7.3.1: The performance of the institution in research area distinctive to its vision, priority and thrust

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Research on Formulation and Development of Biosynthesized Silver Nanoparticle Incorporated Gel

Bhosale Ankita V[1*], Shinde Jitendra V[2], Hadage Mayuri[3]

[1,3]M Pharm, Department of Pharmaceutics, PDEA's Seth Govind Raghunath Sable College of Pharmacy, Purandhar (Saswad), Pune, Maharashtra 412301 India
[2]H.O.D. Department of Pharmaceutics, PDEA's Seth Govind Raghunath Sable College of Pharmacy, Purandhar (Saswad), Pune, Maharashtra 412301 India

ABSTRACT

Nanotechnology is a field where little things collaborate within a scientific framework to develop more useful technologies. For ages, scientists have been fascinated by nanoparticles and have examined them extensively. The advancements in microscope technology have made it possible to see previously hidden details, allowing for the exploration of previously untapped potential and the range of nanoparticles. Drug resistance in pathogenic microorganisms is an emerging and increasing health problem and is a big challenge for the pharmaceutical and biomedical sectors. Multi drug resistant (mdr) bacterial infections lead to significant increase in not only prolonged treatment cost but also morbidity and mortality. Searching and developing novel approach against multi drug resistance bacteria is a priority area for research. Silver is a broad-spectrum antimicrobial agent effective against pathogens. Biological silver nanoparticles have been created, tested for antibacterial activity, and proved to be one of the most effective approaches to address the issue of antibiotic resistance to several drugs. The aim of research work is formulation and development of biosynthesized silver nanoparticle from curry and lemon leaf extract and evaluation of antimicrobial activity against the Streptococcus and E.coli.

Keywords: Lemon, curry leaf extract, silver nanoparticle, UV-spectroscopy, FTIR, Antimicrobial activity,

INTRODUCTION

Nanotechnology is a field where little things collaborate within a scientific framework to develop more useful technologies. For ages, scientists have been fascinated by nanoparticles and have examined them extensively. The advancements in microscope technology have made it possible to see previously hidden details, allowing for the exploration of previously untapped potential and the range of nanoparticles (1). In the past several years, "nanotechnology" has tremendously advanced, is disseminating quickly, has drawn a lot of interest from around the world, and has become a turning point in the scientific revolution. As the subsequent scientific revolution, nanotechnology has gained attention for its potential to speed up computers, treat cancer, and provide solutions for a wide range of medicinal and biomedical problems. Nanoscale organisms can also be found in nature, and this has stimulated a vast field of study in bio nanotechnology. The size spectrum spans macro, micro, and nano sizes (2).

Due to its size and shape, the nanoparticle exhibits a special quality (at dimensions between approximately 1 and 100 nanometers). When compared to bulk material, these nanoscale particles display a number of noteworthy characteristics, such as noticeably lower electrical resistance, lower melting temperatures, or faster chemical reactions (Akbarzadeh et al., 2012; Gericke and Pinches, 2006). Nanoparticles have a number of benefits, including the ability to be stored for longer periods of time, the viability of various administration methods, increased stability and carrier capacity, the usefulness of incorporating both hydrophilic and hydrophobic substances, controlled delivery, and a reduction in the frequency of therapeutic doses (Gelperina et al., 2005). Nanomaterials, nanodots, nanowires, nanoelectronics, and other areas of nano-related research have all been studied by scientists under the more general rubric of nanotechnology. Researchers from all around the world have combined nanotechnology with other scientific disciplines to build and produce a wide range of devices with a variety of applications in daily life after realising the

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Formulation and Evaluation of Antifungal Posaconazole Emulgel as a Controlled Drug Delivery System

Prasanna K. Gaware[1], Jitendra V. Shinde[2], Rajashri S. Chavan[3], Shweta S. Kate[4], Prashant S. Bhosale[5]

