), and hydroxypropyl methylcellulose E15 (HPMC E15) were gently given by Sun Pharma Pvt. Ltd. Ahmednagar. Glycerol was procured from Sigma Aldrich. All other chemicals with analytical grade, and double distilled water were used during the research work.

Methods:

Preparation and optimization of flurbiprofen nanosuspension:

FBF loaded nanosuspensions were prepared by nanoprecipitation technique. Accurately weighed FBF and HPMC E15 were dissolved in methanol (co-solvent) by sonication. Above organic phase of drug was added in

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RESEARCH ARTICLE

$POCl_3$ Mediated Syntheses, Pharmacological Evaluation and Molecular Docking Studies of Some Novel Benzofused Thiazole Derivatives as a Potential Antioxidant and Anti-inflammatory Agents

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Abstract: ***Background*:** The present research work is focused on the development of alternative antioxidant and anti-inflammatory agents. The review of the literature reveals that many benzofused thiazole analogues have been used as lead molecules for the design and development of therapeutic agent, including anticancer, anti-inflammatory, antioxidant and antiviral. The synthesized benzofused thiazole derivatives are evaluated for *in vitro* antioxidant, anti-inflammatory activities and molecular docking study. Thus, the present research work aims to synthesize benzofused thiazole derivatives and to test their antioxidant and anti-inflammatory activities.

***Objective*:** To design and synthesize an alternative antioxidant and anti-inflammatory agents

***Methods*:** The substituted benzofused thiazoles **3a-g** were prepared by cyclocondensation reaction of appropriate carboxylic acid with 2-aminothiophenol in $POCl_3$ and heated for about 2-3 h to offer benzofused thiazole derivatives **3a-g**. All the newly synthesized compounds were *in vitro* screened for their anti-inflammatory and antioxidant activities by using a known literature method.

***Results*:** At the outset, the study of *in vitro* indicated that the compounds code **3c**, **3d** and **3e** possessed distinct anti-inflammatory activity as compared to a standard reference. All the tested compounds show potential antioxidant activity against one or more reactive (H_2O_2, DPPH, SO and NO) radical scavenging species. Additionally, docking simulation is further performed to the position of compounds **3d** & **3e** into the anti-inflammatory active site to determine the probable binding model.

***Conclusion*:** New anti-inflammatory and antioxidant agents were needed; it has been proved that benzofused thiazole derivatives were **3c**, **3d** and **3e** constituted as an interesting template for the evaluation of new anti-inflammatory agents and an antioxidant's work also may provide an interesting template for further development.

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Keywords: $POCl_3$, benzofused thiazoles, antioxidant activity, anti-inflammatory activity, pharmacokinetic study, molecular modeling.

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Synthesis of Asymmetric Thiazolyl Pyrazolines as a Potential Antioxidant and Anti-Inflammatory Agents

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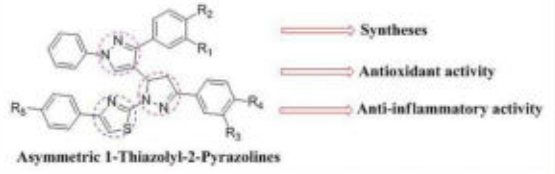
ABSTRACT

A new series of 1-Thiazolyl-2-Pyrazolines **5a-g** was accomplished by reacting pyrazolealdehyde with an appropriate aromatic ketone in the presence of PEG-300 as a solvent to yield chalcone. The chalcones reacted with thiosemicarbazide to yield asymmetric 1-thiocarbamoyl pyrazoles. The above formed 1-thiocarbamoyl pyrazoles reacted with appropriate α- haloketones to yield 1-Thiazolyl-2-Pyrazolines. The structural interpretations of newly formed compounds were done by ^{1}H NMR, ^{13}CNMR, IR and mass spectroscopic methods. The newly prepared asymmetric 1-Thiazolyl-2-pyrazoline derivatives were evaluated to their *in vitro* antioxidant (H_2O_2, DPPH, SOR and NO radical inhibiting activity) as well as anti-inflammatory activity. The 1-Thiazolyl-2-pyrazoline derivatives **5a-g** exhibited moderate to good H_2O_2 scavenging activity as match up to ascorbic acid. All the 1-Thiazolyl-2-pyrazoline derivatives exhibited excellent SOR scavenging activity except **5b**. All the tested compounds have shown good to excellent, NO radical inhibiting activity. DPPH radical scavenging activity results have shown low antioxidant activity. Also, all the 1-Thiazolyl-2-pyrazoline derivatives were tested for their *in vitro* anti-inflammatory activity. The compounds **5a**, **5b**, **5c**, **5f** and **5g** were exhibited good anti-inflammatory activity and **5d** showed moderate activity while **5e** less active as match up to diclofenac sodium as a standard reference.



Asymmetric 1-Thiazolyl-2-Pyrazolines

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KEYWORDS
Anti-inflammatory activity; antioxidant activity; asymmetric 1-thiazolyl-2-pyrazolines; polycyclic aromatic compounds

1. Introduction

Right now our body's cells have face threats every day. The radicals can also cause injury to the smallest structural and functional parts of our body, RNA, DNA and other biomolecules. Out of

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IN-VITRO ANTISPASMODIC EFFICACY OF ETHANOLIC EXTRACT OF LEAVES OF *SESBANIA GRANDIFLORA*

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ABSTRACT

The aim of this research was to use invitro pharmacological assay to provide the pharmacological basis for *Sesbania grandiflora* as an antispasmodic agent. It has been used to treat most illnesses in traditional medicine. The present study was undertaken to evaluate in-vitro antispasmodic activity of ethanolic extract of leaves *Sesbania grandiflora* by interpolation method on isolated chicken ileum. A kymograph reported the combined response of concentration to atropine and acetylcholine in the absence and presence of ethanolic extract. This revealed *Sesbania grandiflora's* ethanolic extract blocks the action of acetylcholine preventing impulses from the parasympathetic nervous system from entering smooth muscles and triggering contraction.

KEYWORDS: Antispasmodic Activity, In-vitro assay, *Sesbania grandiflora*, ethanolic extract.

1. INTRODUCTION

Spasm's definition is a sudden involuntary muscle contraction, a group of muscles, or a hollow organ like the heart. Many medical conditions, including dystonia, may induce a spasmodic muscle contraction. It is most often a muscle cramp that is followed by a sudden pain blast. In this disorder an Antispasmodics drugs that relax the smooth muscle of stomach, intestine, heart and bladder, used to treat indigestion not associated with peptic ulcers,

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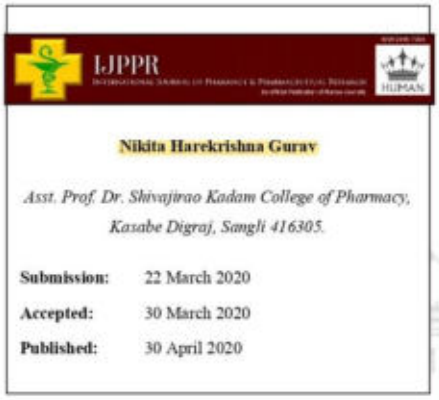
Current Approaches to Detect COVID -19, Limitations and Challenges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Keywords: COVID-19, SARS-CoV-2, RT-PCR Test, Serology Test, Silent carrier

ABSTRACT

At the end of 2019, a novel virus from corona family SARS-CoV-2 began generating captions all over the world because of the unprecedented speed of its transmission. It has been already witnessed the transmission of SARS-CoV-2 is symptomatic as well as non- symptomatic (silent carrier). In early 2020 within 2-3 months it became epidemic all over the world and leads to thousands of death with 2-5% mortality rate. Early detection of infection following proper preventive measures is the only way to prevent transmission of this SARS-CoV-2 since no proper treatment for COVID-19 is established yet. The aim of this article is to update about COVID-19 infection, existing methods of detection and their mechanism, such as current approved methods of diagnosis of COVID-19 are RT-PCR and serology tests, limitations of current methods including challenges. As well as ongoing developments to overcome the limitations to meet the challenges. The article also shortlisted the preventive measures and management of SARS-CoV-2 epidemiological crisis.

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Open Access Research Article

Design, Development and Characterization of Ketorolac Tromethamine Nanosuspension Loaded *In-Situ* Mucoadhesive Ocular Gel

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ABSTRACT

Currently, a variety of ophthalmic products illustrate low bioavailability after topical administration because of anatomical and physiological barriers of eye. Ketorolac tromethamine (KT) is a BCS class I, potent anti-inflammatory drug. The rationale of present work was to design and develop KT nanosuspension loaded *in situ* gel with sustained effect and greater permeability for ocular drug delivery through increased ocular residence time of drug. KT nanosuspension loaded *in situ* gel was designed by using 3^2factorial design. Polymers and surfactant were optimized through trial batches exhibiting better drug content (%), *In Vitro* trans-corneal permeation (%) and corneal hydration (%).Optimized formulation was evaluated for clarity, pH, gelling capacity, rheological behavior, drug content (%), *Ex-vivo* trans-corneal permeation, corneal hydration, HET CAM assay and physical stability. The resultant formulations revealed optimum viscosity, pH and drug content; as well as higher trans-corneal permeability when compared to the marketed eye drop. Optimized formulation was found as nonirritant to eye with sustained effect and good stability. So, current system can be considered as an efficient ocular drug delivery system for the treatment of postoperative inflammation, which would improve patient compliance and ocular bioavailability.

Keywords: Ketorolac tromethamine, *in situ* gel, corneal hydration, mucoadhesive, trans-corneal permeability

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1. INTRODUCTION

Ketorolac tromethamine (KT) is a BCS class I drug having potent anti-inflammatory activity. Chemically it is a pyrrolizine carboxylic acid; NSAID used for the treatment of post-operative eye inflammation and conjunctivitis[1-2]. Being water soluble agent; to formulate nanosystem is quite difficult by entrapment in polymeric vehicle[3]. Generally the basic problems for topical application in the treatment of ocular infection is drug loss from pre-corneal surface, conjunctival uptake due to poor bioavailability and rapid drainage through naso-lacrimal areas[4-5]. However, short pre-corneal contact time combined with corneal impermeability result in low bioavailability, and frequent dosing is usually needed[6]. Nanosuspension by nanoprecipitation is the novel drug delivery approach for sustaining the drug in its crystalline state[7-9]. Selection of polymers and stabilizers are very essential in the development of nanosuspensions to avoid particle aggregation, and crystal growth[10-11]. Design of experiment has proven effective optimization of formulations[10-11]. In present investigation; formulation was optimized by using 3^2 factorial design. Hence, based on above challenge, KT nanosuspension loaded *in situ* gel increases ocular bioavailability, and residence time on the corneal surface. The rationale of present work was to design and develop KT nanosuspension loaded *in situ* gel with sustained effect and greater permeability for challenging ocular drug delivery.

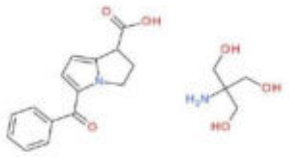

Figure 1: Chemical structure of ketorolac tromethamine

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Research Article

FORMULATION, OPTIMIZATION, AND *IN VITRO* EVALUATION OF POLYMERIC NANOSUSPENSION OF FLURBIPROFEN

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ABSTRACT

Objective: At present, more than 40% of drugs are poorly water-soluble that leads to reduced bioavailability. The objective of the present investigation was to overcome the issue of poor aqueous solubility of drug; therefore, stable flurbiprofen (FBF) nanosuspensions were developed by nanoprecipitation method.

Materials and Methods: Based on particle size, zeta potential, and entrapment efficiency, the polymeric system of hydroxypropyl methylcellulose E15 and poloxamer 188 was used effectively. The prepared formulations were evaluated for Fourier transform infrared spectroscopy, transmission electron microscopy, differential scanning calorimetry, powder X-ray diffraction, saturation solubility, entrapment efficiency, particle size, zeta potential, dissolution profile, and stability.

Results: The resultant FBF nanosuspensions depicted particles in size range of 200–400 nm and were physically stable. After nanonization, the crystallinity of FBF was slightly reduced in the presence of excipients. The aqueous solubility and dissolution rate of all FBF nanosuspensions were significantly increased as compared with FBF powder.

Conclusion: This investigation demonstrated that nanoprecipitation is a promising method to develop stable polymeric nanosuspension of FBF with significant increase in its aqueous solubility.

Keywords: Nanosuspension, Nanoprecipitation, Flurbiprofen, Hydroxypropyl methylcellulose E15, Lyophilization.

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INTRODUCTION

The large number of active pharmaceutical ingredients emerging from the drug discovery process exhibits poor aqueous solubility resulting in a low dissolution rate and oral bioavailability [1,2]. Solubility, dissolution, and permeability of drugs are rate-limiting parameters for its oral absorption [1,2]. Various physicochemical and physiological parameters of drug affect the oral bioavailability of drugs [1,2]. Size reduction of drugs improves oral bioavailability of drug by increasing its effective surface area and thus increasing solubility and dissolution rate of drugs [1,2]. High log p value and molecular weight of the substance are important factors regarding nanosuspension of less aqueous solubility of drugs [2]. Nanosuspension is the novel approach to overcome the problem of low dissolution rate and compromised oral bioavailability and reduce the delivery issues by maintaining the drug in preferred crystalline state [3-8]. Nanosuspension signifies sufficient safety and efficacy [4-6]. According to Nernst-Brunner diffusion layer model, the peripheral layer of the solid particle gets saturated by small portion of an adjacent solvent. Afterward steady-state mass transfer takes place into the bulk solution [8-12]. The formulation can be achieved by top-down (fracturing larger particles to smaller particles) or bottom-up (generation of smaller particles by precipitation at molecular level) approaches [1,9-13]. Nanoprecipitation is one of the promising techniques for the development of nanosuspension of low water-soluble drug molecules [14]. However, particle agglomeration and crystal growth due to Van der Waals forces or Ostwald ripening can be prevented by addition of one or more stabilizer (s) [15]. The selection of polymers and stabilizers is very crucial in the development of nanoformulations. Hydroxypropyl methylcellulose E15 (HPMC E15) and poloxamer 188 (Pluronic F68) are steric stabilizers provide stabilized dispersion by steric hindrance [1,13]. Nanosuspension formulations of several drugs such as Rapamune (sirolimus) and Tricor (fenofibrate) are already successfully marketed [16].

Flurbiprofen (FBF) is a phenylalkanoic acid derivative (Fig. 1), nonsteroidal anti-inflammatory and classified as Biopharmaceutics Classification System Class II drug due to its practical insolubility in water. Its oral bioavailability is affected by low aqueous solubility having pKa value ~ 4.03. The high log p value of FBF is an important feature in the development of its nanosuspension [17,18].

This study was focused to develop stable polymeric nanosuspension for enhancement of dissolution and oral bioavailability of FBF. The solidification of formulations was carried out by freeze-drying.

MATERIALS AND METHODS

Materials

FBF, HPMC E15, and poloxamer 188 (Pluronic F68) were kindly gifted by Sun Pharma Pvt. Ltd., Ahmednagar. Polyvinylpyrrolidone K30 (PVP K30), polyethylene glycol 6000 (PEG 6000), and sodium dodecyl sulfate (SDS) were procured from BASF Ltd. All used supplementary chemicals and reagents were of analytical grade and utilized without additional purification. Double distilled water was used during the experimental work.

Methods

Screening of stabilizer based on settlement volume ratio

To select the optimal stabilizer, the FBF (0.5% w/v) nanosuspensions were prepared using different stabilizers (0.5% w/v) such as PVP K30, PEG 6000, SDS, and poloxamer 188, respectively, by nanoprecipitation technique. The obtained nanoformulations were analyzed by settlement volume ratio (F) for a week, and suitable stabilizer was selected based on the stability of the system [19].

Research Article

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Therapeutic Delivery

Design and evaluation of topical solid dispersion composite of voriconazole for the treatment of ocular keratitis

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Aim: The objective of present investigation was to increases solubility of voriconazole by using solid dispersion techniques and the development of solid dispersion-based voriconazole ophthalmic solutions. **Materials & methods:** The saturation solubility of solid dispersion containing polyvinylpyrrolidone K90 (PVPK-90) was found to increase the solubility of voriconazole compare other carrier like polyethylene glycol and Polyvinylpyrrolidone K 30 (PVPK-30). Solid dispersion of voriconazole was characterized by saturation solubility, Fourier-transform infrared spectroscopy and Differential scanning calorimetry study. **Results & conclusion:** The Fourier-transform infrared spectroscopy and Differential scanning calorimetry studies of voriconazole-based solid dispersion confirmed the complete changes in original polymorphic form of voriconazole. The antifungal assay showed that the maximum zone of inhibition was produced from optimized ophthalmic formulation containing sodium alginate as compared with other formulations and marketed eye drops.

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Keywords: ocular keratitis • PVPK-90 • solid dispersion • transcorneal permeation • voriconazole

Recently, the numbers of drugs are being poorly water soluble and highly lipophilic, resulting in a low bioavailability [1]. Due to this reality, several drug candidates fail to reach the market. About 90% of all new chemical entities have poor bioavailability [1]. Increasing the bioavailability of poorly soluble drugs will be one of the major challenges for the formulation scientists. On the contrary, to achieve the better ocular retention as well as optimum bioavailability, various approaches have been used. Solid dispersion has been widely used to improve drug solubility and bioavailability of poor water-soluble drugs. Some of the existing paradigms are available in the form of solid dispersion like ketoconazole, itraconazole, clotrimazole, terbinafine hydrochloride and miconazole. Solid dispersion technique has been a promising and most successful method in improving the solubility and bioavailability of poorly soluble drugs due to its simplicity and cost-effective. Commonly, the term solid dispersion can be defined as one or more active ingredients in an inert carrier matrix system in solid state prepared by using melting or solvent evaporation method [1]. Some of the earlier literature provides strong evidence about solubility enhancement by using suitable carriers in solid dispersion techniques like levofloxacin [2] and disulfiram [3]. The conventional formulations of the eyes are sometimes unable to treat fungal infections. Fungal keratitis is one of the main causes of ophthalmic mycosis, accounting in some nations for more than 50% of the evidence of ophthalmic mycoses. As per literature, fungal keratitis can lead sever corneal scarring and sometimes loss of vision if it is untreated at early stage [4]. Mostly, this infection is found common in steamy regions and emergent countries [5]. It is need to incorporate drug into the novel drug delivery system. The main reason why topically applied ophthalmic drugs are poor *in vitro* ocular bioavailability is incomplete absorption owing to nasolacrimal drainage [4]. Increased transcorneal preparation of a poorly water-soluble drug may be achieved by formulating solid dispersion-based voriconazole eye drop. Some of the examples are available which has been proof of solubility enhancement and due to this permeation increased by formulating solid dispersion method [6]. Recently, the topical route is the ideal route of administration of antifungal

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EFFECT OF CO-ADMINISTRATION OF QUERCETIN ON GOAT INTESTINAL PERMEABILITY OF BERBERINE CHLORIDE

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Keywords:

Berberine chloride, Bioenhancer, Quercetin, Co-administration, Permeability studies

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ABSTRACT: The purpose of the present study was to explore the effect of co-administration of bioenhancer quercetin on membrane permeability of poorly permeable berberine chloride, on goat intestinal membrane model. The effect of co-administration of quercetin was investigated at 2, 6, and 10 mg concentrations. The study revealed a beneficial effect of low concentration of quercetin on % cumulative drug release (% CDR) of the drug under treatment. The co-administration process resulted in remarkable improvement in the permeability of berberine chloride (% CDR 28.33 ± 1.87) at 2 mg of quercetin. On the contrary, the permeability of berberine chloride was decreased (% CDR 10.46 ± 1.55) at 10 mg concentration of quercetin as compared to berberine chloride alone (% CDR 8.49 ± 1.45 at 10 mg). Apparent permeability coefficient, flux, and enhancement ratio were also found to be increased significantly with decreasing concentration of quercetin as compared with the control. It could be concluded that the use of quercetin will be beneficial for co-administration to enhance the permeability, bioavailability, and reduce the dose, resulting in improved therapeutic outcome of the naturally occurring berberine chloride.

INTRODUCTION: The natural product berberine is an isoquinoline alkaloid most widely used for centuries in Ayurveda and traditional Chinese medicine for the treatment of inflammatory conditions, diarrhea, gastroenteritis and hypertension [1, 2]. Recent research has shown that berberine has diverse promising biological actions against metabolic disorders, microbial infections, as an anti-oxidant, hepatoprotective, anti-arrhythmic, anti-malarial, hypolipidemic, hypoglycemic, anti-proliferative, and antineoplastic activities, *etc.* [3-7]

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As berberine has a variety of activities, low cost, and low toxicity profile, it has gained special interest recently from a therapeutic point of view. However, oral use of berberine has been restricted greatly as it has poor intestinal permeation and very poor bioavailability [8]. It has been reported that berberine is a substrate of multidrug efflux pump P-glycoprotein (P-gp) that acts as an absorption barrier for berberine that leads to poor intestinal absorption that limits its oral use [2].

The pharmacokinetic study of berberine reveals that presence of secretory transporters like P-gp at intestinal epithelium restricts permeation of berberine into systemic circulation by active transport of berberine back into the intestinal lumen and thus it lowers intracellular drug concentration [9]. Thus, the major challenging task to the research scientist lies with improvement in the permeability

Preliminary Communication

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Therapeutic Delivery

Design, development and characterization of ketorolac tromethamine polymeric nanosuspension

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Aim: At present, various ophthalmic formulations show low bioavailability. The rationale of present work was to design and develop stable ketorolac tromethamine nanosuspension with sustained effect and greater permeability for ocular drug delivery and increased ocular residence. **Materials & methods:** Formulations were designed by using central composite design, developed by combined nanoprecipitation and probe sonication method. **Results & discussion:** Nanosuspensions depicted the size range of the particles in between 199 and 441 nm with slight reduction in crystallinity of drug. *In vitro* drug release revealed that higher % entrapment efficiency of drug in nanosuspension delays the drug release. **Conclusion:** Eudragit RL-100-based nanosuspension increases viscosity and avoids problems like drug loss from precorneal surface and rapid drainage through nasolacrimal areas.

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Keywords: ketorolac tromethamine • lyophilization • nanoprecipitation • nanosuspension • probe sonication

Ketorolac tromethamine (KT) is a Biopharmaceutical Classification System (BCS) class I drug having potent anti-inflammatory activity [1,2]. Chemically, it is a pyrrolizine carboxylic acid (Figure 1); Non Steroidal Antiinflammatory Drug (NSAID) used for treatment of postoperative eye inflammation and conjunctivitis [1,2]. Being water-soluble agent to formulate nanoform is quite difficult by entrapment in polymeric vehicle [3]. Nanosuspension is the modern drug delivery system that can sustain the drug in the favored crystalline condition [4–7]. Easy and rapid removal of drug from eye surface is possible due to eye blinking, lachrymation, tear turnover, nasolachrymal drainage predominantly at retina. It may produce suboptimal drug concentration at the target [8]. The normal capacity of human eye to hold an ocular solution is about 25–30 µl [8]. Delivery of drugs to the posterior eye is not easy; around 1% of total dose reaches to the aqueous humor [8]. Five distinct layers of cornea give limited permeability and absorption of drug [8]. Topical route signifies a safe administration comparative to other routes in treatment of ocular diseases, therefore the researchers are trying to overcome the barriers and reach the goal [8]. Based on above challenges, KT nanosuspension can increase ocular bioavailability and contact time with the cornea. Nanosystems may sustain drug release and retain therapeutic levels for prolonged time period [8]. Nanoprecipitation is one of the bottom-up techniques for development of stable nanosuspension of drug molecules [9]. The selection of polymers and stabilizers is very essential to develop nanosuspensions by preventing particle agglomeration and crystal growth [10]. Eudragit RL-100 (acrylate copolymer) is insoluble at all body pH values and has good swelling index, thus representing suitable for the controlled release dispersions of drugs [11–15]. Eudragit-based polymeric suspensions are effective carrier systems for the optimal ophthalmic release of several drugs [15]. Suitable surface charge, better stability and particle size distribution symbolize these systems perfect for ophthalmic drug delivery [14,15]. Particularly, positive surface charge of these systems prolongs the corneal residence time, sustain drug release and improve availability of drug in aqueous humor [14,15]. In recent years, researchers tried greatly in the progress of novel ocular drug delivery systems like hydrogels, microparticles, nanoparticles, liposomes or polymeric implants [15]. Among them, nanotechnology is presently receiving a great attention for using biodegradable and inert polymers in ocular drug delivery [15]. To check the possibility of polymer matrix in the design and development

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Nanostructured lipid carriers (NLC) system: A novel drug targeting carrier

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ARTICLE INFO

Keywords:
Bioavailability
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Lipid nanocarriers
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Nanostructured lipid carriers

ABSTRACT

Lipid nanocarriers are developed as an alternative to polymeric nanoparticles, liposomes and emulsions. Further, Nanostructured Lipid Nanocarriers are the second generation lipid carriers developed to overcome problems associated with Solid Lipid Nanoparticles and are utilized in various therapeutic approaches. NLCs were primarily considered for the delivery of lipophilic drugs but their suitability for hydrophilic drugs is now well established. Biocompatible nature of lipids is responsible for its development as a promising drug delivery. It was found to be having superior characteristics over other lipid formulations. This article describes the NLC with respect to structures, methods of preparation, characterization, stability and its advantages over first generation lipid nanoparticles. Review mainly focuses on the various therapeutic applications of NLCs and their specificity for different physiological proximities. Due to their biologically non-toxic, non-immunogenic and compatible nature, NLCs are going to be the widely explored lipid nanocarrier systems.

1. Introduction

Exploration of novel lipid nanoparticulate drug delivery system was started from the production of solid lipid nanoparticles (SLNs). Incorporation of drug into various biocompatible lipids formulated at nano range has become a promising approach of drug delivery as lipid nanocarriers. This first generation lipid nanocarrier system was further developed to achieve the drug delivery by numerous routes of administrations in the treatment of physiological complications [1]. Some limitations of SLNs were observed by investigators which resulted into development of new lipid carrier in 1999/2000 by Muller known as nanostructured lipid carriers (NLCs). NLCs were developed by replacing a fraction of solid lipids with liquid lipids to form drug incorporated matrix. Currently, NLCs are considered as potential drug carriers due to their biocompatibility and superior formulation properties over SLNs [2].

Development, characterization and establishment of efficacy of drug loaded NLCs is now a current topic for the drug delivery and targeting. Since most of the drugs are lipophilic in nature, their solubility in biocompatible liquid lipids is a key factor for NLC development. NLCs are explored in the drug targeting in various diseases.

NLCs are developed to improve the oral bioavailability of poorly aqueous soluble drugs [3]. Currently, NLCs incorporated cosmetic products and dermal creams are marketed [4]. Formulation of drugs into NLCs for drug targeting in various diseases is explored widely. Drug targeting to various systems like pulmonary, brain tissues, anterior and posterior ocular tissues [5], targeting cancer tissues in various types of malignancies, improving the bioavailability and specificity and reversal of multidrug resistance is investigated by utilizing NLCs as potential lipid nanocarriers [6]. **Carbone et al** [7] included the information about patents on the lipid based nanocarriers where lipid nanoparticles were developed for the targeting and treatment of various ailments. Oral and topical therapy, brain and cancer targeting, gene delivery are addressed.

1.1. Lipid nanocarriers

SLNs are the first generation lipid nanocarriers. These are developed to formulate drug in solid lipids preferably by cold or hot homogenization technique, depending upon thermal stability of the drug.

Due to some observed limitations of SLNs like drug escape through matrix during storage, lower drug loading efficiency, NLCs were developed. NLC formulation is based on the concept of incorporation of drug in the mixture of varying ratios of solid lipid and liquid lipid. NLCs were designed to obtain the less/no crystalline matrix with solidified core to overcome the limitations occurred due to crystallinity of SLNs core.