[1,4,5]Research scholar, Department of Pharmaceutics, PDEA's Seth Govind Raghunath Sable of Pharmacy, Pune, Maharashtra 412301.
[2]HOD, Department of Pharmaceutics, PDEA's Seth Govind Raghunath Sable of Pharmacy, Pune, Maharashtra 412301
[3]Principal, Department of Chemistry, PDEA's Seth Govind Raghunath Sable of Pharmacy, Pune, Maharashtra 412301

ABSTRACT

The goal of this study is to create a Posaconazole emu gel that will enable the medication to permeate the skin more deeply than current preparations. Posaconazole, a triazole antifungal drug, is used for prevention from serious fungal infections. This drug has a limited rate of absorption when taken orally. Topical medication administration is preferred as a treatment because it inhibits the drug's first-pass metabolism. Posaconazole emu gel is made using the gelling agent carpool 934. Additionally, span 20 is used as an emulsifier for the preparation of the oil phase, whereas tween 20 is used as an emulsifier for the production of the aqueous phase, propylene glycol acts as a co-surfactant, and methyl paraben and propyl paraben are used as preservatives. Triethanolamine (TEA) was added to get the emu gel's pH value to a range of 6-6.5.Posaconazole inhibits the sterol 14-demethylase enzyme, which is a cytochrome P-450 dependent enzyme, in fungi by adhering to the heme cofactor on the enzyme. This results in an accumulation of methylated sterol precursors and an inhibition of ergosterol synthesis, an essential component of the fungal cell membrane. As a result, fungal cell growth is inhibited, which ultimately leads to cell death. Physical appearance, pH determination, viscosity, spread ability, in-vitro drug release, and drug content of the developed emu gel were all evaluated. All of the prepared emulgels' physical characteristics were satisfactory. The batch F9 of the formulation shows better drug release as compared to all other formulations.

Keywords: Emu gel, Topical Formulation, Posaconazole, and Controlled Drug Delivery System.

INTRODUCTION

In order to improve bioavailability and decrease adverse effects, topical drug delivery can be defined as the administration of a formulation to a particular body part, such as the ocular, rectal, nasal, vaginal, or skin.[1] Topical drug delivery is the local administration of medication for the treatment of dermatological disorders in which it is not intended for systemic distribution. Examples include the topical treatment of eczema and psoriasis. Topical drugs include corticosteroids, antivirals, antifungals, antibiotics, antiseptics, local anesthetics, and antineoplastics.

The purpose for preparation of topical preparations may be used for

I. Surface effects: remove dirt and germs, enhancement of appearance, prevent moisture loss, sunscreen, and reduce infection.
II. Stratum cornea effects: protective from sunscreens that penetrate this layer andmoisturizing, catalytic a sloughing of the skin, useful in the treatment of psoriasis.
III. Viable epidermal and dermal effects: various types of drugs may penetrate these layers (anti-inflammatory, anesthetic, antipruritic,antihistamine).
IV. Systemic effects: some drugs such as scopolamine, nitroglycerin, clonidine, and estradiolhave been formulated in such a manner to gain systemic effects.
V. Appendage effects: various classes of drugs intended to exert their action in these portions of the skin (depilatory, exfoliate, antimicrobial, and antiperspirant)

Physiological Factors:

1. Skin thickness: Varies from the epidermis to the subcutaneous layer. Epidermis has a high thickness of about 100–15 skin. The skin on the sole and palm has ahigh rate of diffusion.

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A Research on: Formulation and Evaluation of Osmotic Release Tablet of Glipizide

Kunal D. Jadhav[1], Jitendra V. Shinde[2], Ankita V. Bhosale[3], Shital A. Kasture[4]

[1,3,4]M. Pharm, Department of pharmaceutics, PDEA's Seth Govind Raghunath Sable College of Pharmacy, Purandar(Saswad), Pune , Maharashtra 412301.
[2]HOD Department of pharmaceutics, PDEA's Seth Govind Raghunath Sable College of Pharmacy, Purandar(Saswad), Pune, Maharashtra 412301.

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ABSTRACT

The controlled release systems are generally designed to exert control over drug release on the body, whether it be of a temporal, spatial, or both natures. To put it another way, the system makes an effort to control medication concentration in the tissue or cells.Drug delivery can be divided into three categories: targeted delivery, controlled release, and modulated release. In order to deliver a drug to particular cell types, tissues, or organs, a drug-carrier must be administered systemically. This is known as targeted delivery. Using a delivery system with the goal of releasing the medication into the patient's body at a specified pace, at a set time, or with a set release profile is known as controlled release. The main aim of these research paper is to formulate and evaluate osmotic release tablet of glipizide. We successfully formulate and evaluate six batches of tablet. We observed that batch F5 C is as a optimum batch as it shows 99.50% drug release.FromthebatchesF5A–F5E we have observed that some batches were good at extent of drug release & some batches were good at rate of drug.

Keyword- FTIR, DSC, Osmotic Release, In-Vitro Release, Friability.

INTRODUCTION

For many years, patients have received medications in the form of tablets, capsules, pills, creams, liquids, ointments, aerosols, injections, and suppositories. These dosage forms come from the pharmaceutical industry. Currently, this traditional formulation is predominantly a medication on a prescription basis. It is frequently essential to take a dose of the medication numerous times per day in order to achieve and maintain the drug concentration delivered in an effective therapeutic range. As a result, medication levels in the plasma change (1). The recommended drug administration strategy, traditional oral absorption, makes it simple to obtain both local and systemic effects. There is not much control over drug release in a traditional oral drug administration device. Intermittent over-administration can be used to effectively concentrate at the target spot. Such circumstances frequently result in therapeutic changes that are persistent, unanticipated, and frequently sub-plasma-related, which have real adverse effects. In order to address the problem of changing medication levels associated with conventional dosage forms, controlled drug delivery devices have been developed (2).

To get around this problem, drug delivery devices such implants, transdermal patches, and regulated loose dose forms are used. While being relatively high, the expenses associated with drug delivery technologies are far lower than those associated with creating novel compounds.As a result, there is still interest in creating a novel method of temporal and spatial medication administration (3).

Controlled Drug Delivery

To change how medications are distributed throughout the body and/or to deliver them more effectively to their sites of action, novel drug delivery methods are being used.

The controlled release systems are generally designed to exert control over drug release on the body, whether it be of a temporal, spatial, or both natures. To put it another way, the system makes an effort to control medication concentration in the tissue or cells (4).

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Formulation and Evaluation of Microemulsion Based Hydrogel for Topical Delivery

Tanuja Panaskar[1]*, Nilesh Bhosale[2], Rajashree Chavan[3], Pooja Khatate[4], Prajakta Nale[5], Tejas Ombase[6], Ankita Bhosale[7]

[1,5,6,7]*M Pharm Department of Pharmaceutics, Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India*

[2,4]*Assistant Professor Department of Pharmaceutics, Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India*

[3]*Principal Department of Chemistry, Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India*

Abstract: The purpose of this study was to construct a posaconazole hydrogel based on a microemulsion and characterize it in order to use it as a topical administration system. The solubility of posaconazole was done in different excipients. FTIR spectroscopy was used to conduct a study on the compatibility of drugs and excipients. Pseudoternary phase diagrams were built to determine the region of existence of microemulsions. Posaconazole loaded oil in water (o/w) microemulsion was made by phase titration method. To study the impact of independent variables, such as the ratio of surfactant to co-surfactant and the ratio of oil to water, on dependent variables, such as %transmittance, viscosity, and %cumulative drug release at 4 hours, a 3^2full factorial design was used. The improved formulation F9 demonstrated in vitro drug release for up to 4 hours. The physical appearance, pH, viscosity, spreadability, and in vitro permeability of a posaconazole microemulsion-based hydrogel were all adjusted. Antifungal activity was high in the optimized formulation. The results of the stability research demonstrated that the optimized formulation was sufficiently stable for one month.