Methods of preparation of SLNs and NLCs are not much different from each other. Cold homogenization, hot homogenization, hot emulsification-ultrasonication are the commonly used techniques for

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REVIEW ARTICLE

Recent Trends in Antifungal Agents: A Reference to Formulation, Characterization and Applications

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Abstract: ***Background & Objectives:*** Fungi are the heterotrophic eukaryotic organisms which are useful as they causes the biodegradation. There are still some harmful species like yeasts, molds and dermatophytes which cause the infections. As the fungi are eukaryotics, they do not respond to the antibiotic therapy due to the limitations associated with the traditional antibiotic therapies. There are several antifungal agents introduced to treat such infections. These antifungal agents posses severe problems like drug resistance and toxicity due to the higher dose which comprises the need for newer alternatives over conventional dosage forms. Novel drug delivery systems proved to be a better approach to enhance the effectiveness of the antifungals and enhance patient compliance by reducing the adverse effect.

Discussion: This review focused on the general information about fungal infections, types and mechanism of action of antifungal agents and overview of formulation approaches such as vesicular system, colloidal system, nanoparticulate system and *in situ* gelling which are often studied for antifungal treatments.

Conclusion: We concluded that the novel drug delivery systems are the essential techniques for delivering the antifungal agents to their target site with desired concentration. Moreover, the researchers focused on these novel drug deliveries which mainly concentrate on controlling & sustaining the release of antifungal agents.

Keywords: Antifungal agents, fungi, NDDS, fungal infections, nanoparticulate system, *in situ* gels.

1. INTRODUCTION

A fungus is a eukaryotic heterotrophic organism. Mainly the fungi are helpful & they cause biodegradation. But in humans, there are few many harmful species like yeast, molds, and dermatophyte cause infections which are generally challenging to treat. As they are eukaryotes, they do not respond to any traditional antibiotic therapy like bacteria. Fungi can cause superficial infections and/or Invasive Fungal Infections (IFI), out of which, the IFIs are life-threatening which arise due to increasing destructive therapies like the use of a higher dose of corticosteroids, chemotherapy & immunosuppressive infections. The superficial infections which are not life-threatening, target the body parts like skin, eye, nail, buccal cavity and vagina [1].

Regarding IFI, about 1.5 million deaths occurred per year [2]. About 90% of all reported deaths resulted from species which belongs to genera such as *Cryptococcus*, *Candida*, *Aspergillus* and *Pneumocystis*. Sequentially, superficial infections are frequently produced by dermatophytes, a group of closely related filamentous fungi of *Microsporum*, *Trichophyton* and *Epidermophyton* [3]. It has been estimated that about 40 million peoples have suffered from fungal infections in developing and underdeveloped nations [4].

At present, there are five classes of antifungal agents characterized according to their molecular targets & mechanism of action which are natural products (polyenes, echinocandins, benzofuran) and synthetic products (azoles, allylamine, anti-metabolite). The physiochemical properties of antifungal agents are depicted in Table **1**. These ideal antifungal agents would possess some characteristics like a broad spectrum of action against a variety of fungal pathogens, low drug toxicity, multiple routes of administration & excellent penetration into CSF, urine & bones [5]. Since the fungi are closely relates to humans, there are few differential targets for antifungal drug development which includes binding to ergosterol in the fungal membrane or inhibiting its biosynthesis, some of them interferes with DNA and RNA synthesis, and fewer agents target the β-1,3-D-glucan synthase which make the fungal cell-wall susceptible to osmotic lysis [3]. The details of different molecular targets of antifungal agents were presented in Fig. (**1**).

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EVALUATION AND COMPARISON OF ANTIDEPRESSANT ACTIVITY OF MARKETED AYURVEDIC FORMULATIONS

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ABSTRACT:

Depression is referred as an affective disorder which is described by alteration in mood, absence of interest in the surroundings, psychomotor retardation and melancholia. The aim and objectives of present research work is to assess the antidepressant activity and compare the effectiveness of marketed Ayurvedic formulations in mice by using Despair Swim Test and Tail Suspension Test and also estimate the concentration of Nor adrenaline from mouse brain by using Photoflurimeter. The experimental design for present work was the animals were divided into 08 groups and each group contains 06 mice and by using per oral route for 14 days of treatments the Immobility Period was noted on First, Seventh and Fourteenth day.

Forced Swim Test: Group I Control it contains distilled water having dose 10 ml / kg , Group II Standard (Imipramine), dose -15 mg / kg, Group III Formulation A having dose 1.3 ml / kg, Group IV Formulation B dose -1.56 ml / kg. Tail Suspension Test: Group V Control it contains distilled water having dose 10 ml / kg , Group VI Standard (Imipramine), dose -15 mg / kg, Group VII Formulation A having dose 1.3 ml / kg, Group VIII Formulation B dose -1.56 ml / kg. The conclusion of present studies are Formulation A and B possess significant antidepressant activity and Formulation B is highly effective as compared to Formulation A as observed in two models which are employed in this study. However, the precise mechanism of action by which the plants in the formulations shows the antidepressant like effect are not completely studied. So the further additional studies are necessary to isolate the exact active chemical constituents which are responsible for antidepressant action.

KEYWORDS: Depression, Antidepressant drugs, Forced Swim Test, Tail Suspension Test.

INTRODUCTION:

Depression is referred as an affective disorder which is described by alteration in mood, absence of interest in the surroundings, psychomotor retardation and melancholia.[1] Depression belongs to heterogeneous group of mental disorder which is considered by extreme exaggerations and disturbance of mood, which adversely affect cognition and psychomotor functions.[2] The main symptoms of depression are due to functional deficiency in concentration of monoaminergic neurotransmitters like Dopamine, Nor adrenaline, Serotoninin the brain. Those drugs which increases

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Optimization of *ex vivo* permeability characteristics of berberine in presence of quercetin using 3^2 full factorial design

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Key words:
Berberine chloride, bioenhancer quercetin, full factorial design, *ex vivo* permeability study, *in vitro* anticancer activity.

ABSTRACT

The aim of the present work was to investigate permeability characteristics of an anticancer berberine chloride, in presence and absence of bioenhancer quercetin on goat intestine using Franz diffusion cell. A 3^2 full factorial design approach was employed to investigate the effect of independent variables such as the concentration of bioenhancer (X_1) and pretreatment time (X_2) on dependent variable % cumulative drug release (% CDR) (*Y*) using design expert software. The effect of quercetin was examined at three different levels of pretreatment time (30, 45, and 60 minutes) and at three different concentrations (2, 6, and 10 mg) on goat intestine. The apparent permeability (P_{app}), flux (*J*), and enhancement ratio (ER) were determined. Further, *in vitro* anticancer activity of optimized batch was performed on various cancer cell lines K562, A459, and Hela. During pretreatment studies, it was observed that an increase in the concentration of quercetin yielded a positive effect on % CDR while the increase in pretreatment time by quercetin had a detrimental effect on % CDR. When goat intestine was pre-treated for 30 minutes with 10 mg of quercetin, 90.91% ± 1.66% CDR was obtained while the minimum value of 17.45% ± 2.12% CDR was observed at 2 mg quercetin pre-treated for 60 minutes. *In vitro* anticancer activity of optimized batch demonstrated non-significant effect as compared with parent drug. In conclusion, quercetin could be successfully utilized as bioenhancer to improve *ex vivo* permeability of berberine chloride, which would be expected to improve its bioavailability and reduce the dose resulting in improved patient compliance.

INTRODUCTION

Poor membrane permeation is one of the major governing factors for incomplete oral bioavailability of drugs (Aungst 1993; Savla *et al*., 2017). About 40% of new chemical entities developed in the pharmaceutical industry and more than 80% of drug candidates in research and development pipeline fails because of solubility problems. At present, about 40% of an immediate release oral drugs in the market are practically insoluble (Kawabataa *et al*., 2011; Savjani *et al*., 2012). The solubility and permeability of drug molecule can be correlated with its absorption profile.

Permeability through the gastrointestinal tract is the rate-limiting step for delivering macromolecules and very polar compounds. Poor membrane permeability of drug is attributed to certain physicochemical properties like low octanol/aqueous partitioning, highly polar surface area, high molecular mass, substantial number of hydrogen bonding functional groups, etc., or efflux of drug back into intestinal lumen due to presence of secretory transporters which may include P-glycoprotein (P-gp) and possibly others (Aungst, 2000). In addition to these, as per "Lipinski's rule of 5," if the calculated log *P* of the drug is more than 5 and the molecular mass is more than 500, then that drug has poor absorption or permeation (Lipinski *et al*., 1997). For oral and intestinal absorption of the drug, the ideal value of log *P* is 1.35–1.8. Negative value means the drug is more hydrophilic in nature, and thus poorly permeable and bioavailable (Kokate *et al*., 2008). Poorly permeable and bioavailable drugs remain sub-therapeutic as a given dose of drug never reaches to systemic circulation or produces its biological effect after frequent high-dose administration. In such cases, dose escalation would be required which may lead to gastrointestinal toxicity, and thus a reduction in

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Research Article

Synthesis, Characterization and Biological Screening of Substituted Indoledihydro-pyrimidine derivatives.

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ABSTRACT

A series of Schiff bases of N-Substituted-4-(1H-indol-3-yl)-6-methyl-2-oxo-1,2,3,4-tetrahydropyrimidone-5-carbohydrazide U(1-5) were synthesized as per the scheme reported. Structures of synthesized compounds were confirmed by spectral study such as FT-IR, ^{1}H-NMR, Mass and Elemental analysis. The synthesized compounds were subjected to antibacterial evaluation. The structure of synthesized derivatives correlated and it has been observed that electron donating groups like hydroxyl U-4, attached to the phenyl ring increases antibacterial activity. The compound U-5, have shown excellent activity against *E. coli* compared with standard drug ciprofloxacin.

KEYWORDS

Indole, Biginelli reaction, antibacterial activity, MIC determination.

Original Research Article

Mesalamine-loaded mucoadhesive microsphere for colon drug delivery system: Effect of process variables and *in vitro* characterization

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Abstract

Objective: The main objective of this study is to formulate mucoadhesive microspheres for colon drug delivery with sodium alginate (ALG) core enriched with drug.

Methods: The core microspheres of ALG were prepared by modified emulsification method followed by cross-linking with different concentration of $CaCl_2$ at different stirring speed with constant drug-to-polymer ratio (1:3). The core microspheres were further coated with Eudragit S-100 using the solvent evaporation technique.

Results: The microspheres (core and coated) were characterized by shape, size, surface morphology, size distribution, entrapment efficiency, and *in vitro* drug release studies. *In vitro* drug release showed that the optimized batch of core microsphere and coated microspheres exhibited 99.53% ± 0.39% and 89.22% ± 0.26%, respectively. The drug release from all formulations of mesalamine microsphere followed Higuchian Kinetics. Moreover, drug release from core and Eudragit S-100-coated microspheres followed Korsmeyer–Peppas equation with anomalous and Fickian kinetics mechanism, respectively. Stability study suggests that the degradation rate constant of mesalamine from Eudragit S-100-coated microsphere was found to be minimum 2 years shelf life of the formulation. On the basis of scanning electron microscopy, the core microspheres were formed slightly irregular in shape due to surface-attached crystals of the drug and coated mesalamine microspheres showed smooth surface and a smaller number of pores due to coating.

Conclusions: It can be concluded that the appropriate combination of a pH-dependent polymer (Eudragit S-100) with a pH-independent polymer sodium ALG) was suitably adequately sustained the drug release from mesalamine microspheres.

Keywords: Eudragit S-100, Higuchian, mesalamine, microspheres, mucoadhesive

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INTRODUCTION

Various drug delivery strategies have been employed to trigger the release of drug to the large intestine, but they do not reach at the site of action in appropriate concentrations. Thus, to ensure an effective and safe therapy for the large bowel diseases, colon-specific drug delivery system is considered to be the preferable approach.[2] In the treatment

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Introduction and Importance of Medicinal Plants and Herbs in Pharmacognosy

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Abstract
Medicinal plant use dates back to ancient times and may even predate modern medicine. To this day, compounds derived from plants remain an essential resource for the pharmaceutical industry. For thousands of years, people have turned to plants as a source of medicine for the treatment of a wide range of conditions. Numerous records show that plants were used in the Indian, Egyptian, Chinese, Greek, and Roman medical systems to treat a wide variety of illnesses. Studies in pharmacognosy, the study of medications obtained from natural sources like plants, often lead to the creation of brand new pharmaceuticals. In recent years, people all over the world have been engaged in the process of discovering, harvesting, and testing new medicinal plants, spices, microbes, and other forms of biological diversity. Plants contain a wide variety of bioactive substances called phytochemicals, which are extracted from various plant tissues and are mostly responsible for these compounds' biological effects. Important chemical compounds found in plants include: alkaloids, phenols, saponins, carbohydrates, terpenoids, steroids, flavonoids, and tannins, etc.

Keyword
Medicinal plants,pharmacognosy , phytochemicals, biological activities

Introduction
Several different kinds of herbs are included in the umbrella term "medicinal plant" ("herbology" or "herbal medicine"). It's the practise and study of making therapeutic use of plants. The Latin word "herba" and the old French word "herbe" are the etymological ancestors of the English word "herb." Herb has come to mean not only a non-woody plant, but also any plant part, be it fruit, seed, stem, bark, flower, leaf, stigma, or root. When first coined, the term "herb" referred

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Effect Of Olive Leaf Extract on The Attenuation of Ischemic Brain Damage in Rat

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Abstract

Olive leaves are high in antioxidants, and olive leaf extract can prevent damage to the brain, spleen, and blood when given to rats who have been poisoned with lead. However, there is limited data on olive leaf extract's potential impact on lead-related brain damage. Olive leaf extract prevented organelle and cellular matrix damage in the frontal lobe of the cerebral cortex of lead-poisoned rats, as seen under a transmission electron microscope. The highest level of protection was seen with olive leaf extract at 1000 mg/kg. Olive leaf extract, as measured by spectrophotometry, dose-dependently raised antioxidant enzyme activities (such as superoxide dismutase, catalase, alkaline phosphatase, and acid phosphatase) and lowered malondialdehyde concentration. Olive leaf extract also reduced Bax protein expression in the cerebral cortex of lead-poisoned rats in a dose-dependent manner, as shown by immunohistochemistry labelling. Based on our results, olive leaf extract appears to protect against lead-induced brain damage by enhancing antioxidant capacity and decreasing apoptosis.

Keyword

Oliveleaf,Olive leaves, brain damage, rat,OLE, neurological system,

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Modification of Dissolution Profile of Rivaroxaban by spray Drying

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Abstract

The objective of the present study was to enhance the solubility and modification of dissolution profile of poorly water soluble drug Rivaroxaban by formulating its biodegradable microspheres. A major challenge in the drug development and delivery process is improving aqueous solubility and rate of dissolution of drugs, which ultimately improves absorption of the drug. One of the major problems with BCS class II drug is its low solubility in biological fluids, which results into poor bioavailability after oral administration. Rivaroxaban is an oral factor Xa inhibitor. By binding reversibly to the active site of factor Xa, Rivaroxaban attenuates thrombins generate on and reduce fibrin formation. One of the possible way to overcome this outcome is to use formulate biodegradable microspheres by using spray drying technique. Spray drying is the transformation of feed from a fluid state into a dried particulate form by spraying the feed into a hot drying medium. The purpose of this research was to improve the solubility and modification of dissolution profile of Rivaroxaban by spray drying technique using Methanol and polymer like Eudragit RS100. Prepared biodegradable microspheres were evaluated for drug release profile. The compatibility and surface morphology was studied by Fourier Transforms Infrared spectroscopy (FTIR), Motic microscopy, X-Ray Diffraction (XRD) and Scanning Electron Microscopy (SEM) respectively. Prepared biodegradable microspheres were subjected to various physicochemical evaluations and *in-vitro* dissolution profile. The effects of different polymer concentrations on solubility enhancement and modification of dissolution profilewere studied. Stability study was carried out, result obtained after study complied with the limits. The batch with highest combination of polymer concentration with drug showed greaterenhancement in solubility.

Top

Keywords

Solubility, Rivaroxaban, Deep vein thrombosis, Eudragit RS100, Biodegradable microspheres.

Top

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Spray Drying: A Promising Technique to Enhance Solubility

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Abstract

Poor solubility and bioavailability of an existing or newly synthesized drug always pose challenge in the development of efficient pharmaceutical formulation. Numerous technologies can be used to improve the solubility and spray drying technology can be successfully useful for development of product from lab scale to commercial scale with a wide range of powder characteristics. Spray drying is an interesting manufacturing technique for the pharmaceutical industry since it uses a one-step process for formation and drying of powders. Using this technique the number of unit operations is reduced, improving production efficiency and reducing costs. Since spray drying is a technique which can be easily automated and equipped for in-line product analysis. Current review deals with the importance of spray drying technology in drug delivery, basically for solubility and bioavailability enhancement, instrumentation, advantages and the various applications of spray drying. Overall, spray drying has a bright future due to its versatility, effciency and the driving force of poorly soluble drugs.

Top

Keywords

Solubility, bioavailability, spray drying process, instrumentation, application.

Top

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Dissolution enhancement of Telmisartan by spray drying technique

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Abstract

The purpose of this research work was to improve the solubility and therefore the rate of dissolution of Telmisartan using spray drying technique. Microspheres of Telmisartan were prepared by using various proportion of drug: PVP-K30 ratios (1: 1 to 1: 4). The prepared microspheres was subjected to in-vitro dissolution, FT-IR spectroscopy, XRD, and SEM studies. Present investigation describes preparation of microspheres by spray drying technique and the microspheres were found to be discrete, spherical with free flowing properties. The results indicated that formulation containing drug: PVP-K30 ratio of 1: 4, prepared by spray drying technique showed the cumulative release of 96.36% in phosphate buffer 7.5. Hence, it can be concluded that the microspheres prepared by spray drying technique have potential to enhance the solubility and dissolution rate of Telmisartan.

Top

Keywords

Telmisartan, Microspheres, *In-vitro* drug release, SEM, XRD.

Top

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DEVELOPMENT AND VALIDATION OF A STABILITY INDICATING HPLC ASSAY METHOD FOR TACROLIMUS IN SEMI-SOLID DOSAGE FORM & BULK DRUG.

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Tacrolimus,
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HPLC,
Forced degradation study,
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ABSTRACT

In the present study we report the development and validation of reversed-phase high performance liquid chromatographic method for the determination of the tacrolimus in presence of pharmaceutical excipients. The developed method was validated with the guidelines of ICH parameters. Also, the forced degradation studies were performed to develop a stability-indicating high performance liquid chromatographic (HPLC) method for tacrolimus-in the presence of the degradation products. The mobile phase was acetonitrile–water 85:15 (v/v). The calibration plot for the drug was linear in the range 25 – 250 µg/mL was developed on JASCO fully automated HPLC system with Photo-diode array detector at 210 nm wavelength. The method was accurate and precise with limits of detection and quantitation of 4.86 and 14.73 µg, respectively. Mean recovery was 101.05%. In conclusion we report here an simple, precise and accurate developed RP- HPLC method having validated ICH parameters which can scale up to commercial level for the simultaneous quantification of Tacrolimus in dosage form as well as bulk drugs for quality control purpose.

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Stability of Aqueous and Oily Ophthalmic Solutions of Moxifloxacin

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Abstract

Objective

The purpose of this study was to investigate the stability of aqueous and oily ophthalmic solution of moxifloxacin fourth generation of fluoroquinolone.

Method

The stability studies on the aqueous and oily ophthalmic formulations of moxifloxacin were carried out by exposing the formulations to accelerated (40°C and 75% RH) and room temperature storage conditions. During storage period, the formulations were periodically examined for pH and the remaining drug concentrations.

Results

The accelerated and long term stability studies conducted on aqueous isotonic ophthalmic solutions of moxifloxacin indicate that moxifloxacin (0.5%, w/v) formulation of pH 7.2; containing, BAK (0.01%) and EDTA (0.01%) could provide a shelf life (t90) of 2 years, and the formulation appears promising from corneal permeation point of view. Among all the oily formulations, moxifloxacin (0.05%, w/v) ophthalmic solution in castor oil, with adequate overage, containing benzyl alcohol (0.5%, v/v) appears ideal from stability point of view.

Conclusions

Presence of benzyl alcohol, however, appears necessary to maintain sterility of the formulation during use, as eye drops are normally dispensed in multi dose containers. The degradation of moxifloxacin was found to follow first order kinetics.

Top

Keywords

Moxifloxacin, ophthalmic solutions, first order kinetics, benzyl alcohol.

Top

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ORIGINAL ARTICLE

Production and Quantitative Analysis of Trehalose Lipid Biosurfactants Using High-Performance Liquid Chromatography

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Abstract Trehalose lipids (THL) are glycolipid biosurfactants having a wide range of biomedical and environmental applications. Low yield, high purification cost, and the absence of a valid analytical method hinders their application. Hence, in the present study a simple, rapid, and reliable isocratic high-performance liquid chromatography (LC) method was developed for the identification and quantification of trehalose lipid biosurfactants from *Rhodococcus erythropolis*. THL having a minimum surface tension of 24 mN m^{-1} and a critical micellar concentration of 25 mg L^{-1} were produced using hexadecane as a substrate. A standard was developed from the crude THL mixture using thin-layer chromatography and column chromatography and its structure was confirmed using infrared spectroscopy, mass spectroscopy, and ^1H NMR. A high performance liquid chromatography (HPLC) method for quantitation was developed using a C18 column with water/acetonitrile (80:20) as the mobile phase at a 1 mL min^{-1} flow rate and UV detection at 208 nm. This method was validated according to International Conference on Harmonization guidelines for linearity, precision, accuracy, robustness, LOD, and LOQ. This method was found to be linear over the range 10-50 μg m L^{-1} (r^2 =0.99801), precise, accurate, and robust. This method can detect minimum 3.2 μg mL^{-1} and quantify minimum 9.2 μg mL^{-1} of THL. Standards were developed from *R. erythropolis*, broth and purified standard trehalose 6,6′-dimycolate from *Mycobacterium bovis*, having the same retention time of 2.0 min. The yield was calculated from the calibration curve and was found to be 25 g L^{-1}.

Keywords HPLC · Trehalose lipids · Biosurfactants · Surface tension · CMC · Validation

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Electronic supplementary material The online version of this article (doi:10.1002/jsde.12158) contains supplementary material, which is available to authorized users.

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Introduction

Biosurfactants are biomolecules synthesized by microorganisms, consisting of both hydrophilic and hydrophobic moieties. Biosurfactants reduce surface and interfacial tension between interfaces. Glycolipids, which are monosaccharides or disaccharides acylated with long-chain fatty acids or hydroxyl fatty acids, are the most common among biosurfactants. Rhammnolipids, sophorolipids, mannosylerythritol lipids, and trehalose lipids (THL) are glycolipids that differ in sugar residue in their structure (Fracchia, Cavallo, Martinotti, & Banat, 2012). THL contain trehalose a nonreducing disaccharide, which has two glucose units linked by the α-1,1-glycosidic linkage. Mycolic acids are esterified at the C6 position of each glucose. THL also occurs as mono-, di-, tri-, tetra-, hexa-, and octa-acylated derivatives of trehalose and succinoyl THL (Franzetti, Gandolfi, Bestetti, Smyth, & Banat, 2010). The most reported trehalose lipid is trehalose 6,6′-dimycolate (TDM), which is an α-branched chain mycolic acid esterified at the C6 and C′6 positions of each glucose.

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Synthesis, Spectral Analysis and Anticancer Evaluation of Novel Pyrazoline Derivatives

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ABSTRACT

The novel Pyrazoline derivatives were prepared by cyclisation of substituted chalcone derivatives in the presence of 2, 4 dintro phenyl hydrazine hydrate. Structural elucidation of all synthesized derivatives were done by spectral analysis (IR , NMR and Mass spectroscopy). All synthesized derivatives screened for their anticancer activities by MTT assay and these prepared derivatives exhibits promising anticancer activities.

Keywords: Chalcones , 2,4 dinitro phenyl hydrazine hydrate , spectral analysis , anticancer activity , MTT assay.

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Review Article

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EJPMR

ANTICANCER MEDICINAL HERBAL PLANTS: A SYSTEMIC REVIEW

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ABSTRACT

Research on Cancer has predicted that India's cancer burden will nearly double in the next 20 years, from slightly over a million new cases in 2012 to more than 1·7million by 2035. Despite technological and social development, cancer has become one of the most common diseases of concern and a leading cause of human suffering and death. The ever-increasing emergence of the resistance of mammalian tumour cells to chemotherapy and its severe side effects reduces the clinical efficacy of large anticancer agents that are currently in use. In spite of rapid progress and spread of modern medicine & surgery, faith in and popularity of herbal plants & traditional methods has not decreased. Therefore, there is large number of studies which supports the anticancer activity of medicinal plants. Accordingly, Cancer prevention or chemotherapy depending upon bioactive compounds/fractions obtained from medicinal plants with possible known cancer inhibitory properties is a key aspect. In cancer research, these key aspects of research need to be explored by the review articles. So, the aim of this review is to focus on the work on anticancer, cytotoxicity activities of herbal medicine and this article may help in investigation to identify medicinal plants responsible for anticancer potential. This review includes information on scientifically proved anticancer medicinal plants that gives the information on botanical name, family, parts used, chemical constituents, cancer cell lines used for assay and also includes the method of assay which has been used.

KEYWORDS: Anticancer plants, MTT assay, Cytotoxicity assay, Cancer cell lines.

INTRODUCTION

A disease originated & grown by an uncontrolled splitting up of anomalous cells in a fraction of the body is called cancer. Cancer cells basically attack as well as alter cellular functions of normal cells. Cancer is one of the most public health burdens in both developed and in developing countries. In Bangladesh, 13% death due to disease belongs to cancer. Natural Products such as plants have been used for the treatment of different diseases for thousands of years. Globally, plants have been used as medicines in Egypt, China, India and Greece and in many countries from ancient time and an extraordinary number of modern drugs have been developed from them. Medicinal plants remain on to be a central therapeutic assist used for alleviating ailments of human race. Over the last 2500 years, here have been very strongly built traditional systems of medicine such as Ayurvedic, and the Unani.[1]

Following heart disease, cancer is the biggest cause of death in the World. Cancer is a generic term for over 200 diseases, which share a number of characteristics including uncontrolled cellular proliferation. This uncontrolled growth can overcome on surrounding organs, causing disruption of normal bodily functioning which in turn can lead to death. Another feature of cancer is the ability of tumour cells to migrate to other sites in the body. This process (metastasis) also increases the difficulty in treating these diseases as these secondary tumours can also disrupt bodily functions. Under these conditions the removal of tumours by surgery becomes less practicable and other methods of

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A REVIEW : ANTIGOUT MEDICINAL PLANTS

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ABSTRACT
It is a disorder of purine metabolism associated with increase level of serum uric acid (hyperuricaemia) above 6.8 mg/dl. Uric acid crystallizes in the form of monosodium urate and deposits in joints, tendons and in the surrounding tissues that manifested as a sudden burning pain, swelling, redness and tenderness in joints. Gout is the common cause of arthritis in men aged over the fifty. Incidence of gout in men is three to four times more common than women because before menopause, estrogen promotes urate wasting in the urine. The male to female ratio is 3.6: 1 but rare in pre-menopausal women and its incidence and prevalence increases with age. However, in patients over the age of 60, gout affects both men and women equally. The major objectives in gout management are to keep the serum uric acid level towards normal, prevent joint damage due to hyperuricemia and further occurrence as well as to promote the dissolution of existing uric acid crystals as well as prevent new crystal formation. However, the main reason for gout and hyperuricemia is related to the overproduction and hypo-excretion of renal uric acid. The aim of present review is to gather collective information of medicinal plants which are used in the therapeutic management of gout with respect to its parts used. This summerised information will be beneficial for further research.

KEYWORDS: Uric acid, Hyperuricemia, Xanthine Oxidase Inhibitor, Gout, Medicinal Plants.

INTRODUCTION

Gout was described by Hippocrates as "the disease of kings" due to its association with a rich diet.[1] It is a disorder of purine metabolism associated with increase level of serum uric acid (hyperuricaemia) above 6.8 mg/dl. Uric acid crystallizes in the form of monosodium urate and deposits in joints, tendons and in the surrounding tissues that manifested as a sudden burning pain, swelling, redness and tenderness in joints. Initially, hyperuricemic persons have no prominent symptoms and they remain asymptomatic for long time. Gout is the common cause of arthritis in men aged over the fifty. Incidence of gout in men is three to four times more common than women because before menopause, estrogen promotes urate wasting in the urine. The male to female ratio is 3.6:1 but rare in pre-menopausal women and its incidence and prevalence increases with age.[2] However, in patients over the age of 60, gout affects both men and women equally.[1] Gout has both modifiable (diet, alcohol, medications, co-morbidities, body mass index, physical fitness) and non-modifiable (genetics, age and gender) risk factors. As the level of uric acid [in men (≤ 7 mg/dl) and women (≤ 6 mg/dl)] crosses its saturation thresholds in physiological fluids, urate crystals precipitation started in the joints and other tissues. The major objectives in gout management are to keep the serum uric acid level towards normal, prevent joint damage due to hyperuricemia and further occurrence as well as to promote the dissolution of existing uric acid crystals as well as prevent new crystal formation.[3] However, the main reason for gout and hyperuricemia is related to the overproduction and hypo-excretion of renal uric acid.[2] Xanthine oxidase (XO) is responsible for oxidation of hypoxanthine to xanthine and finally xanthine to uric acid. Over activity of this enzyme and increased intake of dietary food rich in nucleic acids (e.g. meat, leguminous seeds) impair renal excretion of uric acid and result in hyperuricemia and gout.[4]

PATHOPHYSIOLOGY

Pathogenesis of Hyperuricemia

Urate is the ionized form of uric acid present in the body. Uric acid is a weak acid with pH of 5.8. Urate crystals deposition in tissues starts to occur when serum uric acid level rises above the normal threshold. Pathological threshold of hyperuricemia is defined as 6.8 mg/dL. Some factors may affect the solubility of uric acid in the joints. These include synovial fluid pH, water concentration, electrolytes level and other synovial components such as proteoglycans and collagen. Serum Uric Acid level in the body is determined by the balance

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REVIEW: ANTIDEPRESSANT MEDICINAL PLANTS

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ABSTRACT
Depression is not a life threatening disease but its consequences can obliterate a life of the suffered person. Depression is considered as an affective disorder which is characterized by change in mood, lack of interest, psychomotor retardation and melancholia. World Health report said that the approximately 450 million people suffer from a mental or behavioral disorder. Diagnostic and Statistical Manual of Mental Disorders (DSM-V), characterized Mental disorder by symptoms like depressed mood, diminished interest or pleasure, significant increase or decrease in weight or appetite, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feeling of worthlessness or excessive or inappropriate guilt, inability to concentrate or indecisiveness, and suicidal thoughts. The main etiology of depression is due to functional deficiency in the level of monoaminergic neurotransmitters like dopamine, serotonin and noradrenaline in the brain. Many synthetic drugs are being used as the typical treatment for clinically depressed patients, but their adverse effects can compromise the therapeutic treatment. These conditions create an opportunity to find alternative treatment for depression by the use of medicinal plants. The aim of present review is to gather the collective information about traditional medicinal plants having potential antidepressant activity. This review article also take account of the essential information regarding experimental models used to screen the medicinal plants whose leaves, fruits, stem, aerial parts, roots, rhizomes were utilized to evaluate the activity from various research articles.

KEYWORDS: Depression, Antidepressants, Medicinal Plants, Forced Swim Test, Tail Suspension Test.

INTRODUCTION

Depression is considered as an affective disorder which is characterized by change in mood, lack of interest, psychomotor retardation and melancholia.[1] The depression belongs to the heterogeneous group of mental disorder which is characterized by extreme exaggerations and disturbance of mood, which adversely affect cognition and psychomotor functions.[2] Recently, Diagnostic and Statistical Manual of Mental Disorders (DSM-V), characterized Mental disorder by these symptoms depressed mood, diminished interest or pleasure, significant increase or decrease in weight or appetite, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feeling of worthlessness or excessive or inappropriate guilt, inability to concentrate or indecisiveness, and suicidal thoughts. These symptoms reflect alternation in cognitive, psychomotor, biological, motivational, behavioral and emotional processes. It is also affects the quality of daily life of community and cause of suicidal death.[3] The number of interactions of genetic and environmental risk factors such as stress, strain leads to depression. The main etiology of depression is due to functional deficiency in the level of monoaminergic neurotransmitters like dopamine, serotonin, noradrenaline in the brain. The drugs that increases the level of these neurotransmitters in the central nervous system such drugs shows the antidepressant activity.[4] World Health report said that the approximately 450 million people suffer from a mental or behavioral disorder. This amounts to 12.3% of the global burden of disease, and will rise to 15% by 2020. In spite of the availability of antidepressant drugs but the depression continue to be a major medical problem. Various plants are being used in complementary and alternative medicines for management of mood disorders.[5] Although a number of synthetic drugs are being used as the standard treatment for clinically depressed patients, they have adverse effects that can compromise the therapeutic treatment, these common adverse effects includes dry mouth, fatigue, gastrointestinal or

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UV Spectroscopy Analysis and Degradation Study of Rivaroxaban

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Abstract

Rivaroxaban is a potent selective oral direct factor Xa inhibitor, which undergo hepatic first pass metabolism and high oral bioavailability. According to ICH guidelines, the major factors that contribute in degradation of a drug product comprise of temperature, time, photo degradation, pH variation (high and low), acid/base stress testing and/or with humidity. An attempt was made to examine and calculate the quantity of drug in the presence of degradation products by UV-Vi spectroscopy method. According to the WHO, the official assay limit of the content should not less than 97% and not more than 101.05% of labelled amount of Rivaroxaban. The results of experiment revealed that Rivaroxaban degrade much especially on exposure to UV light and heat but do not degrades in basic medium whereas slight degradation occurs in acidic medium.

Top

Keywords

Rivaroxaban, Degradation, UV.

Top

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FORMULATION OF MILD NATURAL BIODEGRADABLE MICRO BEADS FACE SCRUBBER

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Abstract
Daily cleansing does not remove dead epithelial cells and impurities which are trapped in pores of skin. These dead cells and impurities affect the skin life if it trapped in pores of skin resulting the less life of skin, problems of Acne and blackheads. Solution of these problem is use of face scrubber ones or twice in week which is exfoliating, mild and contains natural traditional ingredients.
Generally face scrubber contains crushed seeds for removing dead cells of skin but that crushed seeds are not uniform in size and finely crushed particles causes for skin crashes or damage. To overcome this problem we replace the crushed seeds with granules or beads which removes the dead cells from pores of skin safely and without damaging the skin.
The mild micro beads face scrubber contains Gram flour, aloevera, sugar, starch, milk, Skin care oil etc. in this scrubber-beads are outer cover with Gram flour and inside is oil. When we massage with this beads outer layer are exfoliate dead skin and black heads and inside oils is spread on skin which will help to growth of new fresh cells. The result is ever youthful and fresh look.

Key words: *Mild, Biodegradable micro beads, Natural, exfoliating, youthful and fresh look*

Introduction
Face skin is the major part of the body, which indicates the health of an individual. It consists of materials such as amino acids, lipids and carbohydrates etc so that a balanced nutrition is required for the skin to keep it clear glossy and healthy.
"Mild Natural Biodegradable Micro Beads Face Scrubber" is face scrubber with traditional ingredients in new format. In this scrubber we Replacing crushed seeds with granules or beads in scrubber which contain inner layer of oil which is essential for skin and outer is traditional material gram flour, milk, turmeric and sugar which is bio degradable and natural ingredients which was use traditionally as a cosmetics.
Marketed face scrubber content crushed seeds as a scrubbing material which damage the skin and due to this skin irritation problem are faced by all type of skin. To overcome this problem we replace crushed seeds by micro beads which are uniform in size and round in shape. When beads are rubbed on skin it gives soft feel to skin if in any case damage takes place then it will recover by inner part of beads which is oil and reduce skin damaging
In the present scenario, its need remedy for skin care without side effects. "Mild Natural Biodegradable Micro Beads Face Scrubber" opened the way to formulate cosmetics without harmful effect, which can impart the required properties to remove dead cells from skin pores. This formulation can be

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Research Article

A STUDY ON DRUG UTILIZATION PATTERN OF ANTI-DIABETIC DRUGS IN RURAL AREAS OF ISLAMPUR AND KASEGAON AT MAHARASHTRA

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ABSTRACT

Diabetes a chronic disease is associated with significant morbidity, complications with poor glycemic control. Hence, meticulous management is necessary. A prospective observational study was carried out in adult diabetic patients visiting the outpatient Departments of General Medicine. Diabetes mellitus was observed to be highest in patients with the age group of 60-70 years, affecting 58.5% males and41.5% females. We observed that56 patients were treated with sulfonylurea, 38 were treated with biguinide. The choice of drug should be based economic status, associated conditions. Rational prescribing should focus on dose and duration as well as interaction with other medications.

Keywords: Drug utilization, anti-diabetic drugs, prescribing pattern.

INTRODUCTION

Drug utilization has been defined as the marketing, distribution, prescription, and use of drugs in a society, with emphasis on the resulting medical and social consequences[1]. The principal aim of drug utilization studies (DUS) is to facilitate the rational use of drugs in population. DUS is an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure and it is used to identify treatment adherence problems. Diabetes has emerged as a major healthcare problem in India.

India has the largest population of diabetes in the world. The international diabetes federation (IDF) estimates the number of people with diabetes in India will reach 80million by the year 2025. A survey depicts that 4% of adults in India suffered from diabetes in the year 2000 and is expected to increase to 6% by the year 2025[2] The world health organization (WHO) has projected that the global prevalence of type-2 diabetes mellitus will more than double from 5 million in 1995 to 300 million by 2025. Between 1995 and 2025, there will be a 35% increase in worldwide prevalence of diabetes mellitus, from 4 to 5.4%[3].

A projected to rise from 171 million in 2000 to 366 million in 2030 is noted worldwide. The urban population in developing countries is projected to double between 2000 and 2030[4]. Nowadays the incidence is increasing in rural parts of India due to urbanization, obesity, unsatisfactory diet, sedentary life style, etc[5]. Since the literature review on drug utilization pattern in rural parts of India yielded a very few data, we planned to carry out a study to evaluate the drug utilization pattern among diabetic patients in a rural population of Tamilnadu, South India.

Since 1995, a dozen orally administered diabetes medications or combination of medications for the management of type-2 diabetes mellitus have been approved by FDA[6]. They play a primary defense function against hyperglycemic events in comparison to insulin therapy[7]. Traditionally in oral hypoglycemic agent therapy, sulphonyl ureases have always been the agents of first choice, while bisguanides and alpha-glucosidase inhibitors were unpopular[8].

A good number of diabetes patients suffer from cardiovascular disease such as hypertension, hyperlipidaemia and ischemic heart disease.

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A Glance on Zika Virus Infection

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ABSTRACT

Zika virus is mainly transmitted through its vector Aedes aegyti are now a days affecting the world population, this infection has also affected to the pregnant women, which causes microcephaly in their newborns. Zika virus infection also causes Guillain BarreÂ syndrome GBS. Till date, there was no specific medication available for treatment of Zika virus infection. Some preventive measurements will be applicable. The Scientists are trying to investigate the vaccine which will be useful in future.

Keywords: Zika Virus, Treatment, ZIKA.

I. INTRODUCTION

Zika virus was first isolated in the Zika Forest near Lake Victoria, Uganda in April 1947 from a sentinel rhesus monkey placed; in January 1948 a second isolation from the mosquito *Aedes africanus* followed at the same site .[1]

Zika virus (ZIKV) infection has been a source of concern in the recent few months due to increase in the number of patients being affected by it with epidemic proportions in Brazil and its potential of spread to other countries. The association of microcephaly in newborns due to the Zika virus has further created panic and worry among the people. It is thus essential to clarify the doubts and confusion in the minds of physicians and people at large. This article is designed to reflect the best information regarding the Zika virus in depth.

Background

Zika virus (ZIKV) belongs to the family flavivirus is a mosquito-transmitted found in both Africa and Asia. Infection of this to human may result in a febrile illness similar to dengue fever and many other tropical infections found in these regions.

World Health Organization (WHO) report that some neurological disorder such as Guillain BarreÂ syndrome (GBS) and of microcephaly also caused by Zika virus infection.

II. METHODS AND MATERIAL

Epidemiology

In 1947, Zika virus first found in rhesus monkeys in the Zika forest of Uganda.[2] It was later identified in humans in 1968 for the first time in Nigeria.

There were only about 14 or 15 cases documented until 2007. In 2007, sudden spontaneous occurrence of Zika was reported, in the Island[3]. Currently Zika virus has spread to other countries in America, Brazil, and the Colombia.WHO has reported 23 countries and territories in Americas from where local transmission of Zika virus has been reported.[4].

Out Of 76-suspected deaths from microcephaly and congenital central nervous system malformations, 15 were investigated and confirmed to have microcephaly and/or central nervous system malformations.

Structure of the Zika virus

Zika virus, has a positive-sense, single-stranded RNA genome approximately 11 kilobases in length. The RNA contains strands of 5' and 3' that encodes a polyprotein and was cleaved into three structural proteins, namely a) the capsid (C), b) premembrane/membrane (perm), and c) envelope (E), and seven non-structural proteins (NS1, NS2A, NS2B, NS3, NS4A, 2K, NS4B, and NS5) [5].

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Synthesis and Anticonvulsant Screening of 2 Mercaptobenzimidazole Derivatives

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ABSTRACT

The novel series of 2-mercaptobenzimodazole derivative were synthesized by using secondary amine i.e. diethyl amine and aromatic aldehyde. In Mannish reaction instead of formaldehyde other aromatic aldehyde was used. This was main aim of present study. Same derivatives were synthesized by using Microwave technique & reaction time, practice yield were compared. The purity of synthesized compounds was checked by Melting point and TLC and their structure was established by various analytical techniques such as IR, ^{1}HNMR, Mass spectral studies. These Compounds were screened for their Anticonvulsant activity. Anticonvulsant activity was evaluated by PTZ induced model.

Keyword- Mannich reaction, 2-Mercapto Benzimidazole, Aromatic aldehyde.

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In-Vitro Anticancer Activity of *Abutilon Indicum* Against Human Breast and Lung Cancer Cell-Lines

Vipul M. Patil*, Sagar A. Jadhav, Kiran M. Kulkarni, Shitalkumar S. Patil

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ABSTRACT

Plants have been used as medicines for thousands of years. They have always been used as a rich source of biologically active drugs. According to WHO (World Health Organization) report, about 80% of the population, mostly in developing countries still depends on traditional medicinal system for their primary health care. The present investigation is focused on the phytochemical investigation of abutilon indicum species for anticancer activity. The *Abutilon* L. genus of the Malvaceae family comprises about 150 annual or perennial herbs, shrubs or even small trees widely distributed in the tropical and subtropical countries. The aqueous extract of the *A. indicum L.* showed significant cytotoxic activity against both the selected cancer cell lines *viz.* human breast cancer cell line MCF 7 and human lung cancer cell line A 549.

Keyword: WHO, Abutilon indicum, Anticancer activities, MTT assay.

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I Harshada Patil and Amit Pratap

Studies on Emulsification Properties of Glycolipids Biosurfactants

Microbial biosurfactants consists of hydrophilic and hydrophobic moieties in its structure and are produced by microorganisms. Glycolipid class of biosurfactants has wide range of surface and interfacial properties. The emulsification activity and emulsion stability of the Glycolipids Trehalose lipids (THL), Mannosylerythritol lipids (MEL), Sophorolipids (SL) and Rhamnolipids (RL) were investigated using liquid paraffin (hydrocarbon source) and sunflower oil (vegetable source) as hydrophobic source by UV spectroscopy. Emulsification activity and stability are in the order THL > MEL > SL > RL. The stability as a function of the temperature in the range of 20 °C–80 °C is in order THL > SL > MEL > RL. The effect of pH was studied using buffers of acidic and basic pH. It was observed that RL and SL had excellent emulsification activity at pH 8 while the activity of trehalose lipids and mannosylerythritol lipids was not affected by pH. Similar effect of various concentrations of salt (NaCl) was studied; THL and MEL emulsion were very resistant to concentration of salt but the stability of SL and RL emulsion decreased with increased salt concentration. Average droplet diameter of emulsion and the polydispersity index were determined by dynamic light scattering. The emulsions of THL and SL have smallest droplet diameter of 422 nm and 625 nm, while emulsions of MEL and RL have a droplet size of 1923 nm and 2245 nm respectively. Emulsions of all investigatesd glycolipid surfactants had good polydispersity index and negative zeta potential, suggesting their possible applications in pharmaceutical, cosmetics, industrial and environmental techniques.

Key words: Emulsion, glycolipid biosurfactant, emulsifying activity, emulsion stability

Untersuchungen zur Emulgierung von Glykolipid-Biotensiden. Die Moleküle mikrobieller Biotenside bestehen aus hydrophilen und hydrophoben Anteilen und werden von Mikroorganismen hergestellt. Von den Biotensiden haben Glykolipide eine breite Palette von Oberflächen- und Grenzflächeneigenschaften. Die Emulgierfähigkeit und Emulsionsstabilität der Glycolipide Trehaloselipide (THL), Mannosylerythritollipide (MEL), Sophorolipide (SL) und Rhamnolipide (RL) wurden unter Verwendung von flüssigem Paraffin (Kohlenwasserstoffquelle) und Sonnenblumenöl (pflanzliche Quelle) als hydrophobe Quelle mittels UV-Spektroskopie untersucht. Für die Emulgierungsfähigkeit und Emulsionsstabilität ergibt sich folgende Reihenfolge: THL > MEL > SL> RL. Die Stabilität im Temperaturbereich von 20 °C–80 °C hat folgende Reihenfolge: THL > SL > MEL > RL. Der Einfluss des pH-Werts wurde unter Verwendung von Puffer im sauren und basischen pH-Bereich untersucht. Es wurde beobachtet, dass RL und SL bei pH 8 eine ausgezeichnete Emulgierungsfähigkeit hatten, während die Fähigkeit von THL und MEL nicht durch den pH-Wert beeinflusst wurden. Ein ähnlicher Einfluss von verschiedenen Salzkonzentrationen (NaCl-Konzentrationen) wurde studiert; THL- und SL-Emulsionen blieben bei steigender Salzkonzentration stabil, wohingegen die Stabilität der SL- und RL-Emulsionen mit steigender Salzkonzentration abnahm. Der durchschnittliche Tröpfchendurchmesser der Emulsionen und Polydispersitätsindex wurden durch dynamische Lichtstreuung bestimmt. Die Emulsionen von THL und SL hatten einen kleinsten Tröpfchendurchmesser von 422 nm und 625 nm, während die Emulsionen von MEL und RL einen Tröpfchendurchmesser von 1923 nm bzw. 2245 nm aufweisen. Die Emulsionen aller untersuchten Glykolipidtenside hatten einen guten Polydispersitätsindex und ein negatives Zetapotential, was auf mögliche Anwendungen in der Pharmazie, Kosmetik und in der Industrie- und Umwelttechnik hindeutet.

Stichwörter: Emulsion, Glycolipide, Emulsionsaktivität, Emulsionsstabilität

1 Introduction

Bioemulsifiers and biosurfactants (BS) are amphiphilic biomolecules containing hydrophilic and hydrophobic moiety [1] and are therefore able to display a variety of surface activity like emulsification, dispersion, dissolution, solubilization, wetting and foaming. Bioemulsifier and biosurfactant have advantages in comparison with chemically derived surfactants. These advantages include non toxicity, biocompatibility, biodegradability [2], effectiveness at extreme temperatures, pH, salinity, and at low concentration.

Bioemulsifiers have a higher molecular weight than biosurfactants and are polymers of polysaccharides, lipopolysaccharides, proteins or lipoproteins [3]. Based on the type of the hydrophilic part, biosurfactants are classified into the four categories glycolipids, fatty acids type, lipopeptide and polymer type [4]. Among these biosurfactants the glycolipid type biosurfactants are most intensively studied because their production yield is much higher than that of the other types of biosurfactant. Glycolipid biosurfactants are trehalose lipids, mannosylerythritol lipids, sophorolipids and rhamnolipids [5].

Biosurfactants have numerous applications in medicine as anti-cancer, anti-microbial, anti-viral, anti-adhesive and immunological adjuvants, in cosmetics and food industry, in agriculture, petroleum industry and in microbial enhanced oil recovery (MEOR) [6]. Glycolipid biosurfactants consist of carbohydrate group joined to fatty acids or hydroxyl fatty acid chain.

Trehalose lipids (THL) biosurfactants are commonly produced by *Rhodococcus*, *Corynebacterium*, *Mycobacterium* species. They consist of the disaccharide trehalose which is connected by ester bond to an α branched β-hydroxyl long chained fatty acid, (mycolic acid) [7]. Mannosylerythritol lipids (MEL) are produced by the yeast species *Pseudozyma*, *P. rugulosa*, *P.aphidis* and *P. antarctica*. Mannosylerythritol lipids consist of 4-O-β-D mannopyranosyl-D-erythritol connected to two medium length chains of fatty acyl ester. Sophorolipids (SL) are commonly produced by *Candida bombicola* and *Candida apicola*. Sophorolipids consist of two major types, acidic sophorolipids and lactonic sophorolipids. Acidic sophorolipids have a free carbodic group in fatty acid

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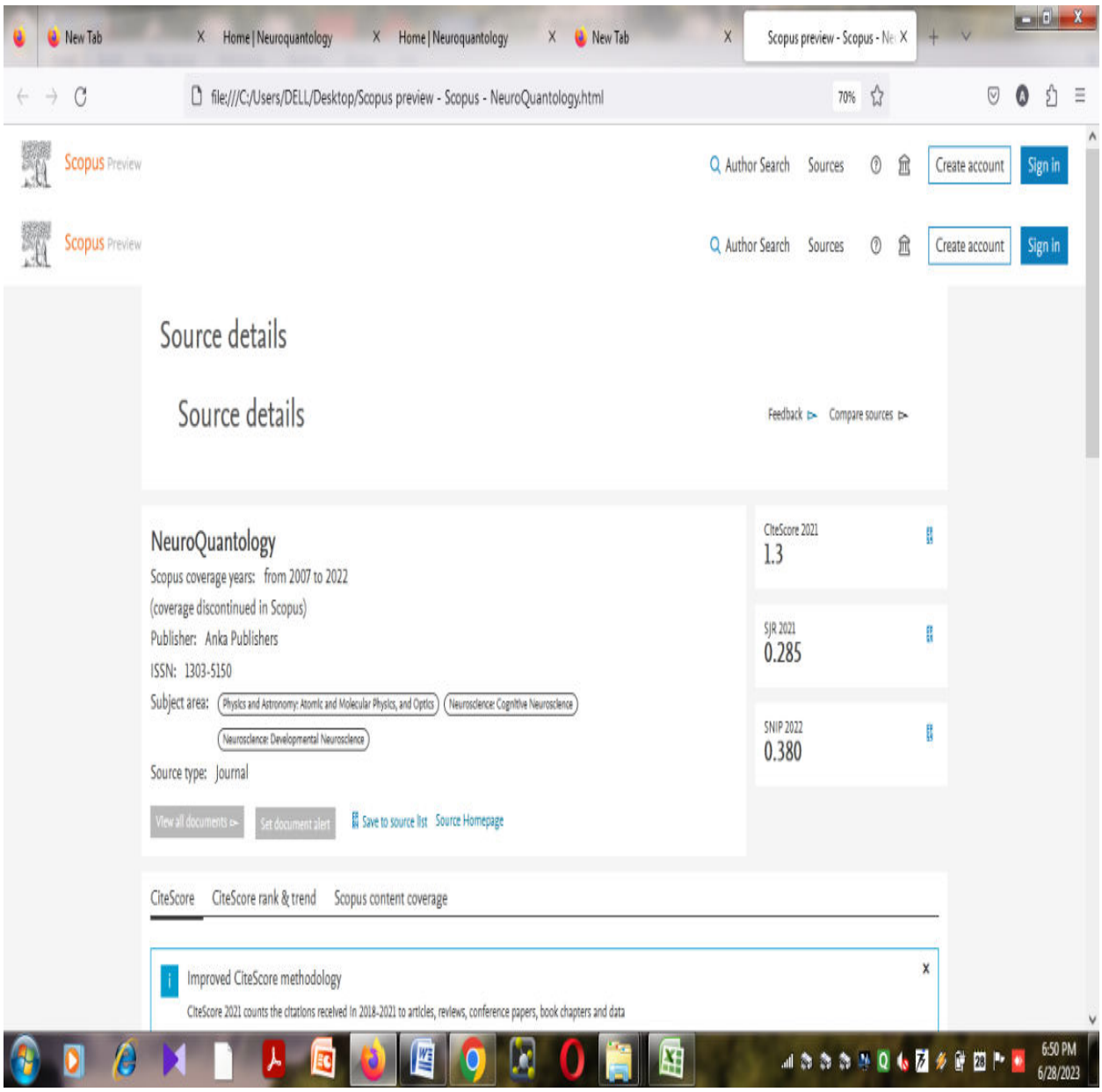