Keywords: Topical drug delivery, pseudoternary phase diagrams, microemulsion based hydrogel, posaconazole, 3^2 factorial design, antifungal activity.

INTRODUCTION

Because of their ability to solubilize poorly water-soluble drugs and improve systemic and topical availability, microemulsions, which are thermodynamically stable and optically isotropic systems of water, oil, surfactant, and/or co-surfactant, have been studied as drug delivery systems. It aids in the solubilization of lipophilic drug moiety and provides quick and effective skin penetration. As a result, it is advantageous for medication administration via topical application. Microemulsion is embedded in a polymer hydrogel substrate for topical distribution to increase local interaction with the skin. Creams, ointments, and lotions are often used topical medicines that have several drawbacks, including causing discomfort to the patient when applied, being sticky when administered by rubbing, and having a lack of stability. Because of its low viscosity, microemulsion has a low stability, but this can be solved by putting it into a topical drug delivery system, which improves viscosity and hydrates the stratum corneum, increasing drug dermal permeability and skin flux. Because of all these aspects within the main category of semisolids, the usage of transparent hydrogels in medicinal preparations and cosmetics has increased. Despite the various benefits of hydrogels, the administration of lipophilic medicines is limited. As a result, a microemulsion-based technique is used to circumvent this limitation, and even a hydrophobic medicinal moiety can be efficiently integrated and administered using hydrogels. Using drug/oil/water emulsions, hydrophobic medicines can be integrated into microemulsion-based hydrogels. Hydrogel based on microemulsions aids in the integration of hydrophobic medicines in the oil phase, after which oily globules are disseminated in the aqueous phase, resulting in an oil/water emulsion. [1-5]

Posaconazole is a BCS (Biopharmaceutics Classification System) classII and imidazole derivative with antimycotic action across the board

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Formulation and Evaluation of Posaconazole Microsponges for Controlled Topical Drug Delivery

Supriya Bankar[1]*, Jitendra Shinde[2], Rajashree Chavan[3], Pooja Khatate[4], Tejas Ombase[5], Ankita Bhosale[6], Pooja Garud[7]

[1,5,6,7]- M Pharm Department of Pharmaceutics,Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India
[2]-HOD of Department of Pharmaceutics,Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India
[3]-Principal Department of Chemistry,Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India
[4]-Assistant Professor Department of Pharmaceutics,Pune District Education Association Seth Govind Raghunath Sable College of Pharmacy, Saswad (Purandar) Pune, Maharashtra 412301 India

ABSTRACT

The Microsponges are Novel Approach for topical controlleddrug delivery system. To overcome conventional topical drug delivery problems like itching, skin irritation, redness, swelling, stickiness, greaseness etc & overcome the side effects. Most common technique for microsponge preparation is Quasi emulsion solvent diffusion method. In that Eudragit RS 100 mostly use because they forms best microsponges with suitable compatibility. Microsponges provide controlled release of drug for prolonged period of time increases solubility of BCS class II Drug. Posaconazole antifungal microsponges are treat the fungal skin infections like candida infections,Esophageal candidiasis, Amebiasis, Oropharyngeal candidiasis, Trichomoniasis etc .Effective treatment against topical fungal infections.As the polymer concentration increases the entrapment efficiency increases.Rate of drug release increases.

Keywords: Microsponges, Posaconazole, Eudragit RS100, Ethyl Cellulose, Controlled drug release, Topical drug delivery, 3^2 factorial design, antifungal activity etc

INTRODUCTION

- Topical drug delivery system has been used predominantly in the treatment of localized skin disease and other injuries.
- Local treatment requires only that, the drug permeate the outer layers of the skin to treat the specific area with the hope that this occurs with little or no systemic accumulation.
- The industries produces chemical entity specific for dermal or transdermal are ideally suited to retain on to the skin and should not uptake into and through the skin.
- This means considerable effort has to be expanded on the appropriate design or a device to deliver enough of the medicine with controlled, extended and target manner at its site of action.[1,2]
- A Microsponge drug delivery system (MDDS) is a patented, highly cross-linked, porous, polymeric microspheres polymeric system (10-25), consisting of porous microspheres particles consisting of a myriad of interconnecting voids within non-collapsible structures with a large porous surface that can entrap a wide range of actives (cosmetics, over-the-counter (OTC) skin care, sunscreens, and prescription products) and then to cause. A normal 25-mm sphere can contain up to 250000 holes, giving it a total pore volume of around 1 ml/g, and an internal pore structure that is 10 feet long. [3]
- The skin cannot be penetrated by micro sponges, which can hold four times their weight in skin secretions. Instead, they gather in the skin's minuscule crevices and release the medicine there as the skin requires it. The micro sponge system can stop components from building up too much in the dermis and epidermis. These products often have a high concentration of active chemicals and are offered to the consumer in customary forms such creams, gels, or lotions. Micro sponges are porous microsphere-based polymeric delivery devices. They include a variety of active components that they can contain, including emollients,

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ANTIDEPRESSANT AND ANTIOXIDANT ACTIVITY OF ETHANOLIC POLYHERBAL EXTRACT USING ANIMAL MODEL

Sonali S. Gadiya and *Pradnya N. Jagtap

Master of Pharmacy, Department of pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India.

Corresponding Author: Pradnya N. Jagtap
Master of Pharmacy, Department of pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India.

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ABSTRACT

The present study was undertaken to evaluate the antioxidant and antidepressant activity of ethanolic Polyherbal extract. The ethanolic extracts were prepared by using leaves of *Bacopa monnieri* and fruits of *Terminalia chebula* by the maceration and percolation extraction process. Drugs were administered orally as per mg/kg body weight, one time for seven days. Antidepressant activity evaluated by force swim test and antioxidant activity by DPPH assay. The force swim test showed remarkable antidepressant activity at 250mg/kg in combination of BM and TC showing decrease in immobility time. Antioxidant activity by DPPH showing Radical Scavenging Activity of 94.40385% at 50µg/ml and IC50 of 38.8614 µg/ml.

KEYWORDS: *Bacopa Monnieri* (BM), *Terminalia chebula* (TC), Depression, Antioxidant.

INTRODUCTION

During the last decade much attention has been focused on the role of reactive oxygen species in numerous diseases. Free radical technology causes cumulative damage to DNA, proteins, and lipids caused by oxidative stress. This oxidative pressure has been advised to purpose developing older and several human illnesses, which includes maximum cancers, hepatic problems and diabetes. DNA damage mediated with the aid of using manner of free radicals may also bring about mutation or chromosomal aberrations foremost to carcinogenesis.[1] The utilization of the medicinal herb within side the treatment and prevention of illnesses is attracting interest through scientists globally. Active oxygen species and unfastened radicals play role within side the initiation and evolution of excessive sickness.[2,3] In a normal cell there is an appropriate pro-oxidant, antioxidant balance. However, this balance can be shifted towards the pro-oxidant when production of oxygen species is increased or when levels of antioxidants are diminished. This state is called 'oxidative stress' and can result in serious cell damage if the stress is massive or prolonged.[4]

The use of compounds with antioxidant activity is expected to be useful for these diseases. Therefore, there has been a developing interest in locating novel antioxidants to fulfill the requirements of pharmaceutical industries. Among the various healthful and preparation plants, some endemic species are of specific interest because of the actual fact they will be used for generating raw substances or preparations containing phytochemicals with big antioxidant capacities and fitness benefits. Reactive Oxygen species had been discovered to play an crucial operate within the initiation or development of diverse diseases that embody atherosclerosis, inflammatory injury, most cancers and vessel disease