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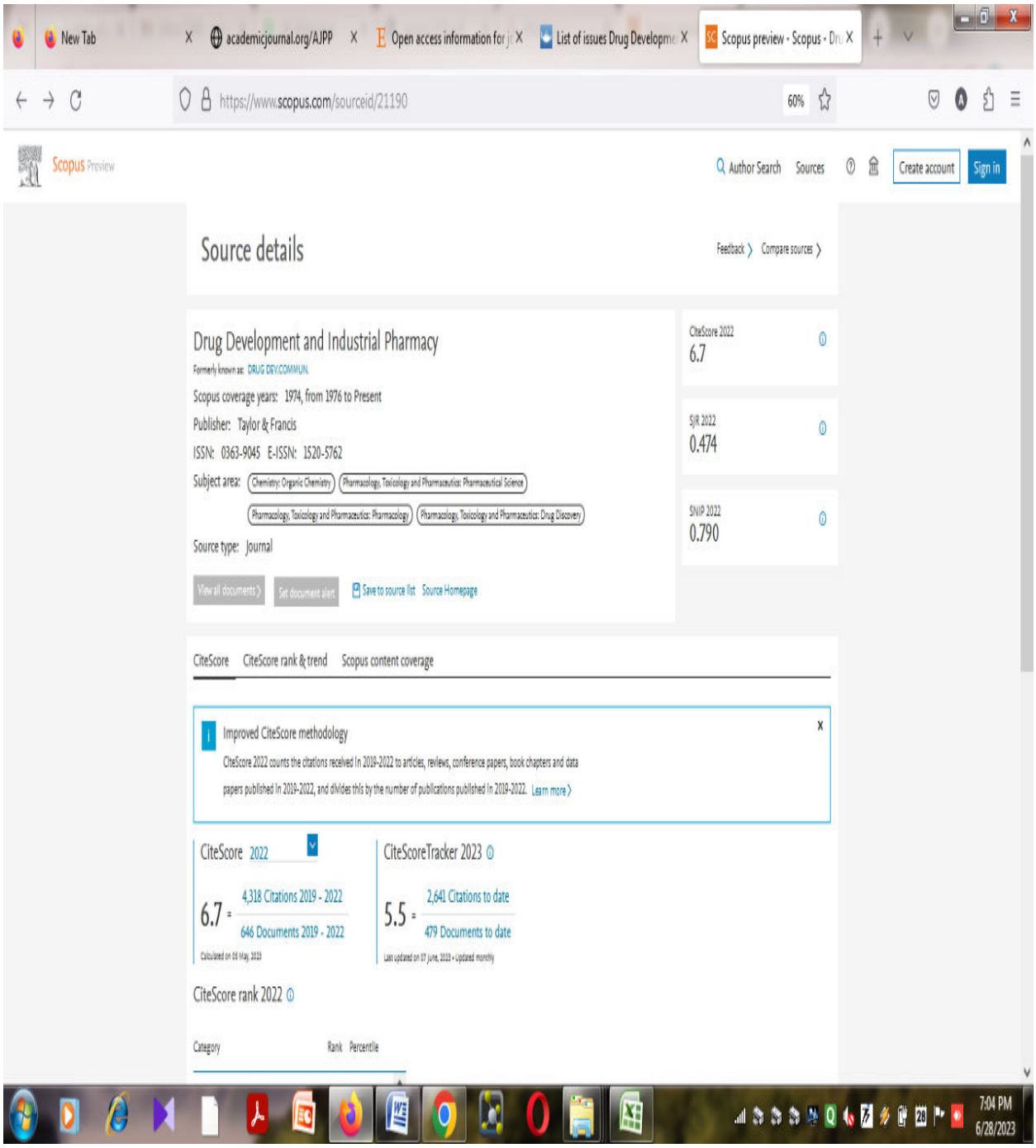
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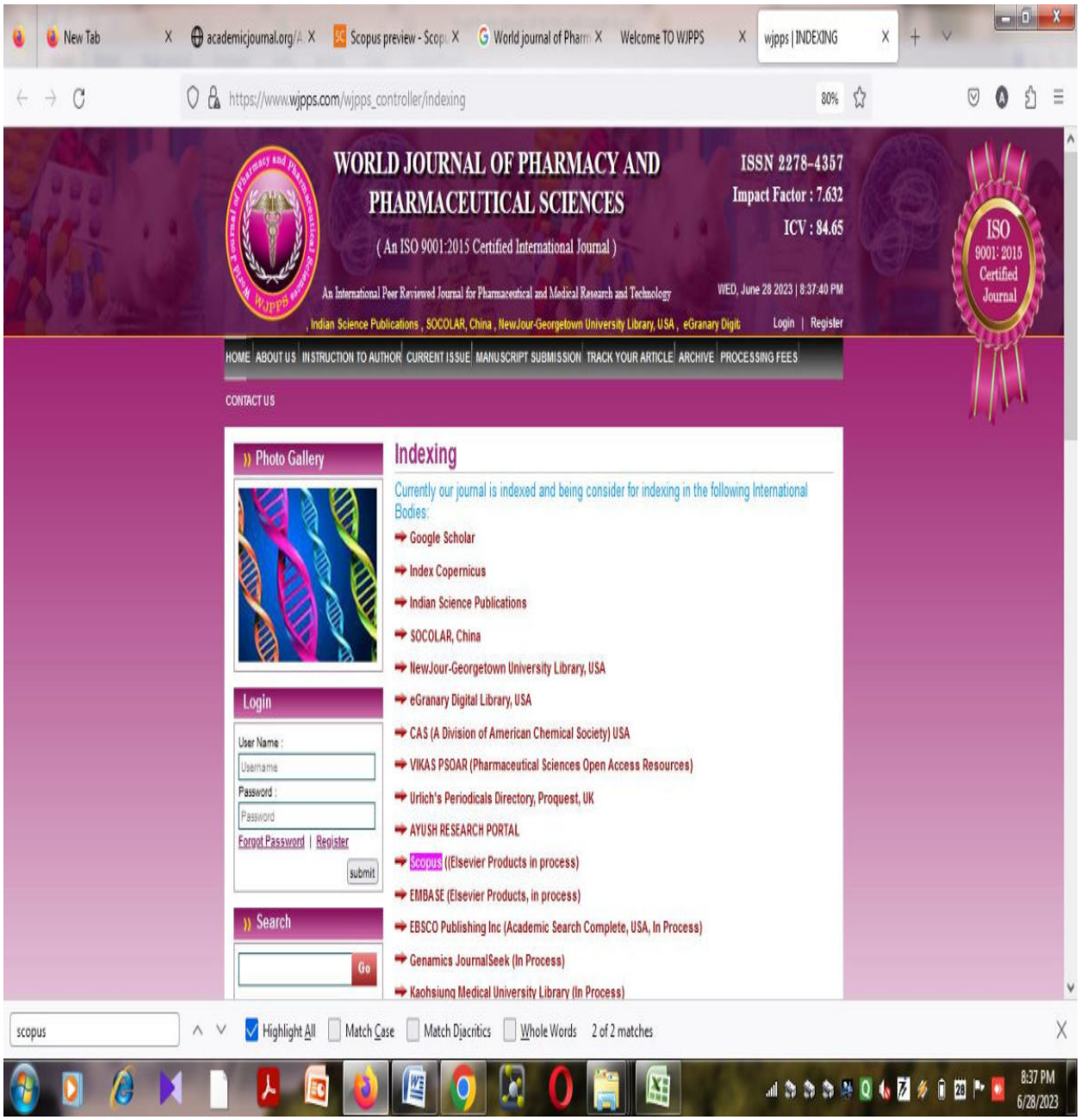
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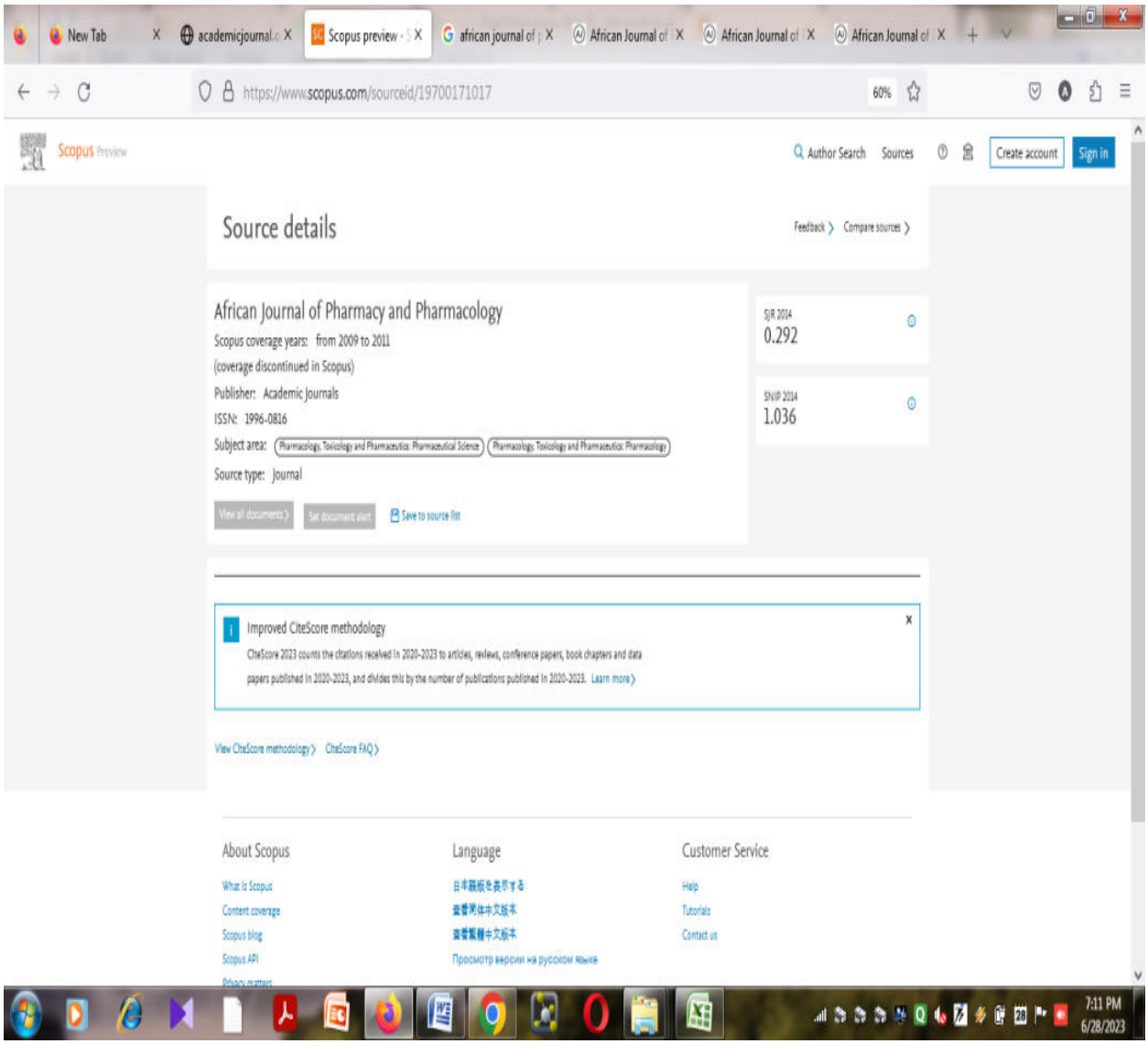
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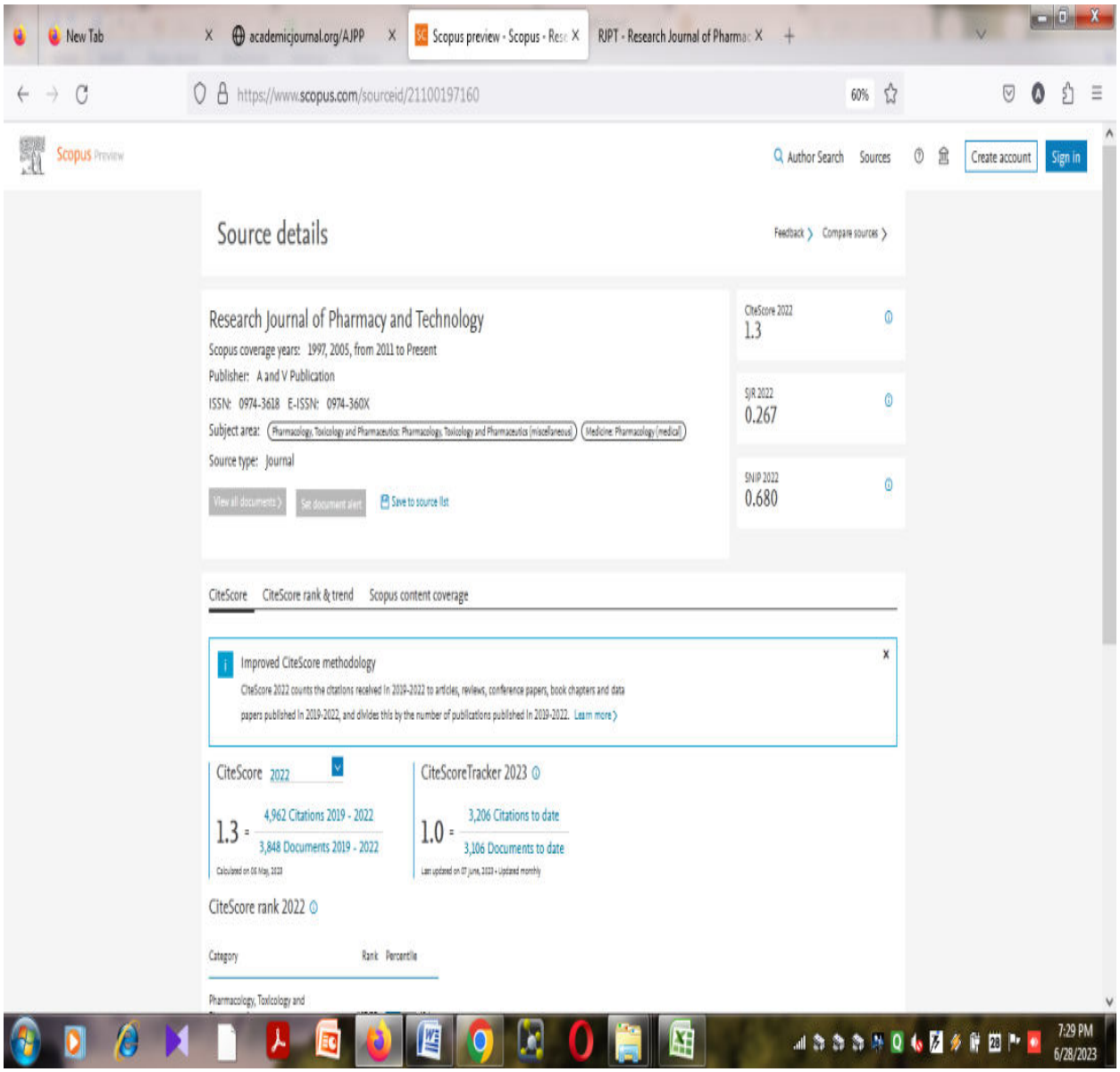
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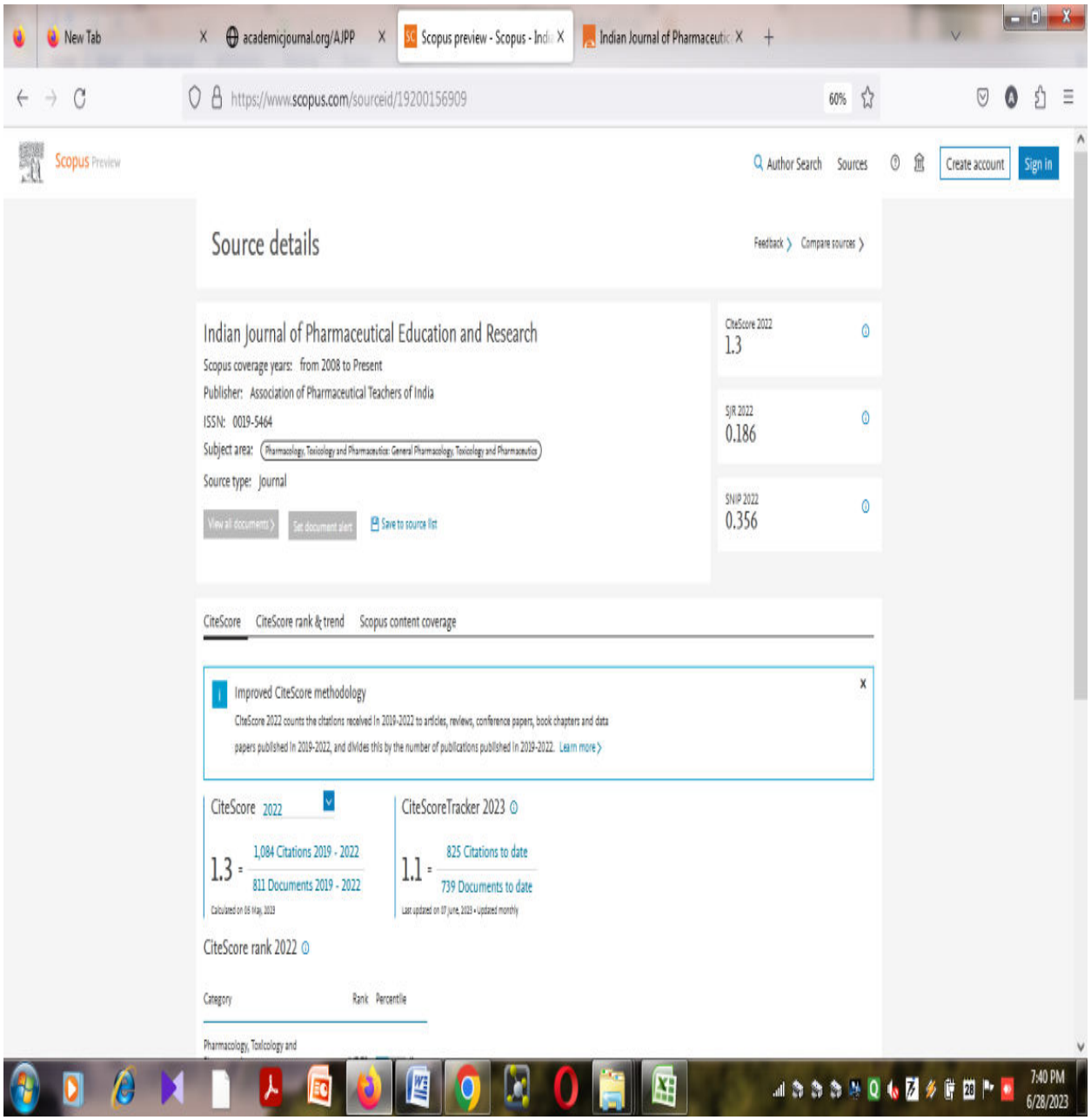
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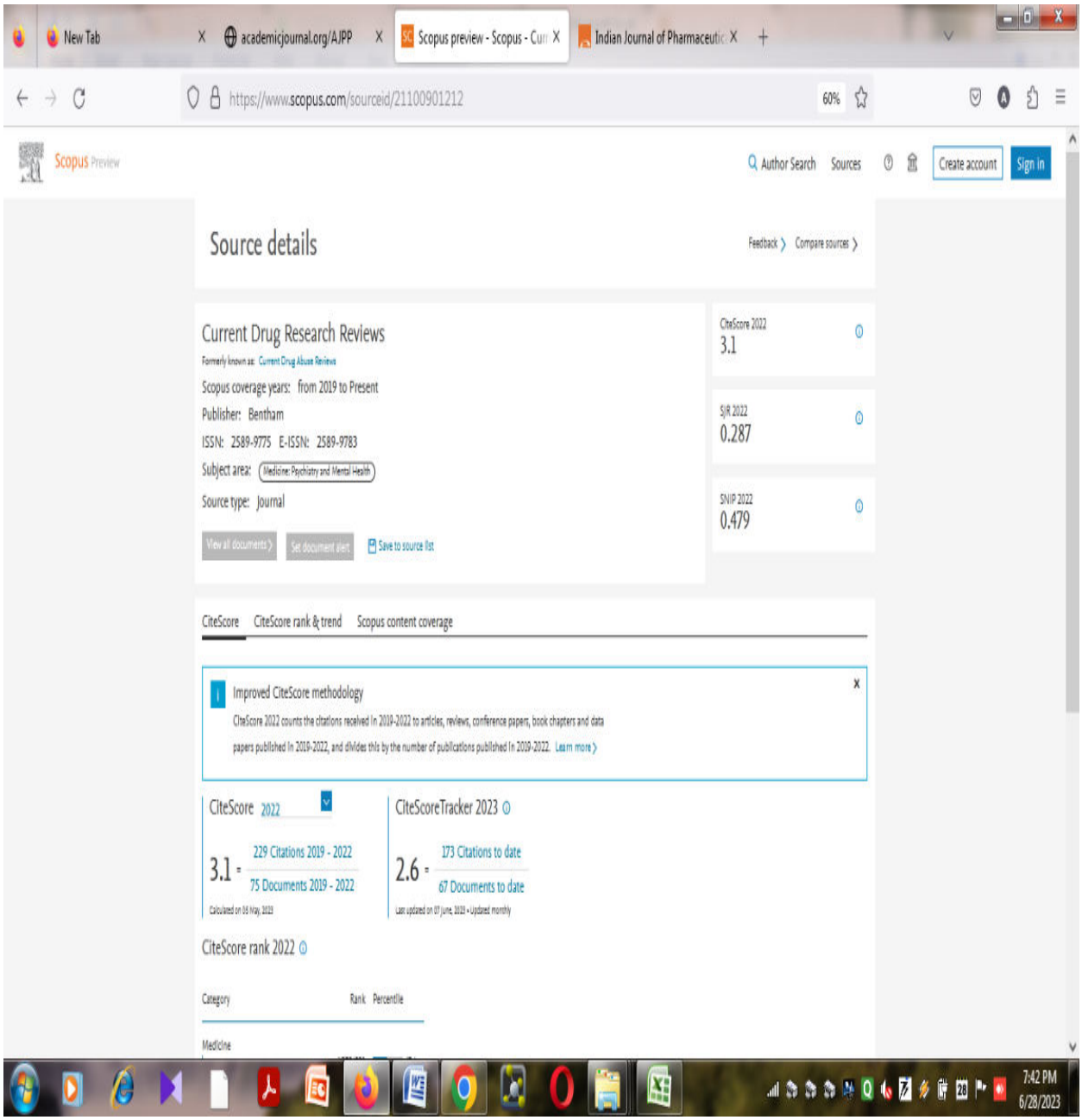
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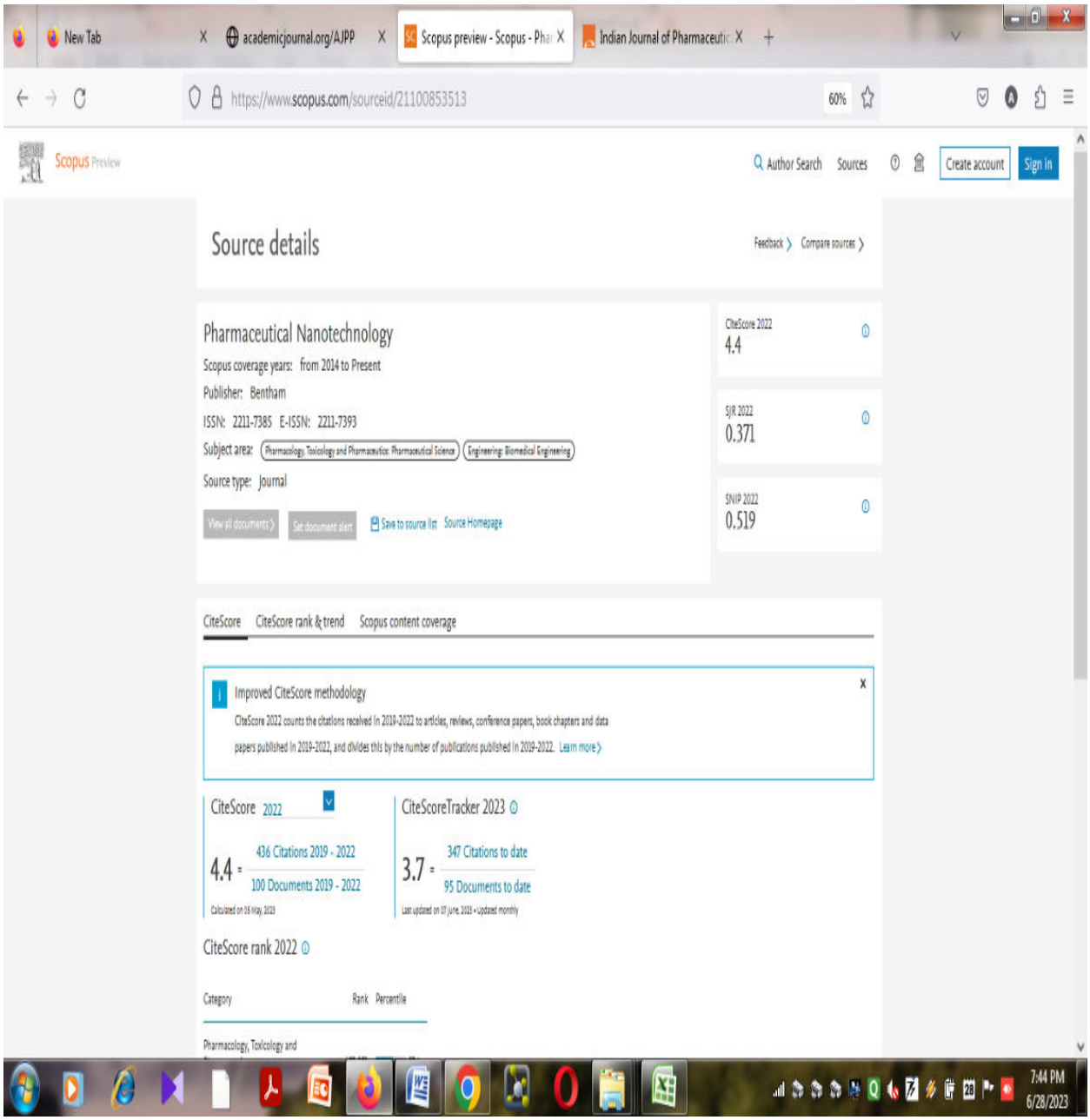
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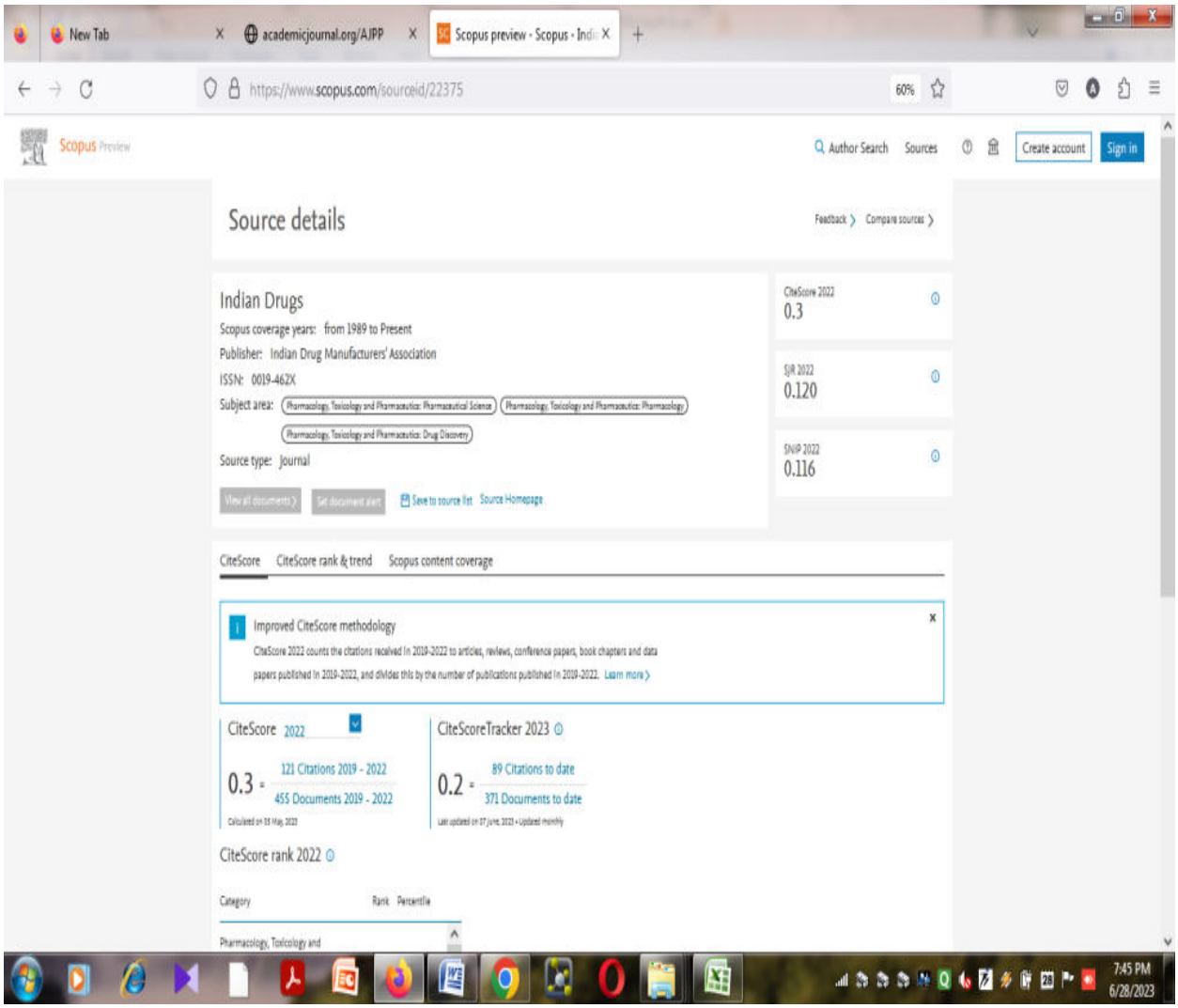