According to the World Health Report, about 450 million people suffer from mental or behavioral disorders. By 2020, depression will be the second largest cause of the global illness burden after heart disease. . Depression is a systemic condition that affects not only mood and emotions, but also the body and thinking process. Depression is a heterogeneous mood disorder that has been classified and treated in a variety of ways. Although a number of synthetic drugs are used as standard treatment for clinically depressed patients, they have side effects that can interfere with therapeutic management. Therefore, it pays to look out for herbal antidepressants with proven benefits and a favourable risk-benefit ratio. Several medicinal plants and medicines derived from these plants have demonstrated antidepressant properties due to the combined effects of their medicinal components. The causes of depression are decreased brain levels of monoamines such as norepinephrine, dopamine and serotonin .Therefore, drugs that restore reduced levels of these monoamines in the brain, either by inhibiting monoamine oxidase or by inhibiting the

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REVIEW ARTICLE ON BRAIN IMPLANTS

***[1]Pradnya N. Jagtap and [2]Kishori S. Jagtap**

[1]M.Pharmacy, Head of Department of Pharmacology, PDEA's Seth Govind Raghunath Sable College of Pharmacy, Saswad.

[2]M.Pharmacy (Student), PDEA's Seth Govind raghunath Sable College of Pharmacy, Saswad.

***Corresponding Author: Pradnya N. Jagtap**
M.Pharmacy, Head of Department of Pharmacology, PDEA's Seth Govind Raghunath Sable College of Pharmacy, Saswad.

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ABSTRACT
The use of synthetic gadgets to control the characteristic of various elements of the human body has been observed. The growth of the closing decade has generated numerous contemplation and skepticism. This article is a complete series of numerous experiments carried out on mind implants associated with the neuroethical views of deep mind stimulation, stentrode, and bioabsorbable implants, and the continuing use the patient's mind transplant. It become a discussion.[1]

KEYWORDS: The growth of the closing decade has generated numerous contemplation and skepticism.

INTRODUCTION

Brain implants, commonly known as neural implants, are very powerful medical tools that connect directly to the brain. They usually cling to the surface or bark. These implants interact with the brain and send electrical impulses to nerve cells that replace and strengthen the brain. The firing pattern is transmitted in a different way. A nerve transplant is considered a nervous system hack. Implantable devices such as deep brain stimulator (DBS) and vagus nerve stimulator (VNS) are both increasingly used in patients with clinical depression in Parkinson's disease (PD). As of 2018, more than 150,000 people worldwide use this North American market for DBS transplants.[1]

Stentrode with thought-controlled digital switch: associate initial feasibility study (EFS) of the protection of the Stentrode device in participants with loss of motor operate because of paralysis due to spinal cord injury, motoneuron disease, stroke, genetic abnormality or loss of limbs. analysis has shown that in individuals with neurologic disorders, brain signals may be recorded by electrical sensors established within the brain. These cues might be utilized by people to regulate helpful technologies (e.g.: spellings) that create lifestyle easier, simply by thinking. However, implanting these electrical sensors often needs open-brain surgery. a brand new medical device and a new surgical technique are developed that enable the implantation of electrical sensors while not open brain surgery. The device, known as a Stentrode, may be a tiny wire mesh tube (stent), with electrode contacts (tiny metal discs) within the stent frame. It may be placed inside a vessel within the brain placed in the motor cortex. It doesn't involve open brain surgery.[2]

The term "bioabsorbable" conjointly means that biodegradable or "naturally absorbed". For example, bioabsorbable stents or bio-absorbable sutures are absorbed by the body over time. In implant science, biosorbent materials are ordinarily used for radio-controlled bone transforming and bone grafting.[3]

METHODS AND MATERIALS

▪ DEEP BRAIN STIMULATION THERAPY

Deep Brain Stimulation Therapy (DBS) is neurosurgery that involves the insertion of a medical device called a neurostimulator.[4] In DBS, electrodes are implanted in specific areas of the brain. These electrodes generate electrical pulses to correct for abnormal pulses. In addition, electrical impulses can affect certain cells and chemicals in the brain.

The intensity of deep brain stimulation is controlled by a device such as a pacemaker placed under the skin above the chest. A wire that goes through the skin connects the device to electrodes in the brain.

Deep brain stimulation is often accustomed treat variety of conditions, such as.