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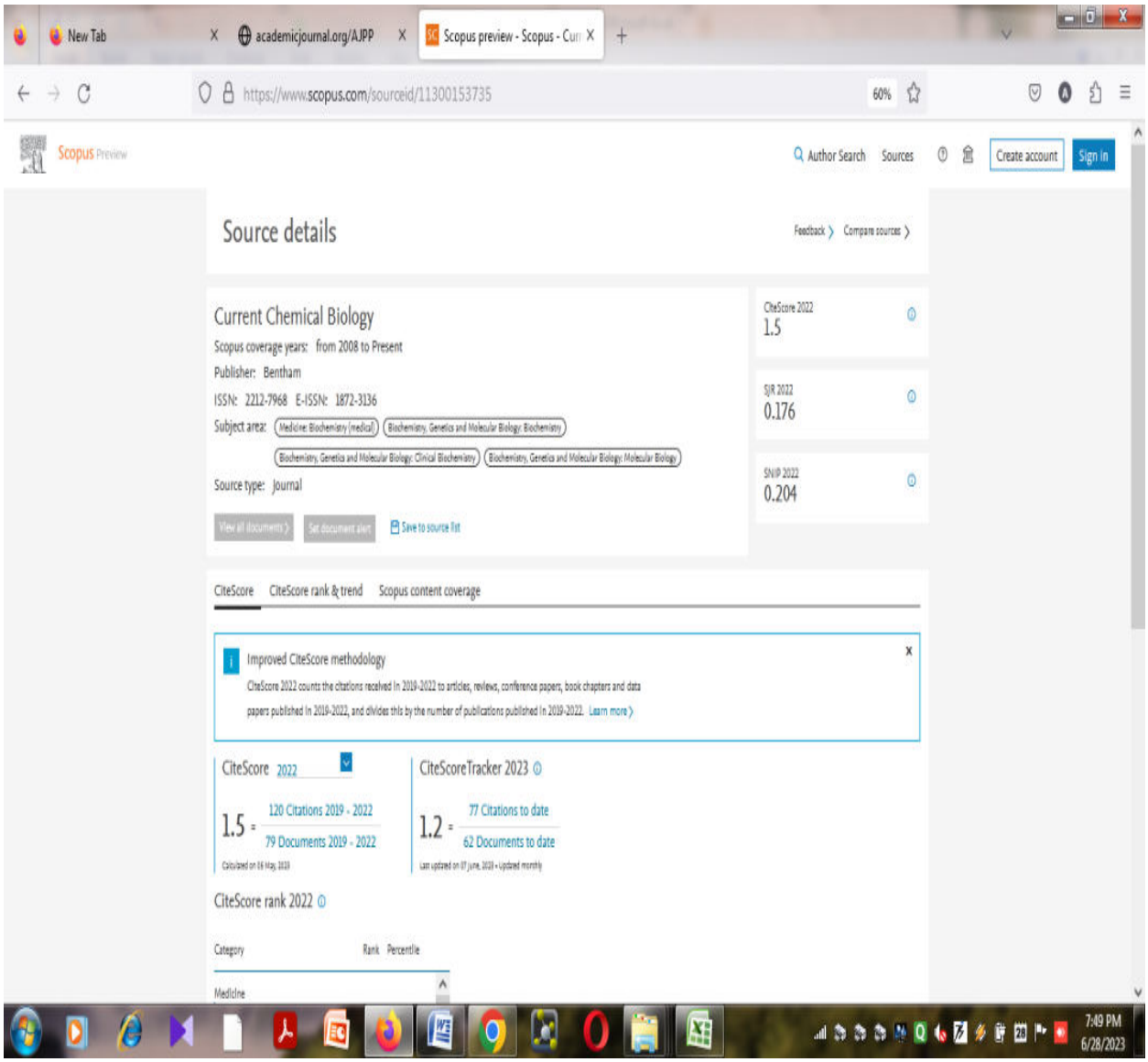
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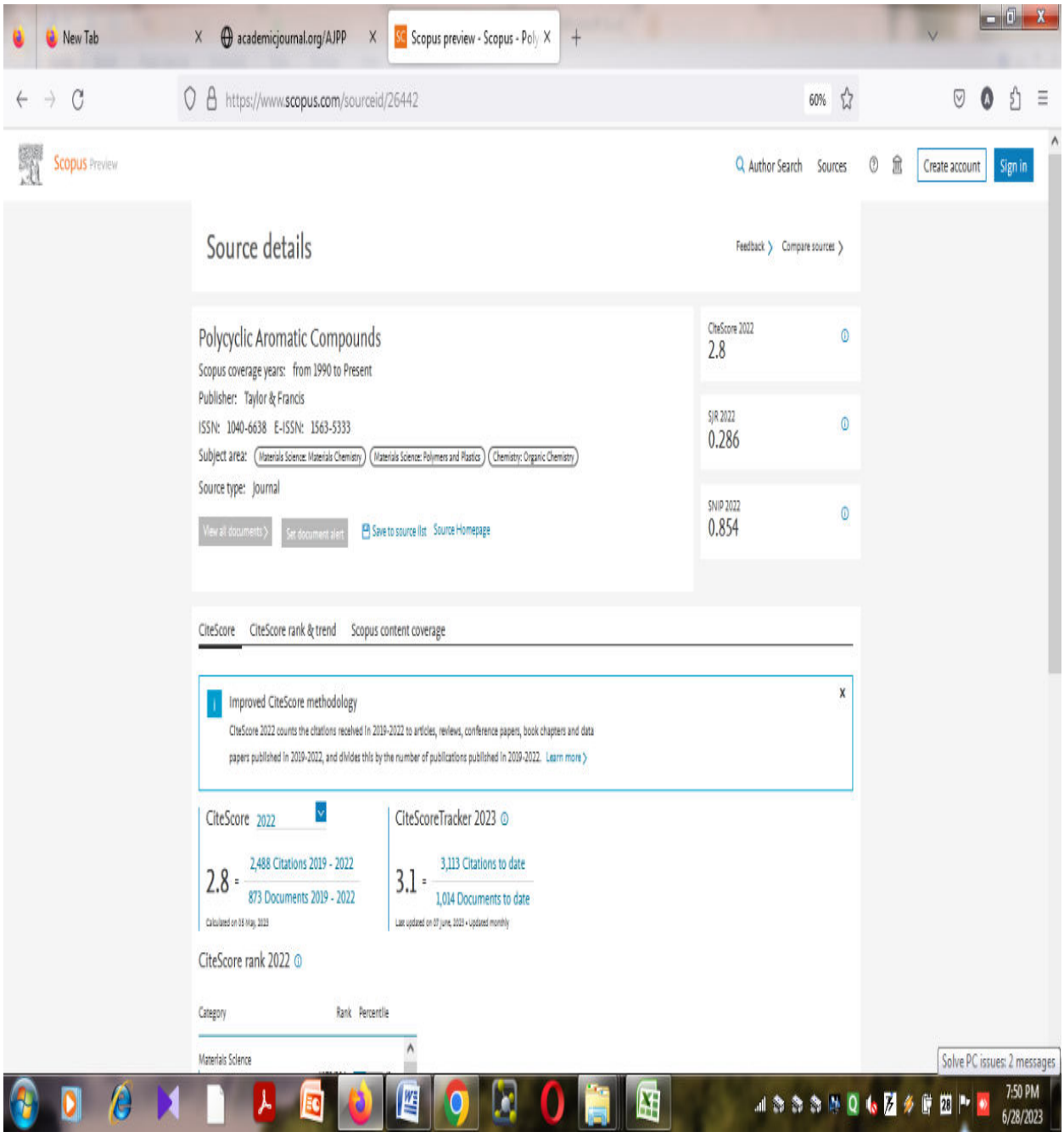
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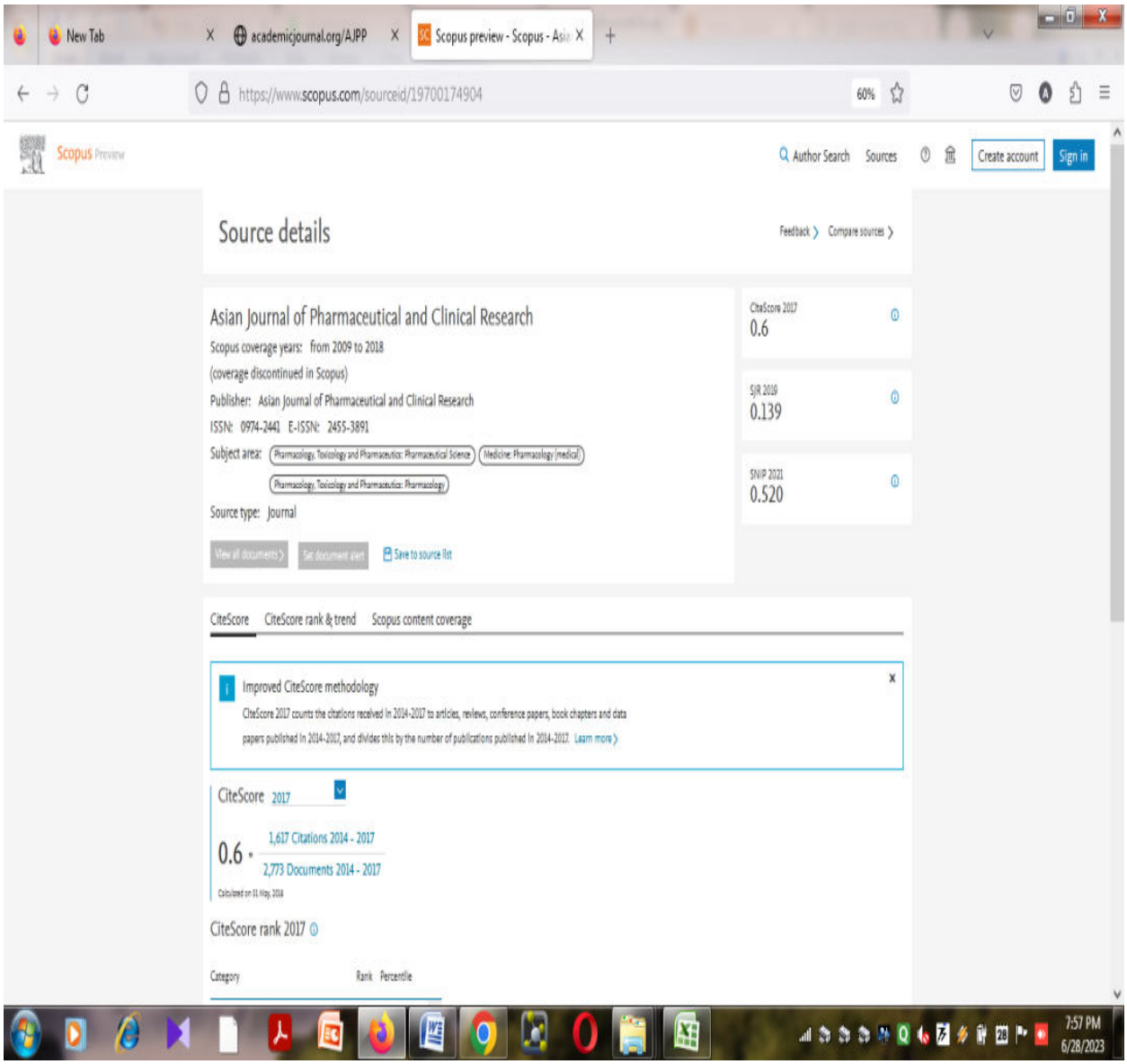
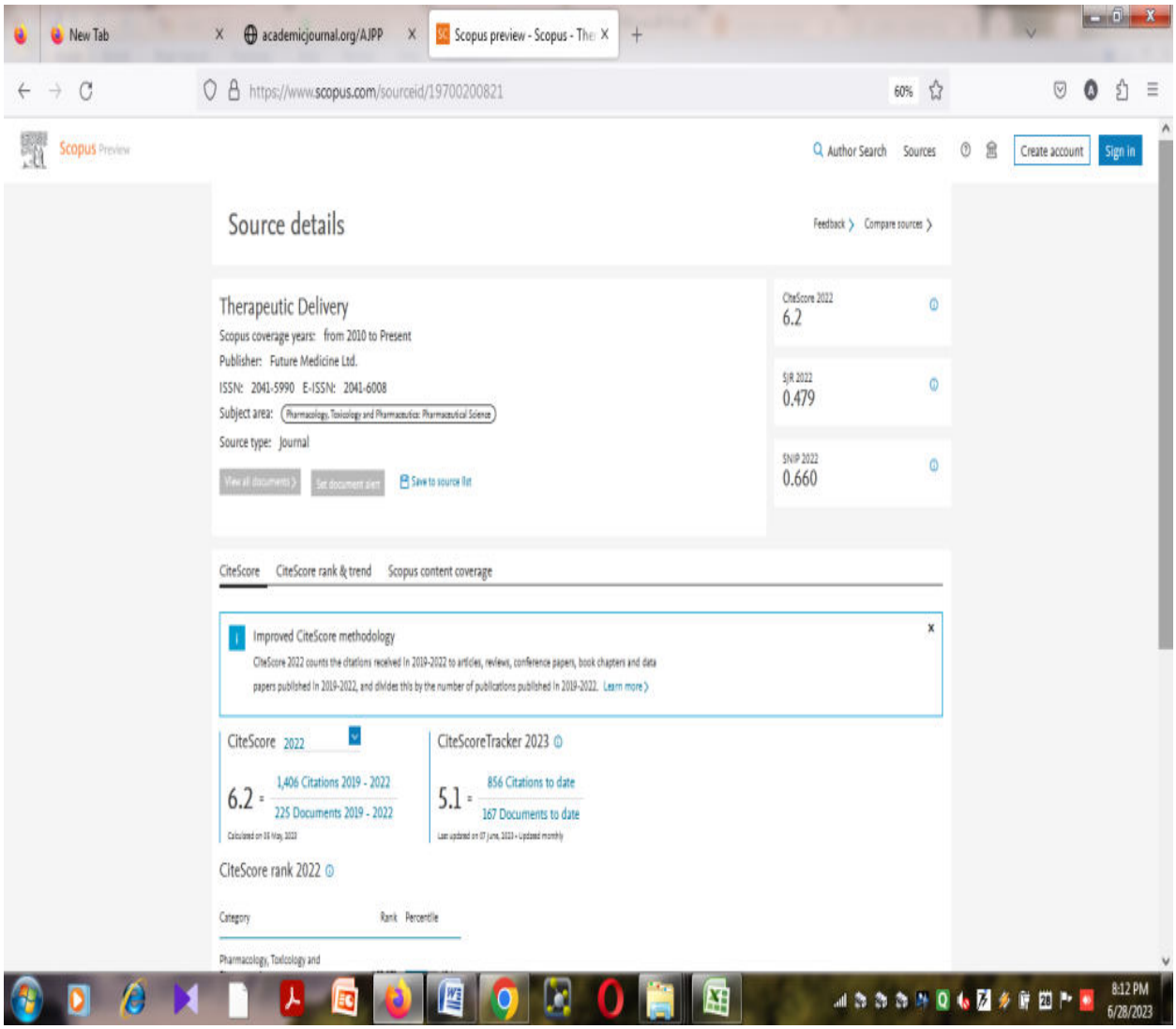
2.8 = 2,488 Citations 2019 - 2022 / 873 Documents 2019 - 2022
CiteScoreTracker 2023
3.1 = 3,113 Citations to date / 1,014 Documents to date
CiteScore rank 2022
Category
Rank
Percentile
Materials Science
Solve PC issues: 2 messages
7:50 PM
6/28/2023

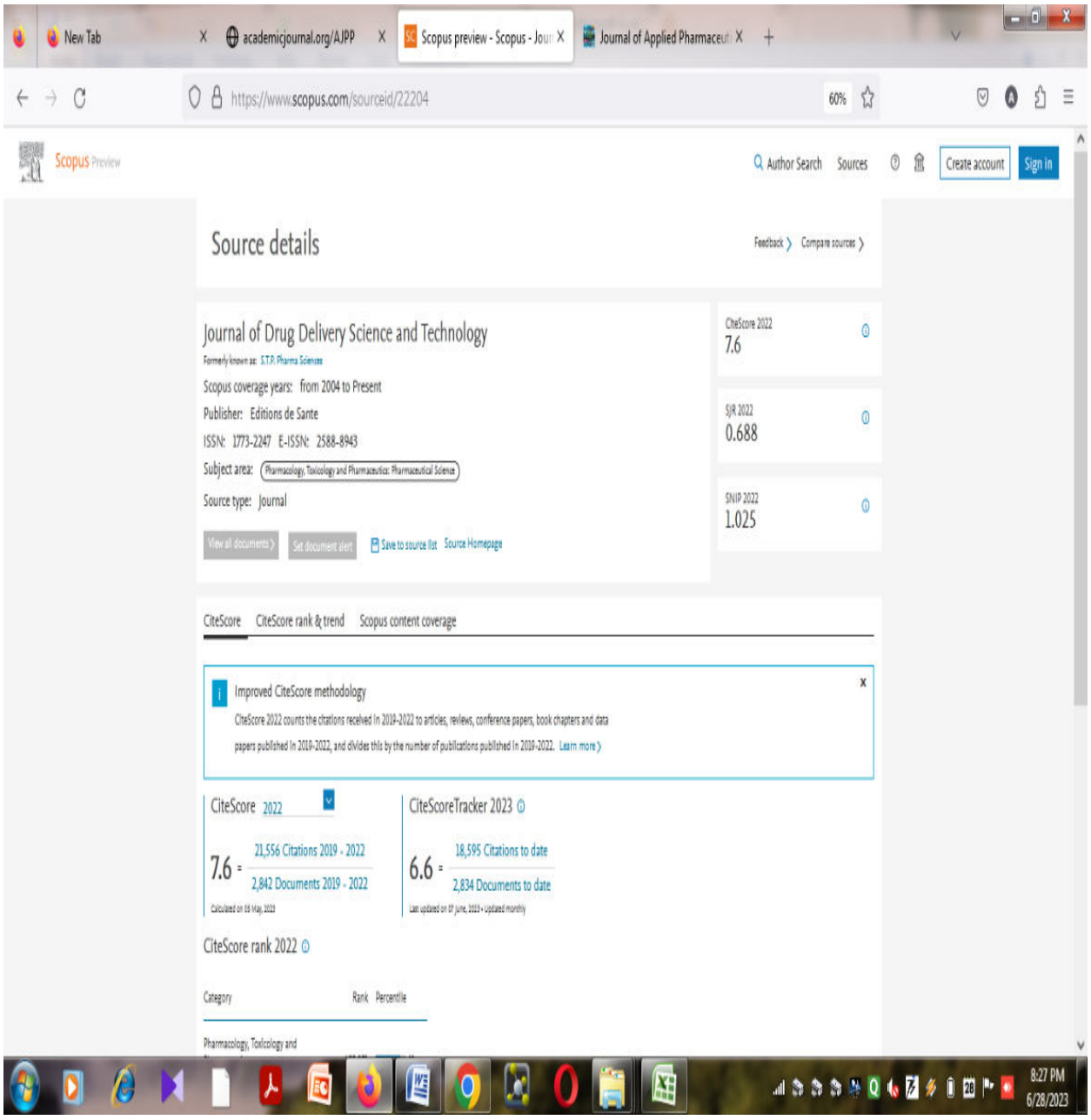
Sr. No. 32


New Tab
academicjournal.org/AJPP
Scopus preview - Scopus - Asia
https://www.scopus.com/sourceid/19700174904
60%
Scopus Preview
Author Search
Sources
Create account
Sign in
Source details
Feedback
Compare sources
Asian Journal of Pharmaceutical and Clinical Research
Scopus coverage years: from 2009 to 2018
(coverage discontinued in Scopus)
Publisher: Asian Journal of Pharmaceutical and Clinical Research
ISSN: 0974-2441 E-ISSN: 2455-3891
Subject area: Pharmacology, Toxicology and Pharmaceutics: Pharmaceutical Science
Medicine: Pharmacology (medical)
Pharmacology, Toxicology and Pharmaceutics: Pharmacology
Source type: Journal
View all documents
Set document alert
Save to source list
CiteScore 2017
0.6
SJR 2018
0.139
SNIP 2021
0.520
CiteScore
CiteScore rank & trend
Scopus content coverage
Improved CiteScore methodology
CiteScore 2017 counts the citations received in 2014-2017 to articles, reviews, conference papers, book chapters and data papers published in 2014-2017, and divides this by the number of publications published in 2014-2017. Learn more
CiteScore 2017
0.6 = 1,617 Citations 2014 - 2017 / 2,773 Documents 2014 - 2017
CiteScore rank 2017
Category
Rank
Percentile
7:57 PM
6/28/2023

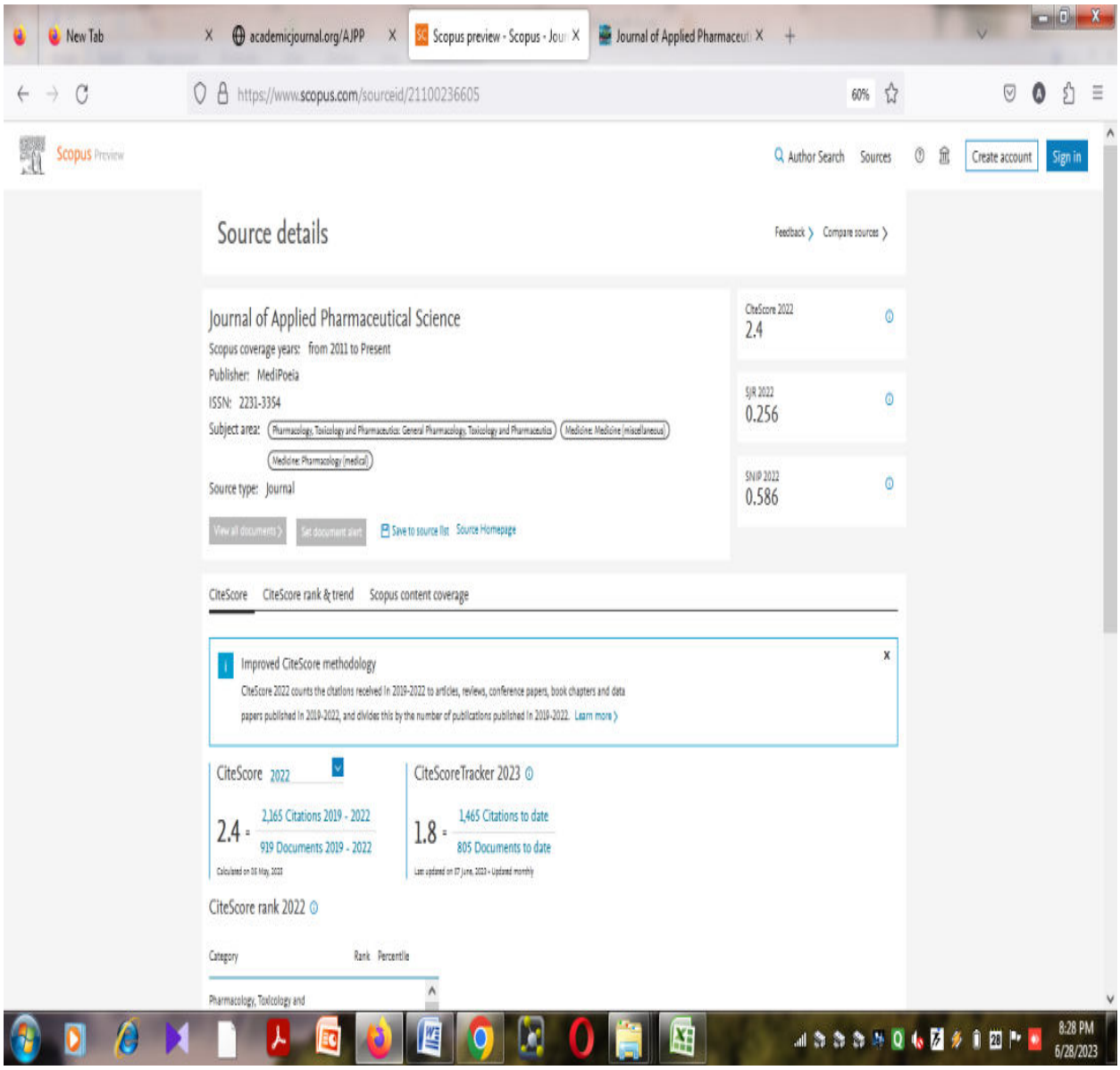
Sr. No. 36


New Tab
academicjournal.org/AJPP
Scopus preview - Scopus - The
https://www.scopus.com/sourceid/19700200821
Scopus Preview
Author Search
Sources
Create account
Sign in
Source details
Feedback
Compare sources
Therapeutic Delivery
Scopus coverage years: from 2010 to Present
Publisher: Future Medicine Ltd.
ISSN: 2041-5990 E-ISSN: 2041-6008
Subject area:
Source type: Journal
CiteScore 2022
6.2
SJR 2022
0.479
SNIP 2022
0.660
CiteScore
CiteScore rank & trend
Scopus content coverage
Improved CiteScore methodology
CiteScore 2022
6.2 = 1,406 Citations 2019 - 2022 / 225 Documents 2019 - 2022
CiteScoreTracker 2023
5.1 = 856 Citations to date / 167 Documents to date
CiteScore rank 2022
Category
Rank
Percentile
8:12 PM
6/28/2023

Sr. No. 37, 39


New Tab
academicjournal.org/AJPP
Scopus preview - Scopus - Jour
Journal of Applied Pharmaceut
https://www.scopus.com/sourceid/22204
60%
Scopus Preview
Author Search
Sources
Create account
Sign in
Source details
Feedback
Compare sources
Journal of Drug Delivery Science and Technology
Formerly known as: S.T.P. Pharma Sciences
Scopus coverage years: from 2004 to Present
Publisher: Editions de Sante
ISSN: 1773-2247 E-ISSN: 2588-8943
Subject area: Pharmacology, Toxicology and Pharmaceutics: Pharmaceutical Science
Source type: Journal
View all documents
Set document alert
Save to source list
Source Homepage
CiteScore 2022
7.6
SJR 2022
0.688
SNP 2022
1.025
CiteScore
CiteScore rank & trend
Scopus content coverage
Improved CiteScore methodology
CiteScore 2022 counts the citations received in 2018-2022 to articles, reviews, conference papers, book chapters and data papers published in 2019-2022, and divides this by the number of publications published in 2019-2022. Learn more
CiteScore 2022
7.6 = 21,556 Citations 2019 - 2022 / 2,842 Documents 2019 - 2022
Calculated on 05 May, 2023
CiteScoreTracker 2023
6.6 = 18,595 Citations to date / 2,834 Documents to date
Last updated on 07 June, 2023 • Updated monthly
CiteScore rank 2022
Category
Rank
Percentile
Pharmacology, Toxicology and
8:27 PM
6/28/2023

Sr. No. 40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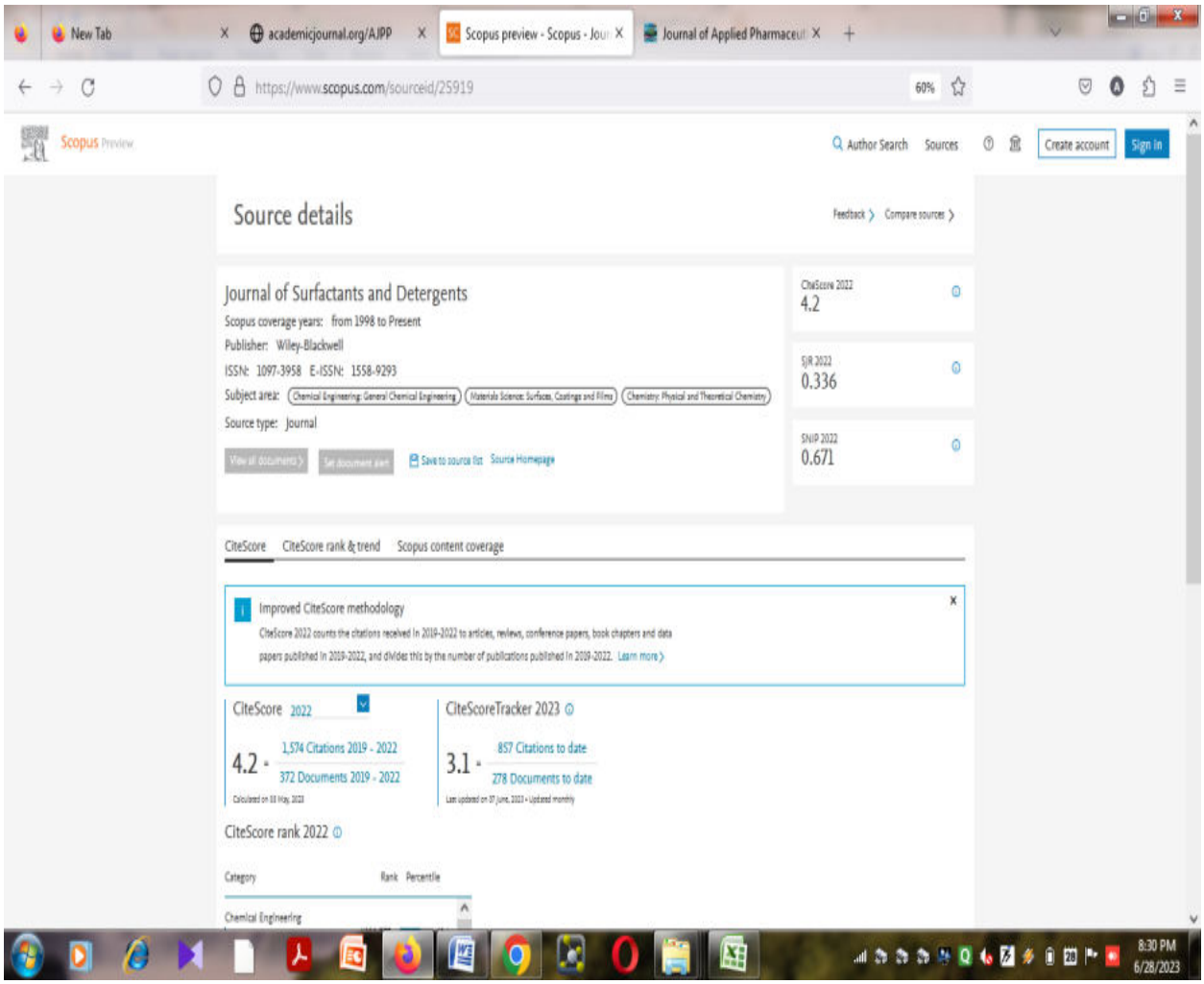
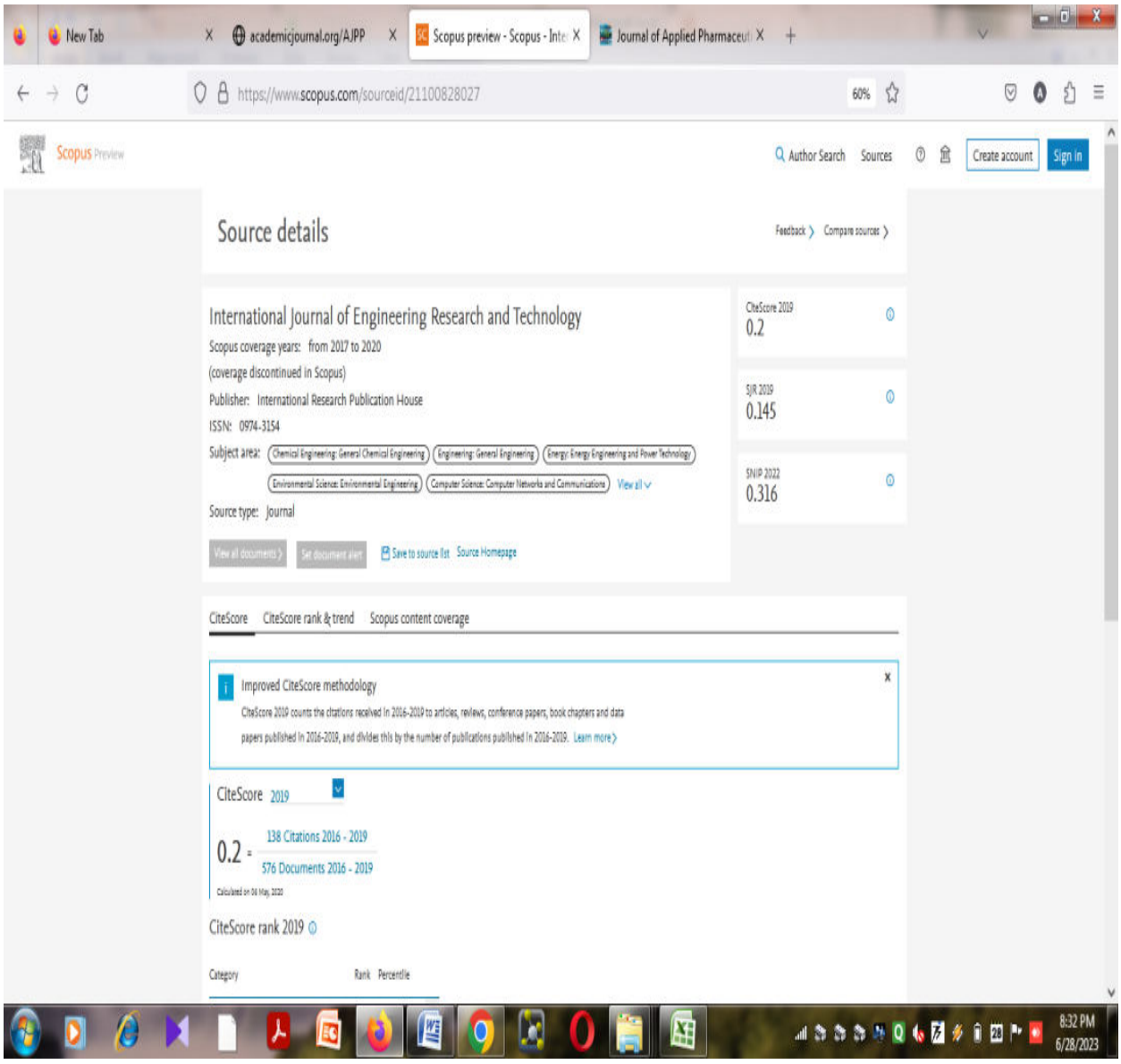
academicjournal.org/AJPP
Scopus preview - Scopus - Jour
Journal of Applied Pharmaceuti
https://www.scopus.com/sourceid/21100236605
60%
Scopus Preview
Author Search
Sources
Create account
Sign in
Source details
Feedback
Compare sources
Journal of Applied Pharmaceutical Science
Scopus coverage years: from 2011 to Present
Publisher: MediPoeia
ISSN: 2231-3354
Subject area: Pharmacology, Toxicology and Pharmaceutics: General Pharmacology, Toxicology and Pharmaceutics
Medicine: Medicine (miscellaneous)
Medicine: Pharmacology (medical)
Source type: Journal
View all documents
Set document alert
Save to source list
Source Homepage
CiteScore 2022
2.4
SJR 2022
0.256
SNIP 2022
0.586
CiteScore
CiteScore rank & trend
Scopus content coverage
Improved CiteScore methodology
CiteScore 2022 counts the citations received in 2019-2022 to articles, reviews, conference papers, book chapters and data papers published in 2019-2022, and divides this by the number of publications published in 2019-2022.
Learn more
CiteScore 2022
2.4 = 2,165 Citations 2019 - 2022 / 919 Documents 2019 - 2022
CiteScore Tracker 2023
1.8 = 1,465 Citations to date / 805 Documents to date
CiteScore rank 2022
Category
Rank
Percentile
Pharmacology, Toxicology and
8:28 PM
6/28/2023

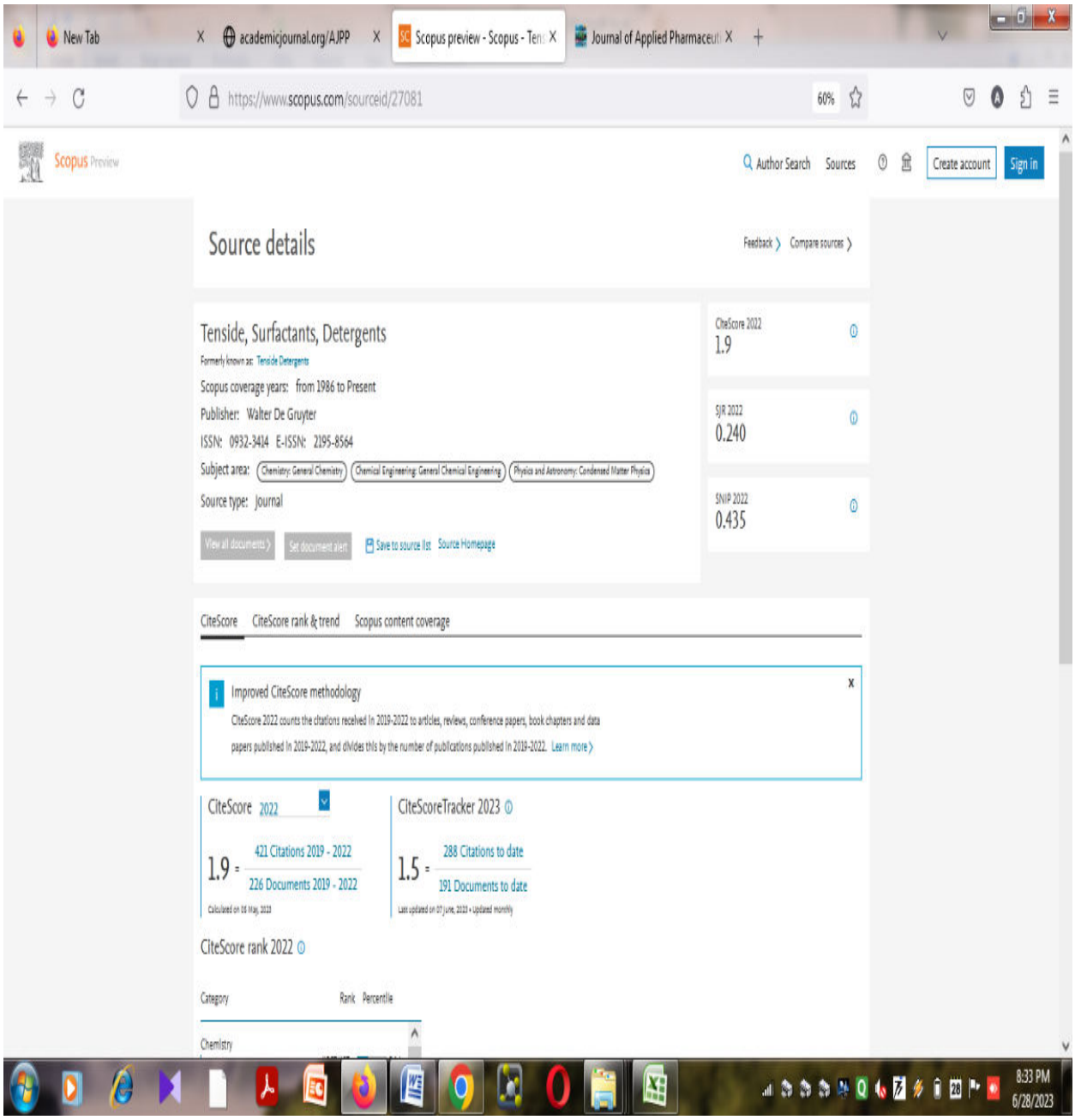
Sr. No.43



Sr. No. 53

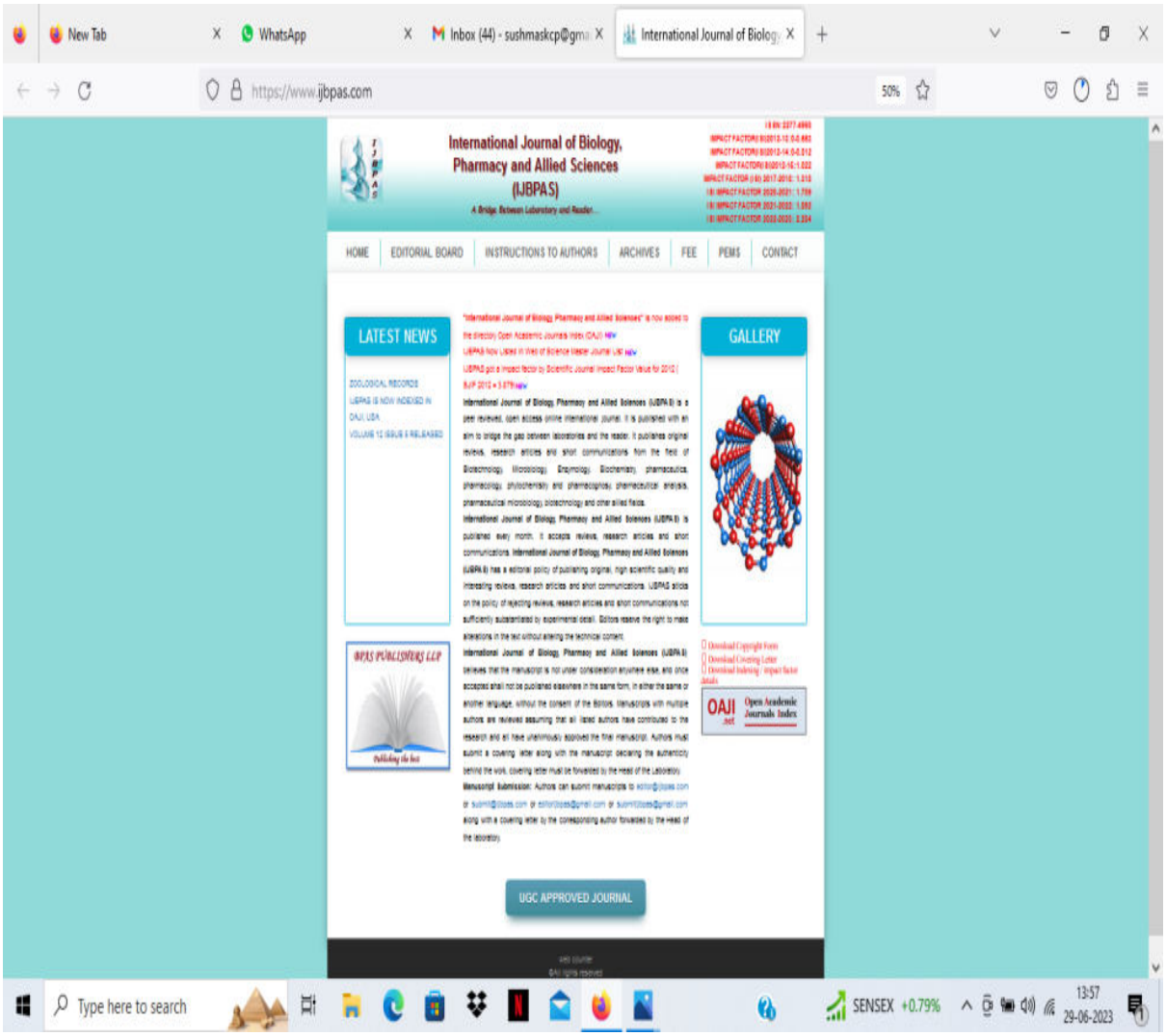

New Tab
academicjournal.org/AJPP
Scopus preview - Scopus - Inte
Journal of Applied Pharmaceut
https://www.scopus.com/sourceid/21100828027
60%
Scopus Preview
Author Search
Sources
Create account
Sign in
Source details
Feedback
Compare sources
International Journal of Engineering Research and Technology
Scopus coverage years: from 2017 to 2020
(coverage discontinued in Scopus)
Publisher: International Research Publication House
ISSN: 0974-3154
Subject area:
Chemical Engineering: General Chemical Engineering
Engineering: General Engineering
Energy: Energy Engineering and Power Technology
Environmental Science: Environmental Engineering
Computer Science: Computer Networks and Communications
View all
Source type: Journal
View all documents
Set document alert
Save to source list
Source Homepage
CiteScore 2019
0.2
SJR 2019
0.145
SNIP 2022
0.316
CiteScore
CiteScore rank & trend
Scopus content coverage
Improved CiteScore methodology
CiteScore 2019 counts the citations received in 2016-2019 to articles, reviews, conference papers, book chapters and data papers published in 2016-2019, and divides this by the number of publications published in 2016-2019. Learn more
CiteScore 2019
0.2 = 138 Citations 2016 - 2019 / 576 Documents 2016 - 2019
CiteScore rank 2019
Category
Rank
Percentile
8:32 PM
6/28/2023

Sr. No. 59

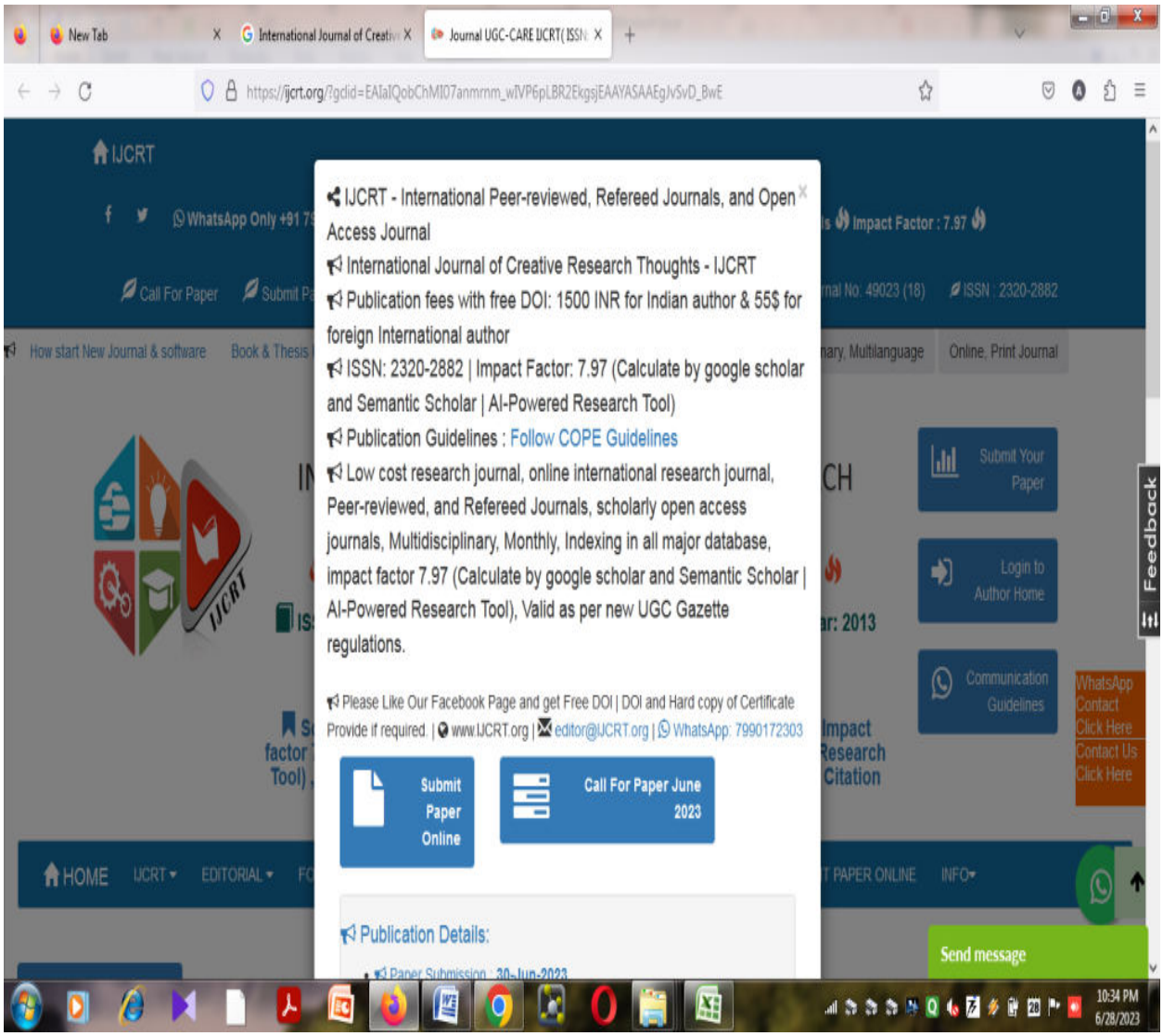

New Tab
academicjournal.org/AJPP
Scopus preview - Scopus - Ten
Journal of Applied Pharmaceuti
https://www.scopus.com/sourceid/27081
60%
Scopus Preview
Author Search
Sources
Create account
Sign in
Source details
Feedback
Compare sources
Tenside, Surfactants, Detergents
Formerly known as: Tenside Detergents
Scopus coverage years: from 1986 to Present
Publisher: Walter De Gruyter
ISSN: 0932-3414 E-ISSN: 2195-8564
Subject area: Chemistry: General Chemistry
Chemical Engineering: General Chemical Engineering
Physics and Astronomy: Condensed Matter Physics
Source type: Journal
View all documents
Set document alert
Save to source list
Source Homepage
CiteScore 2022
1.9
SJR 2022
0.240
SNIP 2022
0.435
CiteScore
CiteScore rank & trend
Scopus content coverage
Improved CiteScore methodology
CiteScore 2022 counts the citations received in 2019-2022 to articles, reviews, conference papers, book chapters and data papers published in 2019-2022, and divides this by the number of publications published in 2019-2022. Learn more
CiteScore 2022
1.9 = 421 Citations 2019 - 2022 / 226 Documents 2019 - 2022
CiteScoreTracker 2023
1.5 = 288 Citations to date / 191 Documents to date
CiteScore rank 2022
Category
Rank
Percentile
Chemistry
8:33 PM
6/28/2023

Sr. No. 64

UGC PUBLICATIONS PROOFS



Sr. No. 9 , 11


IJCRT - International Peer-reviewed, Refereed Journals, and Open Access Journal
International Journal of Creative Research Thoughts - IJCRT
Publication fees with free DOI: 1500 INR for Indian author & 55$ for foreign International author
ISSN: 2320-2882 | Impact Factor: 7.97 (Calculate by google scholar and Semantic Scholar | AI-Powered Research Tool)
Publication Guidelines : Follow COPE Guidelines
Low cost research journal, online international research journal, Peer-reviewed, and Refereed Journals, scholarly open access journals, Multidisciplinary, Monthly, Indexing in all major database, impact factor 7.97 (Calculate by google scholar and Semantic Scholar | AI-Powered Research Tool), Valid as per new UGC Gazette regulations.
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Paper Submission : 30-Jun-2023
Impact Factor : 7.97
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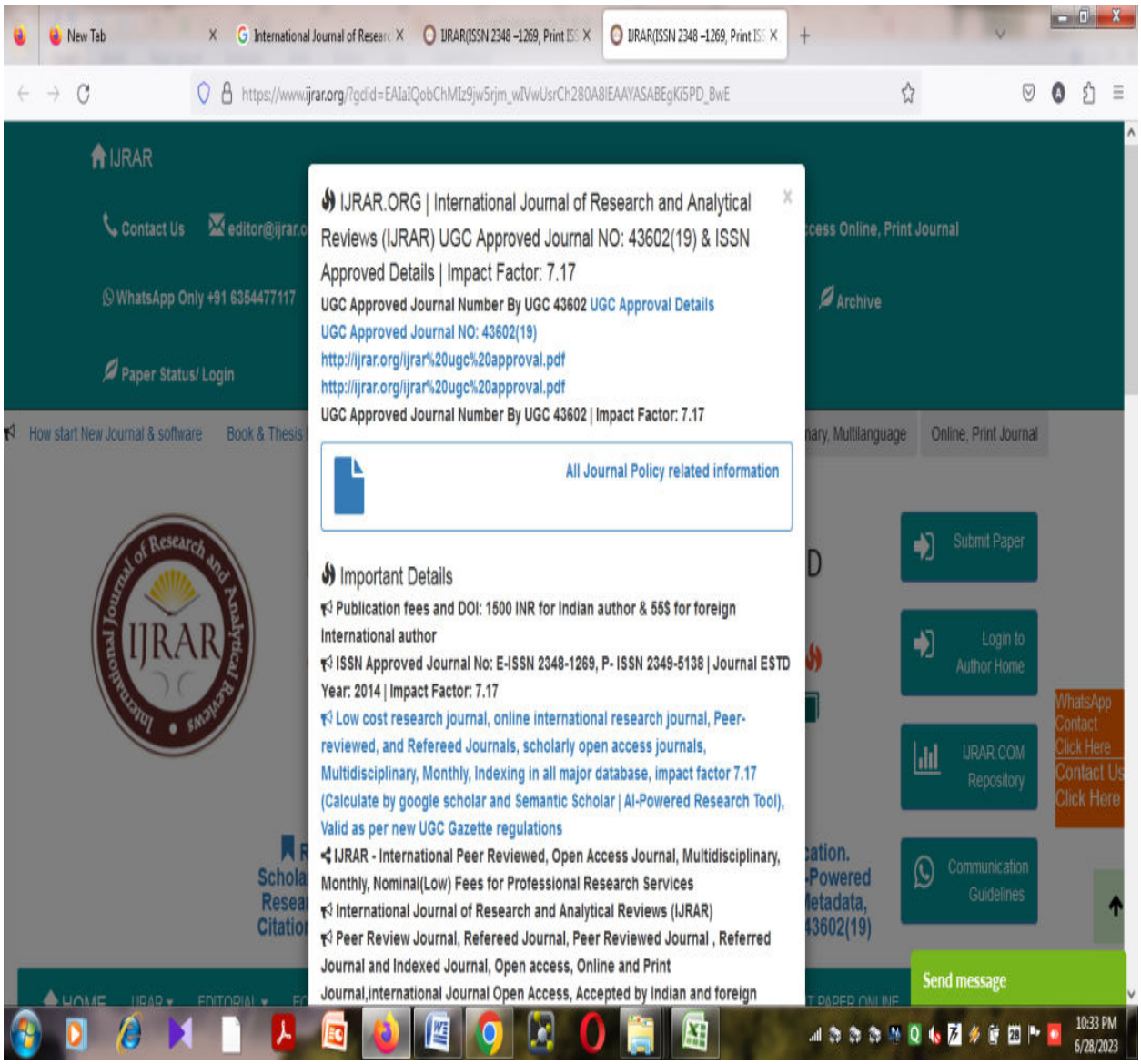
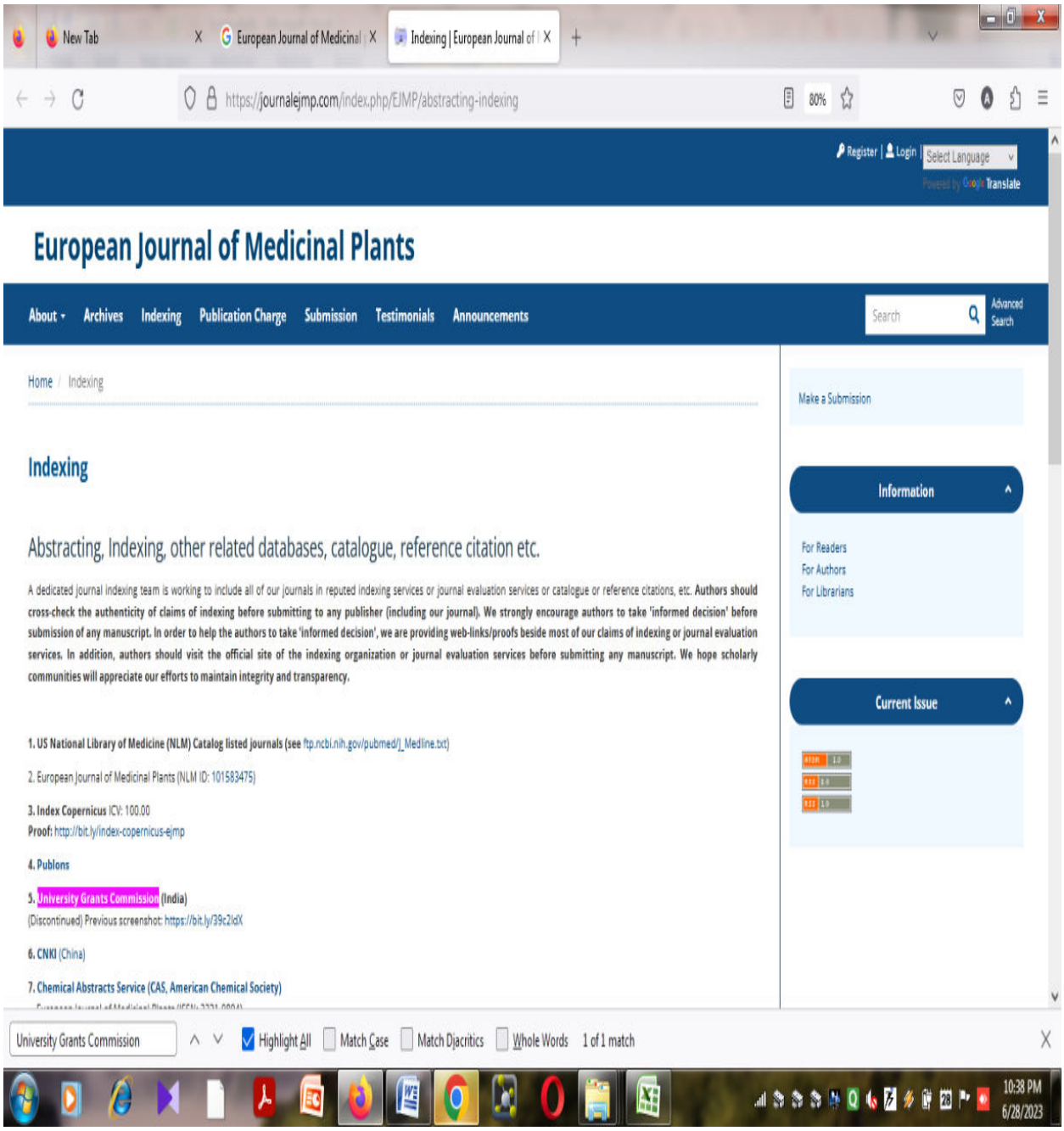
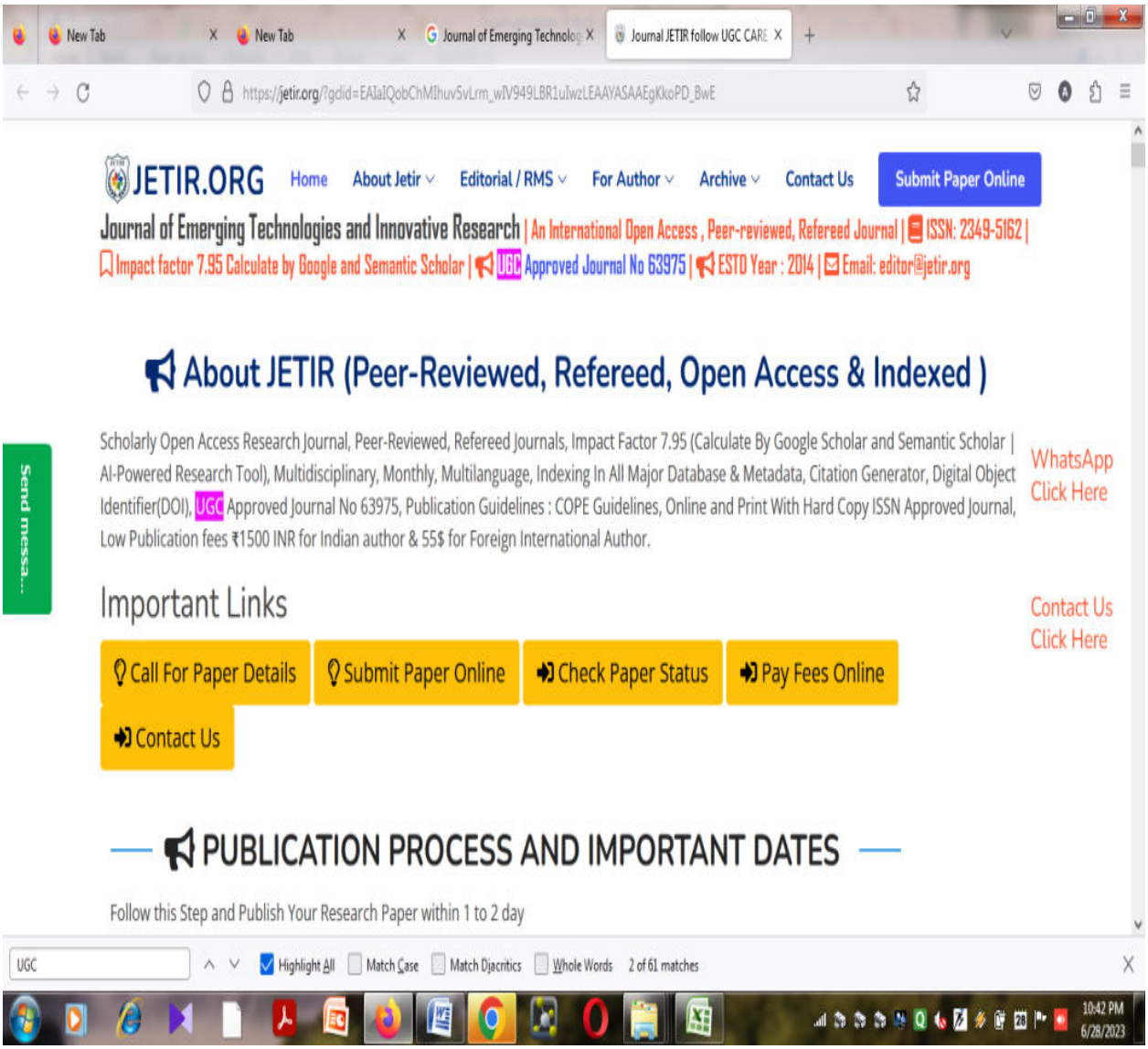
Sr. No. 16


IJRAR.ORG | International Journal of Research and Analytical Reviews (IJRAR) UGC Approved Journal NO: 43602(19) & ISSN Approved Details | Impact Factor: 7.17
UGC Approved Journal Number By UGC 43602 UGC Approval Details
UGC Approved Journal NO: 43602(19)
http://ijrar.org/ijrar%20ugc%20approval.pdf
http://ijrar.org/ijrar%20ugc%20approval.pdf
UGC Approved Journal Number By UGC 43602 | Impact Factor: 7.17
All Journal Policy related information
Important Details
Publication fees and DOI: 1500 INR for Indian author & 55$ for foreign International author
ISSN Approved Journal No: E-ISSN 2348-1269, P- ISSN 2349-5138 | Journal ESTD Year: 2014 | Impact Factor: 7.17
Low cost research journal, online international research journal, Peer-reviewed, and Refereed Journals, scholarly open access journals, Multidisciplinary, Monthly, Indexing in all major database, impact factor 7.17 (Calculate by google scholar and Semantic Scholar | AI-Powered Research Tool), Valid as per new UGC Gazette regulations
IJRAR - International Peer Reviewed, Open Access Journal, Multidisciplinary, Monthly, Nominal(Low) Fees for Professional Research Services
International Journal of Research and Analytical Reviews (IJRAR)
Peer Review Journal, Refereed Journal, Peer Reviewed Journal , Referred Journal and Indexed Journal, Open access, Online and Print Journal,international Journal Open Access, Accepted by Indian and foreign
Submit Paper
Login to Author Home
IJRAR.COM Repository
Communication Guidelines
Send message

Sr. No. 17


New Tab
European Journal of Medicinal
Indexing | European Journal of
https://journalejmp.com/index.php/EJMP/abstracting-indexing
Register | Login
Select Language
Translate
European Journal of Medicinal Plants
About
Archives
Indexing
Publication Charge
Submission
Testimonials
Announcements
Search
Advanced Search
Home / Indexing
Indexing
Abstracting, Indexing, other related databases, catalogue, reference citation etc.
A dedicated journal indexing team is working to include all of our journals in reputed indexing services or journal evaluation services or catalogue or reference citations, etc. Authors should cross-check the authenticity of claims of indexing before submitting to any publisher (including our journal). We strongly encourage authors to take 'informed decision' before submission of any manuscript. In order to help the authors to take 'informed decision', we are providing web-links/proofs beside most of our claims of indexing or journal evaluation services. In addition, authors should visit the official site of the indexing organization or journal evaluation services before submitting any manuscript. We hope scholarly communities will appreciate our efforts to maintain integrity and transparency.
1. US National Library of Medicine (NLM) Catalog listed journals (see ftp.ncbi.nih.gov/pubmed/J_Medline.txt)
2. European Journal of Medicinal Plants (NLM ID: 101583475)
3. Index Copernicus ICV: 100.00
Proof: http://bit.ly/index-copernicus-ejmp
4. Publons
5. University Grants Commission (India)
(Discontinued) Previous screenshot: https://bit.ly/39c2ldX
6. CNKI (China)
7. Chemical Abstracts Service (CAS, American Chemical Society)
Make a Submission
Information
For Readers
For Authors
For Librarians
Current Issue
University Grants Commission
Highlight All
Match Case
Match Diacritics
Whole Words
1 of 1 match
10:38 PM
6/28/2023

Sr. No. 21


New Tab
Journal of Emerging Technolog
Journal JETIR follow UGC CARE
https://jetir.org/?gclid=EAIaIQobChMIhuvSvLrm_wIV949LBR1uIwzLEAAYASAAEgKkoPD_BwE
JETIR.ORG
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About Jetir
Editorial / RMS
For Author
Archive
Contact Us
Submit Paper Online
Journal of Emerging Technologies and Innovative Research | An International Open Access , Peer-reviewed, Refereed Journal | ISSN: 2349-5162 |
Impact factor 7.95 Calculate by Google and Semantic Scholar | UGC Approved Journal No 63975 | ESTD Year : 2014 | Email: editor@jetir.org
About JETIR (Peer-Reviewed, Refereed, Open Access & Indexed)
Scholarly Open Access Research Journal, Peer-Reviewed, Refereed Journals, Impact Factor 7.95 (Calculate By Google Scholar and Semantic Scholar | AI-Powered Research Tool), Multidisciplinary, Monthly, Multilanguage, Indexing In All Major Database & Metadata, Citation Generator, Digital Object Identifier(DOI), UGC Approved Journal No 63975, Publication Guidelines : COPE Guidelines, Online and Print With Hard Copy ISSN Approved Journal, Low Publication fees ₹1500 INR for Indian author & 55$ for Foreign International Author.
WhatsApp Click Here
Contact Us Click Here
Important Links
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Submit Paper Online
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PUBLICATION PROCESS AND IMPORTANT DATES
Follow this Step and Publish Your Research Paper within 1 to 2 day
UGC
Highlight All
Match Case
Match Diacritics
Whole Words
2 of 61 matches
10:42 PM
6/28/2023

Sr. No. 42

3.3.1 Number of research papers published per teacher in the journals notified on UGC / SCOPUS care list during the last five years

LIST OF RESEARCH PAPERS PUBLISHED

Sr. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Volume (Issue)	Page No.	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi)		
									Link to website of the Journal	Link to article/paper/abstract of the article	Is it listed in UGC Care list/Scopus/Web of Science/other, mention
2022-23											
1	Insilico pharmacokinetics and docking analysis of active biolmolecules from 5-amino-salicylic acid against cycline dependant kinase II	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Neuroquantology	2022	1303-5150	20 (9)	364 to 376	www.neuroquantology.com	https://www.neuroquantology.com/data-cms/articles/20220819073111pmNQ440037.pdf	Scopus
2	Synthesis, characterization and in vitro anticancer evaluation of novel Quinoline - 3 -carboxamide derivatives as inhibitors of PDGFR	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Neuroquantology	2022	1303-5150	20 (8)	7967 to 7980	www.neuroquantalogy.com	https://www.neuroquantology.com/open-access/Synthesis%252C+Characterization+and+in+vitro++Anticancer+Evaluation+of+Novel+Quinoline-3-+Carboxamide+Derivatives+as+Inhibitors+of++PDGFR_4065/	Scopus
3	Syntheis and spectral analysis of some novel 5-amino salisylic acid derivatives and their insilico ADMET studies	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Neuroquantology	2022	1303-5150	20 (9)	3936 to 3944	www.neuroquantalogy.com	https://www.neuroquantology.com/open-access/Synthesis+and+Spectral+analysis+of+some+novel+5-Amino%2502Salicylic+Acid+derivatives+and+their+In-silico+ADMET+studies_5662/	Scopus
4	Isolation, Phytochemical Studies and Evaluation Of Caesalpinia pulcherrima Mucilage as a Potant Superdisintegrant	Choundikar M. Y	Pharmaceutical Chemistry	Research & Reviews in Pharmacy and Pharmaceutical Sciences (JPPS)	2022	2320-1215	11 (6)	45261	https://www.rroij.com/pharmacy-and-pharmaceutical-sciences.php	https://www.rroij.com/open-access/isolation-phytochemical-studies-and-evaluation-of-emcaesalpinia-pulcherrimaem-mucilage-as-a-potant-superdisintegrant.php?aid=91739	Peer-reviewed journal
5	Concurrent oral delivery of non-oncology drugs through solid self-emulsifying system for repurposing in hepatocellular carcinoma	Mr. Rameshwar Ardad	Pharmacognosy	Drug Development and Industrial Pharmacy (Taylor & Francis)	2022	Print ISSN: 0363-9045 Online ISSN: 1520-5762	49 (5)	1 to 15	https://www.tandfonline.com/loi/iddi20	https://www.tandfonline.com/doi/full/10.1080/03639045.2023.2216785	Scopus
6	Impurity profile study of Aspirin in bulk and tablet dosage form	Mr. Nilesh Jangade	Pharmaceutical Chemistry	Journal of Pharmaceutical negative results	2022	ISSN: Print - 0976-9234, Online - 2229-7723	13 (6)	2457 to 2466	https://www.pnrjournal.com/index.php/home/about	https://www.pnrjournal.com/index.php/home/article/view/2235/1923	Web of Science, Index Copernicus, Schimago journal ranking, Google Scholar, Hinari, Infotrieve, National Science Library

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Signed by: Sidharth Patil
Reason: NAAC
Location: Kasabe Digraj
Date: 30-Jun-2023 (04:04 PM)

7	In silico Identification of novel Quinoline 3 Carboxamide derivatives targeting platelet derived growth factor receptor	Dr. Ajit V. Dale	Pharmaceutical Chemistry	Bentham Science	2022	1875-6301 (Online) 1573-3947 (Print)	18 (2)	131 to 142	www.benthamscience.net	https://www.ingentaconnect.com/content/ben/cctr/2022/00000018/00000002/art00008	EBSCO,,INDEX COPERNICUS,GOOGLE SCHOLAR,WEB OF SCIENCE,PUBMED
8	Covid 19 vaccines	Ms. Archana Vanjari	Pharmacology	International journal of Pharmacy and Pharmaceutical research	2022	2349-7203	25 (2)	245 to 270	www.ijppr.humanjournals.com	www.ijppr.humanjournals.com	Google Scholar, Index Copernicus, Pubmed, CAS
2021-22											
9	Theorotical Exploration on development of Prostatitis Inflammatory Model in drug discovery	Dr. Sandeep B. Patil	Pharmacology	International journal of biology, Pharmacy and allied science	2022	2277-4998	11 (4)	1538 to 1550	https://www.ijbpas.com/	https://ijbpas.com/archive/archive-single-pdf/4929	UGC
10	Folic Acid Conjugated Nanosystems: A Systematic Review	Dr. Sandeep B. Patil	Pharmacology	World journal of Pharmcy and Pharmaceutical science	2022	2278-4357	11 (5)	117	https://www.wjpps.com/	https://www.omicsonline.org/open-access/folic-acid-conjugated-nano-systems-a-systematic-review-120504.html?view=mobile	Scopus
11	Optimization of goat Intestinal Permeability of BERBERINE CHLORIDE in presence of natural Bioenhancer Piperine using 32 full factorial design	Dr. Sarika Narade	Pharmaceutical Chemistry	International journal of biology, Pharmacy and allied science	2022	2277-4998	11 (10)	4758-4778	https://www.ijbpas.com/	https://ijbpas.com/archive/archive-single-	UGC
12	Formulation of silver nanoparticle of cassia angustifolia by using green synthesis method and screening for invitro antiinflammatory activity	Mrs. Anuja Masule/ Priyanka Patil	Pharmaceutical Chemistry	Indoglobal journal of Pharmaceutical sciences	2022	2249-1023	12	183 to 188	http://iglobaljournal.com	file:///C:/Users/HP/Downloads/Manuscript.pdf	Google scholar, Index copernicus
13	Formulation and characterization of a self nano emulsifying drug delivery system with Paclitaxel for improved oral absorption	Mr. Rameshwar Ardad	Pharmacognosy	Advances in bioresearch	2022	2277-1573 Online 0976-4585 Print	13 (3)	26 to 32	https://soeagra.com/abr.html	https://soeagra.com/abr/abrmay2022/5.pdf	Web of Science
14	A brief review on covid 19 associated mucurmycosis	Dr. Harshada A. Patil	Pharmaceutics	Asian journal of research in pharmaceutical sciences	2022	Print ISSN : 2231-5640. Online ISSN : 2231-5659	12 (4)	297 to 303	www.anvpublications.org	https://www.indianjournals.com/ijor.aspx?target=ijor:ajrps&volume=12&issue=4&article=007	Google Scholar, Index copernicus, PSOAR
15	Synthesis Of Solid Lipid Nanoparticles Using Double Emulsion- Solvent Evaporation Method For Ritonavir Loaded Drug Delivery System	Ms. Nikita Gurav	Pharmaceutics	World journal of Pharmcy and Pharmaceutical scinece	2022	2278-4357	11 (4)	1425 to 1430	www.wjpps.com	https://storage.googleapis.com/journal-uploads/wjpps/article_issue/1648725485.pdf	Google Scholar, Index Copernicus, CAS

eSign
Signed by: Sidharth Patil
Reason: NAAC
Location: Kasabe Digraj
Date: 30-Jun-2023 (04:04 PM)

16	Synthesis And Development Of Mobile Phase By Thinlayer Chromatography Of Benzimidazole	Choundikar M. Y	Pharmaceutical Chemistry	International Journal of Creative Research Thoughts (IJCRT)	2022	2320-2882	10 (4)	e860-e863	http://www.ijcrt.org/	https://ijcrt.org/papers/IJCRT2204564.pdf	UGC
17	Optimization Of Mobile Phase Of Benzocaine By Thin Layer Chromatography	Choundikar M. Y	Pharmaceutical Chemistry	International Journal of Research and Analytical Reviews	2022	2348-1269 (online) 2349-5138 (Print)	9 (2)	961-964	www.ijrar.org	file:///C:/Users/DELL/Downloads/IJRAR22B2189-1.pdf	UGC
18	In-Vitro Calcium Oxalate Stone Reducing Potential of Selected Commercial Samples From Indian Market	Dr. Santosh Maruti Gejage	Pharmaceutics	Advances in Bioresearch	2021	Print ISSN 0976-4585; Online ISSN 2277-1573	12 (4)	20 to 26	URL:http://www.soeagra.com/abr.html	https://soeagra.com/abr/abr_july2021/3.pdf	google scholar,pubmed,CAS,index copernicus
19	Anticancer activity of terpenoid saponin extract of Psidium guajava on MCF-7 cancer cell line using DAPI and MTT assays	Dr. Sandeep B. Patil	Pharmacology	African Journal of Pharmcy and Pharmacology	2021	1996-0816	15 (12)	206 to 211	https://academicjournals.org/journal/AJPP	https://academicjournals.org/journal/AJPP/article-full-text-pdf/BA5DD1A68326	Scopus
20	Investigating the Antioxidant and Cytocompatibility of Mimusops elengi Linn Extract over Human Gingival Fibroblast Cells	Dr. Sandeep B. Patil	Pharmacology	International Journal of Environmental research and public health	2021	1660-4601	18 (13)	7162	www.mdpi.com/journal/ijerph	https://pubmed.ncbi.nlm.nih.gov/34281099/	cas,pubscholar,ebsco
21	Microwave assisted extraction of berberine and preparation of Berberine Hydrochloride from Berberis Aristata Variety of Nepal, and Quantification using RP-HPLC and HPTLC Methods	Dr. Sandeep B. Patil	Pharmacology	European Journal of Medicinal plants	2021	2231-0894	32 (12)	46 to 53	https://journalejmp.com/index.php/EJMP	file:///C:/Users/HP/Downloads/30434-ArticleText-57022-1-10-20211222.pdf	UGC
2020-21											
22	In vitro antioxidant potential and anticancer activity of Ceratophyllum demersum Linn. extracts on HT-29 human colon cancer cell line	Dr. Suhas Awati	Pharmaceutical Chemistry	Research Journal of Pharmacy and Technology (RJPT)	2021	0974-3618(print) 0974-360X(online)	14 (1)	1 to 9	https://www.rjptonline.org/	https://rjptonline.org/AbstractView.aspx?PID=2021-14-1-6	Scopus
23	Chemopreventive potential of adrenergic blocker in behavioral stressaccelerated prostate cancer development in rats	Dr. Sandeep B. Patil	Pharmacology	Research Journal of Pharmcy and Technology	2021	Print - 0974-3618 Online - 0974-360x	14 (2)	203-209	www.rajptonline.org	https://rjptonline.org/AbstractView.aspx?PID=2021-14-2-33	Scopus
24	In vitro protein denaturation and membrane stabilizing anti-arthritic activity of aqueous extracts of bark of Ficus benghalensis L. against methotrexate	Dr. Sandeep B. Patil	Pharmacology	The pharmainnovation Journal	2021	2277-7695 (Print) 2349-8242 (Online)	10 (4)	689 to 692	www.thepharmajournal.com	https://www.thepharmajournal.com/archives/2021/vol10issue4/PartJ/10-3-176-475.pdf	google scholar,indexcopernicus,cas

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25	Investigation of in vitro anti-arthritic activity of aqueous extracts of leaves of Vitex negundo L. using methotrexate as DMARDs	Dr. Sandeep B. Patil	Pharmacology	Journal of Pharmacognosy and Phytochemistry	2021	Online: 2278-4136 Print: 2349-8234	10 (2)	963 to 965	www.phytojournal.com	https://www.phytojournal.com/archives/2021/vol10issue2/PartM/10-2-176-243.pdf	Google scholar, CAS
26	In vitro Antioxidant Potential and Cytotoxicity Study of Asparagus aethiopicus L. Extracts on HT-29 Human Colon Cancer Cell Line	Dr. Suhas Awati	Pharmaceutical Chemistry	Indian Journal of Pharmaceutical Education and Research	2020	0019-5464	54 (3)	0019-5464	www.ijper.org	https://www.ijper.org/sites/default/files/IndJPhaEdRes-54-3s-s570.pdf	Scopus
27	Design and Evaluation of Eudragit RS-100 Based Itraconazole Nanosuspension for Ophthalmic Application	Dr. Pravin Pawar	Pharmaceutics	Current drug Research review (Bentham Science)	2020	2589-9775 (Print) 2589-9783 (Online)	13 (1)	36-48	https://www.eurekaselect.com/	https://pubmed.ncbi.nlm.nih.gov/32990554/	Scopus
28	Eudragit RL100 Based Moxifloxacin Hydrochloride andKetorolac Tromethamine Combination Nanoparticulate System for Ocular Drug Delivery.PharmaceuticalNanotechnology	Dr. Pravin Pawar	Pharmaceutics	Pharmaceutical Nanotechnology (Bentham Science)	2020	(Print): 2211-7385 (Online): 2211-7393	8 (2)	133-147	https://pubmed.ncbi.nlm.nih.gov/32167436/	https://www.eurekaselect.com/article/105218	Scopus
29	Assessment Of Permeability Behavior Of Berberine Chloride Across Goat Intestinal Membrane In Presence Of Natural Biopotentiator Curcumin	Dr. Sarika Narade	Pharmaceutical Chemistry	Indian Drugs	2020	0019-462X (Print)	58 (4)	23-27	www.indiandrugsonline.org	http://www.indiandrugsonline.org/issuesarticle-details?id=MTE3MQ==	Scopus
2019-20											
30	Polymeric nanosuspension loaded oral thin films of flubiprofen:design development and in vitro evaluation	Dr. Pankaj Jadhav	Pharmaceutics	Research Journal of pharmatechnology	2020	0974-3618 (Print) 0974-360x(online)	13 (4)	1907 to 1912	www.rjptonline.org	https://rjptonline.org/AbstractView.aspx?PID=2020-13-4-53	Scopus
31	POCl3 Mediated Syntheses, Pharmacological Evaluation and Molecular Docking Studies of Some Novel Benzofused Thiazole Derivatives as a Potential Antioxidant and Anti-inflammatory Agents	Dr. Sandeep Patil	Pharmacology	Current chemical Biology	2020	1872-3136	14 (1)	58 to 68	https://benthamscience.com/public/journals/current-chemical-biology	https://www.ingentaconnect.com/content/ben/ccb/2020/00000014/00000001/art00009	Scopus
32	Synthesis of Asymmetric Thiazolyl Pyrazolines as a Potential Antioxidant and Anti-Inflammatory Agents	Dr. Sandeep Patil	Pharmacology	Polycyclic aromatic compounds	2020	Print: 1040-6638 Online : 1563-5333	42 (1)	70-79	https://www.tandfonline.com/loi/gpol20	https://www.tandfonline.com/doi/abs/10.1080/10406638.2020.1716028	Scopus

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33	In-Vitro Antispasmodic Efficacy Of Ethanolic Extract Of Leaves Of Sesbania Grandiflora	Dr. Sandeep Patil	Pharmacology	World Journal of Pharmaceutical research	2020	2277-7105	9 (2)	915 to 921	www.wjpr.net	https://www.wjpr.net/archive_show/2020/VOLUME%209,%20FEBRUARY%20ISSUE%202	Index copernicus Ebsco,google scholar, CAS
34	Current Approaches to Detect COVID - 19, Limitations and Challenges	Ms. Nikita Gurav	Pharmaceutics	International journal of Pharmacy and pharmaceutical research	2020	2349-7203	18 (1)	331 to 344	www.ijppr.humonjournals.com	https://ijppr.humanjournals.com/current-approaches-to-detect-covid-19-limitations-and-challenges/	Pubmed
35	Design, development and characterization of ketorolac tromethamine nanosuspension loaded insitu mucoadhesive occular gel	Dr. Pankaj Jadhav	Pharmaceutics	Journal of drug delivery and therapeutics	2019	2250-1177	9 (4-s)	203 to 209	http://jddtonline.info	https://jddtonline.info/index.php/jddt/article/download/3227/2487	EBSCO,CAS,INDEX COPERNICUS,GOOGLE SCHOLAR,PUBLONS
36	Formulation and optimization and invitro evaluation of polymeric nanosuspension of Fluribiprofen	Dr. Pankaj Jadhav	Pharmaceutics	Asian journal of pharmaceutical and clinical research	2019	Online 2455-3891 Print 0974-2441	12 (11)	1 to 9	https://journals.innovareacademics.in/index.php/ajpcr/index	https://journals.innovareacademics.in/index.php/ajpcr/article/view/35670	Scopus
37	Design and evaluation of topical solid dispersion composite of voriconazole for the treatment of ocular keratitis	Dr. Pravin Pawar	Pharmaceutics	Therapeutic delivery	2019	2041-5990	10 (8)	481 to 492	www.future.science.com	https://www.future-science.com/doi/epub/10.4155/tde-2019-0021	Scopus
38	Effect of co -administration of Quercetin on goat intestinal permeability of Berberine chloride	Dr. Sarika Narade	Pharmaceutical Chemistry	International journal of Pharmaceutical sciences and research	2019	Print: 2320-5148 Online: 0975-8232	10 (8)	3915 to 3919	www.ijpsr.com	https://japsonline.com/admin/php/uploads/2824_pdf.pdf	Google Scholar, Web of Science
39	Design, development and characterization of ketorolac tromethamine polymeric nanosuspension	Dr. Pankaj Jadhav	Pharmaceutics	Therapeutic delivery	2019	2041-5990	10 (9)	585 to 597	www.future.science.com	https://www.future-science.com/doi/10.4155/tde-2019-0045?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub++0pubmed	Scopus
2018-19											
40	Nanostructure lipid carriers (NLC) system: A Novel drug targeting carrier	Dr. Pravin Pawar	Pharmaceutics	Journal of drug delivery science and technology	2019	1773-2247	51	255-267	www.elsevier.com	https://www.sciencedirect.com/science/article/abs/pii/S1773224718314473	Scopus
41	Recent trends in antifungal agents :a Reference to formulation characterization and applications	Dr. Pravin Pawar	Pharmaceutics	Drug delivery letters	2019	2210-3031 (PRINT) 2210-304X (ONLINE)	9 (3)	199 to 210	www.benthamscience.net	http://www.eurekaselect.com/article/98408	EBSCO,,INDEX COPERNICUS,GOOGLE SCHOLAR,WEB OF SCIENCE,PUBMED

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42	Evaluation And Comparison Of Antidepressant Activity Of Marketed Ayurvedic Formulations	Gajanan S. Patil	Pharmacology	Journal of Emerging Technologies and Innovative Research	2019	2349-5162	6 (6)	735-747	www.jetir.org	https://www.jetir.org/view?paper=JETIR1908577	UGC
43	Optimization of ex vivo permeability characteristics of berberine in presence of quercetin using 32 full factorial design	Dr. Sarika Narade	Pharmaceutical Chemistry	Journal of applied pharmaceutical sciences	2019	2231-3354	9 (1)	073 to 082	www.japsonline.com	https://japsonline.com/admin/php/uploads/2824_pdf.pdf	Scopus
44	Synthesis, characterization and biological screening of substituted indoledihydro pyrimidine derivatives	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Current pharma research	2019	2230-7842	9 (4)	3237 to 3246	www.jcpronline.in	https://www.proquest.com/openview/79d1a30bd30ae934d508d7176f032cd2/1?pq-origsite=gscholar&cbl=1936342	Pubmed, Google Scholar, Index Copernicus
45	Mesalamine loaded mucoadhesive microsphere colon drug delivery system: efefct of process variables and invitro characterization	Dr. Pravin Pawar	Pharmaceutics	International journal of pharmaceutical investigation	2018	2230-973X (PRINT)2230-9713(ONLINE)	8 (2)	74 to 82	www.jpionline.org	https://www.jpionline.org/index.php/ijpi/article/view/253/241	WEB OF SCIENCE,INDEX COPERNICUS
46	Introduction and Importance of Medicinal Plants and Herbs in Pharmacognosy	Mr. Rameshwar Ardad	Pharmacognosy	International Research Journal of Natural and Applied Sciences	2018	2349-4077	5 (12)	261-268	www.aarf.asia	http://aarf.asia/applied2.php?p=Volume5,Issue12,December2018	Google Scholar
47	Effect Of Olive Leaf Extract on The Attenuation of Ischemic Brain Damage in Rat	Mr. Rameshwar Ardad	Pharmacognosy	International Research Journal of Natural and Applied Sciences	2018	2349-4077	5 (11)	173-180	www.aarf.asia	http://aarf.asia/applied2.php?p=Volume5,Issue11,November,2018	Google Scholar
48	Modification of dissolution profile of Rivaroxaban by spray drying	Mr. Girishkumar Mandake	Pharmaceutics	Asian Journal of Pharmacy and Technology	2018	Print ISSN : 2231-5705. Online ISSN : 2231-5713.	8 (4)	203-210	https://ajptonline.com/	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpt&volume=8&issue=4&article=004	Google Scholar Indian Citetion IndexPSOAR
49	Spray drying: A promising technique to enhance solubility	Mr. Girishkumar Mandake	Pharmaceutics	Asian Journal of Pharmacy and Technology	2018	Print ISSN : 2231-5705. Online ISSN : 2231-5713.	8 (4)	255-260.	https://ajptonline.com/	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpt&volume=8&issue=4&article=010	Google Scholar Indian Citetion IndexPSOAR
50	Dissolution enhancement of Telmisartan by spray drying technique	Mr. Girishkumar Mandake	Pharmaceutics	Asian Journal of Pharmacy and Technology	2018	Print ISSN : 2231-5705. Online ISSN : 2231-5713.	8 (4)	264-269.	https://ajptonline.com/	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpt&volume=8&issue=4&article=012	Google Scholar Indian Citetion IndexPSOAR
2017-18											

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51	Development and validation of stability indicating HPLC assay method for Tacrolimus in semisolid dosage form and bulk drug	Dr. Santosh Gejage	Pharmaceutics	Indoamerican Journal of Pharmaceutical research	2018	2231-6876	8 (5)	1097 to 1106	www.iajpr.com	https://zenodo.org/record/2531189#.ZEeiNs5BzIV	CAS,INDEX COPERNICUS
52	Stability of Aqueous and Oily Ophthalmic Solutions ofMoxifloxacin	Dr. Pravin Pawar	Pharmaceutics	Asian Journal of Pharmacy and Technology	2018	2231-5705 (Print) 2231-5713 (Online)	8 (1)	29 to 34	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpt&type=home	https://www.indianjournals.com/ijor.aspx?target=ijor:ajpt&volume=8&issue=1&article=005	Google Scholar, Indian Citation Index, PSOAR
53	Production and quantitative analysis of Trehalose lipid biosurfactants using HPLC	Dr.Harshada A. Patil	Pharmaceutics	Journal of surfactants and detergents	2018	1558-9293	21 (4)	553 to 564	https://aocs.onlinelibrary.wiley.com/doi/abs/10.1002/jsde.12158	https://doi.org/10.1002/jsde.12158	Scopus
54	Synthesis, spectral analysis and anticancer evaluation of novel Pyrazoline derivatives	Mr. Sagar Jadhav	Pharmaceutical Chemistry	American Journal of Pharmtech research	2018	2249-3387	8 (1)	303-315	http://www.ajptr.com	http://ajptr.com/assets/upload/publish_article/AJPTR-81021_439.pdf	SCOPUS(APPLIED) google scholar
55	Anticancer Medicinal Herbal Plants: A Systemic Review	Gajanan S. Patil	Pharmacology	European Journal of Pharmaceutical and Medical Research	2018	2394-3211	5 (5)	530-536	www.ejpmr.com	https://storage.googleapis.com/journal-uploads/ejpmr/article_issue/1525346970.pdf	Web of Science, Pubmed, Google Scholar
56	A Review : Antigout Medicinal Plants	Gajanan S. Patil	Pharmacology	European Journal of Biomedical and Pharmaceutical sciences	2018	2349-8870	5 (5)	394-402	http://www.ejbps.com	https://storage.googleapis.com/journal-uploads/ejbps/article_issue/volume_5_may_issue_5/1525071399.pdf	Google Scholar, Index Copernicus
57	Review: Antidepressant Medicinal Plants	Gajanan S. Patil	Pharmacology	European Journal of Biomedical and Pharmaceutical Sciences	2018	2349-8870	5 (4)	316-326	http://www.ejbps.com	https://www.jetir.org/view?paper=JETIR1908577	Google Scholar, Index Copernicus
58	UV spectroscopy analysis and degradation study of Rivaroxaban.	Mr. Girishkumar Mandake	Pharmaceutics	Asian Journal of Research in Pharmaceutical Sciences	2018	Print ISSN : 2231-5640. Online ISSN : 2231-5659	8 (2)	57-60.	https://ajpsonline.com/	https://www.indianjournals.com/ijor.aspx?target=ijor:ajrps&volume=8&issue=2&article=001	Google Scholar, Index copernicus, PSOAR
59	Formulation of mild natural biodegradable mycrobeads face scrubber	Dr. Harshada A. Patil	Pharmaceuitics	International journal of engineering research and technology	2017	0974-3154	10 (1)	289 to 292	www.irphouse.com	https://www.ripublication.com/irph/ijert_spl17/ijertv10n1spl_55.pdf	Scopus

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60	Study on drug utilization pattern of antidabetic drugs in rural areas of Islampur and Kasegaon at Maharashtra	Mrs. Anuja Masule/ Priyanka Patil	Pharmaceutical Chemistry	International journal of research in pharmacy and chemistry	2017	2231-2781	7 (1)	60 to 62	www.ijrpc.com/index.html	http://www.ijrpc.com/files/10-01-17/09.pdf	index copernicus (ijrpc.com)
61	A glance on Zika virus infection	Mrs. Anuja Masule/ Priyanka Patil	Pharmaceutical Chemistry	International journal of scientific research in science and technology	2017	2395-6011 (Print) 2359-602x (Online)	3 (7)	146 to 152	www.ijsrst.com/indexby.php	https://ijsrst.com/paper/1457.pdf	elsevier ssrn,google scholar,NCBI ,ACADEMIC,PUBLONS
62	Synthesis and anticovulsant screening of 2 Mercaptobenzimidazole derivatives	Mr. Sagar Jadhav	Pharmaceutical Chemistry	American Journal of Pharmtech research	2017	2249-3387	7 (4)	265-272	http://www.ajptr.com	file:///C:/Users/HP/Downloads/AJPTR-%2074023_1261-1.pdf	NLM INDEX
63	In vitro anticancer activity of abutilon indicum against human breast and lung cancer cell - lines	Mr. Sagar Jadhav	Pharmaceutical Chemistry	American Journal of Pharmtech research	2017	2249-3387	7 (4)	171 to 184	http://www.ajptr.com	file:///C:/Users/HP/Downloads/AJPTR-%2074015_8452-1.pdf	NCBI,GOOGLE SCHOLAR,index copernicus,cas
64	Studies on emulsification properties of glycolipids biosurfactants	Dr. Harshada A. Patil	Pharmaceuitics	Tenside, surfactants, Detergents	2017	0932-3414	54 (4)	315 to 321	www.hanserelibrary.com	https://www.degruyter.com/document/doi/10.3139/113.110505/html	Scopus

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3.3.1 Number of research papers published per teacher in the journals notified on UGC / SCOPUS care list during the last five years

LIST OF RESEARCH PAPERS PUBLISHED IN SCOPUS / UGC / WEB OF SCIENCE

Sr. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Volume (Issue)	Page No.	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi)		
									Link to website of the Journal	Link to article/paper/abstract of the article	Is it listed in UGC Care list/Scopus/Web of Science/other, mention
2022-23											
1	Insilico pharmacokinetics and docking analysis of active biolmolecules from 5-amino-salicylic acid against cycline dependant kinase II	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Neuroquantology	2022	1303-5150	20 (9)	364 to 376	www.neuroquantology.com	https://www.neuroquantology.com/data-cms/articles/20220819073111pmNQ440037.pdf	Scopus
2	Synthesis, characterization and in vitro anticancer evaluation of novel Quinoline - 3 -carboxamide derivatives as inhibitors of PDGFR	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Neuroquantology	2022	1303-5150	20 (8)	7967 to 7980	www.neuroquantalogy.com	https://www.neuroquantology.com/open-access/Synthesis%252C+Characterization+and+in+vitro++Anticancer+Evaluation+of+Novel+Quinoline-3-+Carboxamide+Derivatives+as+Inhibitors+of++PDGFR_4065/	Scopus
3	Syntheis and spectral analysis of some novel 5-amino salisylic acid derivatives and their insilico ADMET studies	Mr. Sagar Jadhav	Pharmaceutical Chemistry	Neuroquantology	2022	1303-5150	20 (9)	3936 to 3944	www.neuroquantalogy.com	https://www.neuroquantology.com/open-access/Synthesis+and+Spectral+analysis+of+some+novel+5-Amino%2502Salicylic+Acid+derivatives+and+their+In-silico+ADMET+studies_5662/	Scopus
4	Concurrent oral delivery of non-oncology drugs through solid self-emulsifying system for repurposing in hepatocellular carcinoma	Mr. Rameshwar Ardad	Pharmacognosy	Drug Development and Industrial Pharmacy (Taylor & Francis)	2022	Print ISSN: 0363-9045 Online ISSN: 1520-5762	49 (5)	1 to 15	https://www.tandfonline.com/loi/iddi20	https://www.tandfonline.com/doi/full/10.1080/03639045.2023.2216785	Scopus
5	Impurity profile study of Aspirin in bulk and tablet dosage form	Mr. Nilesh Jangade	Pharmaceutical Chemistry	Journal of Pharmaceutical negative results	2022	ISSN: Print - 0976-9234, Online - 2229-7723	13 (6)	2457 to 2466	https://www.pnrjournal.com/index.php/home/about	https://www.pnrjournal.com/index.php/home/article/view/2235/1923	Web of Science, Index Copernicus, Schimago journal ranking, Google Scholar, Hinari, Infotrieve, National Science Library
6	In silico Identification of novel Quinoline 3 Carboxamide derivatives targeting platelet derived growth factor receptor	Dr. Ajit V. Dale	Pharmaceutical Chemistry	Bentham Science	2022	1875-6301 (Online) 1573-3947 (Print)	18 (2)	131 to 142	www.benthamscience.net	https://www.ingentaconnect.com/content/ben/cctr/2022/00000018/00000002/art00008	EBSCO,,INDEX COPERNICUS,GOOGLE SCHOLAR,WEB OF SCIENCE,PUBMED

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2021-22											
7	Theorotical Exploration on development of Prostatitis Inflammatory Model in drug discovery	Dr. Sandeep B. Patil	Pharmacology	International journal of biology, Pharmacy and allied science	2022	2277-4998	11 (4)	1538 to 1550	https://www.ijbpas.com/	https://ijbpas.com/archive/archive-single-pdf/4929	UGC
8	Folic Acid Conjugated Nanosystems: A Systematic Review	Dr. Sandeep B. Patil	Pharmacology	World journal of Pharmcy and Pharmaceutical science	2022	2278-4357	11 (5)	117	https://www.wjpps.com/	https://www.omicsonline.org/open-access/folic-acid-conjugated-nano-systems-a-systematic-review-120504.html?view=mobile	Scopus
9	Optimization of goat Intestinal Permeability of BERBERINE CHLORIDE in presence of natural Bioenhancer Piperine using 32 full factorial design	Dr. Sarika Narade	Pharmaceutical Chemistry	International journal of biology, Pharmacy and allied science	2022	2277-4998	11 (10)	4758-4778	https://www.ijbpas.com/	https://ijbpas.com/archive/archive-single-	UGC
10	Formulation and characterization of a self nano emulsifying drug delivery system with Paclitaxel for improved oral absorption	Mr. Rameshwar Ardad	Pharmacognosy	Advances in bioresearch	2022	2277-1573 Online 0976-4585 Print	13 (3)	26 to 32	https://soeagra.com/abr.html	https://soeagra.com/abr/abrmay2022/5.pdf	Web of Science
11	Synthesis And Development Of Mobile Phase By Thinlayer Chromatography Of Benzimidazole	Choundikar M. Y	Pharmaceutical Chemistry	International Journal of Creative Research Thoughts (IJCRT)	2022	2320-2882	10 (4)	e860-e863	http://www.ijcrt.org/	https://ijcrt.org/papers/IJCRT2204564.pdf	UGC
12	Optimization Of Mobile Phase Of Benzocaine By Thin Layer Chromatography	Choundikar M. Y	Pharmaceutical Chemistry	International Journal of Research and Analytical Reviews	2022	2348-1269 (online) 2349-5138 (Print)	9 (2)	961-964	www.ijrar.org	file:///C:/Users/DELL/Downloads/IJRAR22B2189-1.pdf	UGC
13	Anticancer activity of terpenoid saponin extract of Psidium guajava on MCF-7 cancer cell line using DAPI and MTT assays	Dr. Sandeep B. Patil	Pharmacology	African Journal of Pharmcy and Pharmacology	2021	1996-0816	15 (12)	206 to 211	https://academicjournals.org/journal/AJPP	https://academicjournals.org/journal/AJPP/article-full-text-pdf/BA5DD1A68326	Scopus
14	Investigating the Antioxidant and Cytocompatibility of Mimusops elengi Linn Extract over Human Gingival Fibroblast Cells	Dr. Sandeep B. Patil	Pharmacology	International Journal of Environmental research and public health	2021	1660-4601	18 (13)	7162	www.mdpi.com/journal/ijerph	https://pubmed.ncbi.nlm.nih.gov/34281099/	cas,pubscholar,ebsco
15	Microwave assisted extraction of berberine and preparation of Berberine Hydrochloride from Berberis Aristata Variety of Nepal, and Quantification using RP-HPLC and HPTLC Methods	Dr. Sandeep B. Patil	Pharmacology	European Journal of Medicinal plants	2021	2231-0894	32 (12)	46 to 53	https://journalejmp.com/index.php/EJMP	file:///C:/Users/HP/Downloads/30434-ArticleText-57022-1-10-20211222.pdf	UGC

2020-21											
16	In vitro antioxidant potential and anticancer activity of Ceratophyllum demersum Linn. extracts on HT-29 human colon cancer cell line	Dr. Suhas Awati	Pharmaceutical Chemistry	Research Journal of Pharmacy and Technology (RJPT)	2021	0974-3618(print) 0974-360X(online)	14 (1)	1 to 9	https://www.rjptonline.org/	https://rjptonline.org/AbstractView.aspx?PID=2021-14-1-6	Scopus
17	Chemopreventive potential of adrenergic blocker in behavioral stressaccelerated prostate cancer development in rats	Dr. Sandeep B. Patil	Pharmacology	Research Journal of Pharmcy and Technology	2021	Print - 0974-3618 Online - 0974-360x	14 (2)	203-209	www.rajptonline.org	https://rjptonline.org/AbstractView.aspx?PID=2021-14-2-33	Scopus
18	Investigation of in vitro anti-arthritic activity of aqueous extracts of leaves of Vitex negundo L. using methotrexate as DMARDs	Dr. Sandeep B. Patil	Pharmacology	Journal of Pharmacognosy and Phytochemistry	2021	Online: 2278-4136 Print: 2349-8234	10 (2)	963 to 965	www.phytojournal.com	https://www.phytojournal.com/archives/2021/vol10issue2/PartM/10-2-176-243.pdf	Google scholar, CAS
19	In vitro Antioxidant Potential and Cytotoxicity Study of Asparagus aethiopicus L. Extracts on HT-29 Human Colon Cancer Cell Line	Dr. Suhas Awati	Pharmaceutical Chemistry	Indian Journal of Pharmaceutical Education and Research	2020	0019-5464	54 (3)	0019-5464	www.ijper.org	https://www.ijper.org/sites/default/files/IndJPhaEdRes-54-3s-s570.pdf	Scopus
20	Design and Evaluation of Eudragit RS-100 Based Itraconazole Nanosuspension for Ophthalmic Application	Dr. Pravin Pawar	Pharmaceutics	Current drug Research review (Bentham Science)	2020	2589-9775 (Print) 2589-9783 (Online)	13 (1)	36-48	https://www.eurekaselect.com/	https://pubmed.ncbi.nlm.nih.gov/32990554/	Scopus
21	Eudragit RL100 Based Moxifloxacin Hydrochloride andKetorolac Tromethamine Combination Nanoparticulate System for Ocular Drug Delivery.PharmaceuticalNanotechnology	Dr. Pravin Pawar	Pharmaceutics	Pharmaceutical Nanotechnology (Bentham Science)	2020	(Print): 2211-7385 (Online): 2211-7393	8 (2)	133-147	https://pubmed.ncbi.nlm.nih.gov/32167436/	https://www.eurekaselect.com/article/105218	Scopus
22	Assessment Of Permeability Behavior Of Berberine Chloride Across Goat Intestinal Membrane In Presence Of Natural Biopotentiator Curcumin	Dr. Sarika Narade	Pharmaceutical Chemistry	Indian Drugs	2020	0019-462X (Print)	58 (4)	23-27	www.indiandrugsonline.org	http://www.indiandrugsonline.org/issuesarticle-details?id=MTE3MQ==	Scopus
2019-20											
23	Polymeric nanosuspension loaded oral thin films of flubiprofen:design development and in vitro evaluation	Dr. Pankaj Jadhav	Pharmaceutics	Research Journal of pharmatechnology	2020	0974-3618 (Print) 0974-360x(online)	13 (4)	1907 to 1912	www.rjptonline.org	https://rjptonline.org/AbstractView.aspx?PID=2020-13-4-53	Scopus

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24	POCl3 Mediated Syntheses, Pharmacological Evaluation and Molecular Docking Studies of Some Novel Benzofused Thiazole Derivatives as a Potential Antioxidant and Anti-inflammatory Agents	Dr. Sandeep Patil	Pharmacology	Current chemical Biology	2020	1872-3136	14 (1)	58 to 68	https://benthamscience.com/public/journals/current-chemical-biology	https://www.ingentaconnect.com/content/ben/ccb/2020/00000014/00000001/art00009	Scopus
25	Synthesis of Asymmetric Thiazolyl Pyrazolines as a Potential Antioxidant and Anti-Inflammatory Agents	Dr. Sandeep Patil	Pharmacology	Polycyclic aromatic compounds	2020	Print: 1040-6638 Online : 1563-5333	42 (1)	70-79	https://www.tandfonline.com/loi/gpol20	https://www.tandfonline.com/doi/abs/10.1080/10406638.2020.1716028	Scopus
26	Formulation and optimization and invitro evaluation of polymeric nanosuspension of Fluribiprofen	Dr. Pankaj Jadhav	Pharmaceutics	Asian journal of pharmaceutical and clinical research	2019	Online 2455-3891 Print 0974-2441	12 (11)	1 to 9	https://journals.innovareacademics.in/index.php/ajpcr/index	https://journals.innovareacademics.in/index.php/ajpcr/article/view/35670	Scopus
27	Design and evaluation of topical solid dispersion composite of voriconazole for the treatment of ocular keratitis	Dr. Pravin Pawar	Pharmaceutics	Therapeutic delivery	2019	2041-5990	10 (8)	481 to 492	www.future.science.com	https://www.future-science.com/doi/epub/10.4155/tde-2019-0021	Scopus
28	Effect of co -administration of Quercetin on goat intestinal permeability of Berberine chloride	Dr. Sarika Narade	Pharmaceutical Chemistry	International journal of Pharmaceutical sciences and research	2019	Print: 2320-5148 Online: 0975-8232	10 (8)	3915 to 3919	www.ijpsr.com	https://japsonline.com/admin/php/uploads/2824_pdf.pdf	Google Scholar, Web of Science
29	Design, development and characterization of ketorolac tromethamine polymeric nanosuspension	Dr. Pankaj Jadhav	Pharmaceutics	Therapeutic delivery	2019	2041-5990	10 (9)	585 to 597	www.future.science.com	https://www.future-science.com/doi/10.4155/tde-2019-0045?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub++0pubmed	Scopus
2018-19											
30	Nanostructure lipid carriers (NLC) system: A Novel drug targeting carrier	Dr. Pravin Pawar	Pharmaceutics	Journal of drug delivery science and technology	2019	1773-2247	51	255-267	www.elsevier.com	https://www.sciencedirect.com/science/article/abs/pii/S1773224718314473	Scopus
31	Recent trends in antifungal agents :a Reference to formulation characterization and applications	Dr. Pravin Pawar	Pharmaceutics	Drug delivery letters	2019	2210-3031 (PRINT) 2210-304X (ONLINE)	9 (3)	199 to 210	www.benthamscience.net	http://www.eurekaselect.com/article/98408	EBSCO,,INDEX COPERNICUS,GOOGLE SCHOLAR,WEB OF SCIENCE,PUBMED

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32	Evaluation And Comparison Of Antidepressant Activity Of Marketed Ayurvedic Formulations	Gajanan S. Patil	Pharmacology	Journal of Emerging Technologies and Innovative Research	2019	2349-5162	6 (6)	735-747	www.jetir.org	https://www.jetir.org/view?paper=JETIR1908577	UGC
33	Optimization of ex vivo permeability characteristics of berberine in presence of quercetin using 32 full factorial design	Dr. Sarika Narade	Pharmaceutical Chemistry	Journal of applied pharmaceutical sciences	2019	2231-3354	9 (1)	073 to 082	www.japsonline.com	https://japsonline.com/admin/php/uploads/2824_pdf.pdf	Scopus
34	Mesalamine loaded mucoadhesive microsphere colon drug delivery system: efefct of process variables and invitro characterization	Dr. Pravin Pawar	Pharmaceutics	International journal of pharmaceutical investigation	2018	2230-973X (PRINT)2230-9713(ONLINE)	8 (2)	74 to 82	www.jpionline.org	https://www.jpionline.org/index.php/ijpi/article/view/253/241	WEB OF SCIENCE,INDEX COPERNICUS
2017-18											
35	Production and quantitative analysis of Trehalose lipid biosurfactants using HPLC	Dr.Harshada A. Patil	Pharmaceutics	Journal of surfactants and detergents	2018	1558-9293	21 (4)	553 to 564	https://aocs.onlinelibrary.wiley.com/doi/abs/10.1002/jsde.12158	https://doi.org/10.1002/jsde.12158	Scopus
36	Anticancer Medicinal Herbal Plants: A Systemic Review	Gajanan S. Patil	Pharmacology	European Journal of Pharmaceutical and Medical Research	2018	2394-3211	5 (5)	530-536	www.ejpmr.com	https://storage.googleapis.com/journal-uploads/ejpmr/article_issue/1525346970.pdf	Web of Science, Pubmed, Google Scholar
37	Formulation of mild natural biodegradable mycrobeads face scrubber	Dr. Harshada A. Patil	Pharmaceuitics	International journal of engineering research and technology	2017	0974-3154	10 (1)	289 to 292	www.irphouse.com	https://www.ripublication.com/irph/ijert_spl17/ijertv10n1spl_55.pdf	Scopus
38	Studies on emulsification properties of glycolipids biosurfactants	Dr. Harshada A. Patil	Pharmaceuitics	Tenside, surfactants, Detergents	2017	0932-3414	54 (4)	315 to 321	www.hanserelibrary.com	https://www.degruyter.com/document/doi/10.3139/113.110505/html	Scopus

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