- Parkinson's disease
- Essential tremor
- Dystonia
- Epilepsy
- Obsessive-compulsive disorder.[5]

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A REVIEW ON: HERBS USED IN TREATMENT OF ANXIETY DISORDERS

Mahesh S. Mali*[1], Kishori S. Jagtap[2], Shweta S. Bobade[3], Pradnya N. Jagtap[4] and Vaibhav C. Shilimkar[5]

*[1]Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

[2,3]Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

[4]Head of Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

[5]Head of Department of Pharmacognosy, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

***Corresponding Author: Mahesh S. Mali**
Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

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ABSTRACT

Anxiety and other psychiatric diseases have a high frequency and comorbidity. Many people from all around the world have been affected by these well-known forms of psychiatric disease. Herbs alone, as well as herbal formulas, are frequently prescribed for mental disease treatment. Because of the severe side effects of western medication, the number of people who utilize herbs to improve their health is growing. Herbal psychopharmacology has attracted a lot of interest in recent decades. The reuptake of monoamines, influencing neuroreceptor binding and channel transporter function, modulating neuronal transmission, or the hypothalamic-pituitary adrenal axis are all examples of herbal modes of action used for anxiety treatment (HPA). Despite this, there is no systematic evaluation of herbal pharmacology in anxiety. This review was conducted to better understand the mechanisms of action of various herbal medicines and to provide relevant information for herbal medicine application. People with anxiety sometime consider herbal remedies as an alternative to prescription drugs. This may be because some medications, for example, beta-blockers or benzodiazepines, can have unwanted side effects. The aim of the current review is a high light on the anxiety signs, symptoms, etiology, pathophysiology and herbals used in the treatment of anxiety.

KEYWORDS: Anxiety, phobia, amygdala, medulla oblongata, adrenal medulla, herbs.

INTRODUCTION

"Anxiety is an unpleasant emotional state that is accompanied with uneasiness, discomfort, and worry or fear about some undefined future threat. Anorexia, dyspnea, palpitation, paresthesia, and other somatic symptoms are common. Anxiety is a common aspect of life for most people. When treatment is disproportionate to the condition and extreme, it is required. Pathological anxiety is seen in some psychotics and depressed people".[1] "g.i. neurosis (fixation on bowel movement, distention, eructation, reflux, acidity); social anxiety (fear of being observed and evaluated by others); obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), and various forms of phobias are some specific types of anxiety disorders".[1]

"Anxiety is an adaptive response that helps a person prepare for life's obstacles. Anxiety is characterized by both psychologic and sympathetic plus physical symptoms (tension, fear, apprehension, lack of attention) (tachycardia, tremors, sweating, GIT distress etc). Fatigue and sleep difficulties are common side effects. Anxiety inhibits a person's capacity to perform their job and frequently results in visceral organ dysfunction and neurological issues".[2]

"The most prevalent, or often occurring, mental disorders are anxiety disorders. They refer to a group of disorders in which the primary mood or emotional tone alteration is severe or pathological anxiety. Anxiety, which can be thought of as the pathological counterpart of normal fear, manifests as mood, thinking, behavior, and physiological activity changes. Panic disorder (with or without agoraphobia), agoraphobia (with or without panic disorder), generalized anxiety disorder, specific phobia, social phobia, obsessive-compulsive disorder, acute stress disorder, and post-traumatic stress disorder are

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Review Article

A Review on Effect of Physical Activity as an Exogenous Factor and Cognitive Change in Motor Neuron Disease

Shweta Shivaling Bobade[1], Mahesh Somnath Mali[2], Komal Dattatray Pol[3], Pradnya Nilesh Jagtap[4], Sumit Kailas Musale[5]

[1]Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India. 412301
[2]Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India. 412301
[3]Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India. 412301
[4]Head of Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India. 412301
[5]Assistant Professor, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India. 412301

Corresponding Author: Shweta Shivaling Bobade

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ABSTRACT

Motor neuron disease (MND) is a terrible neurodegenerative illness with a poor prognosis and significant impairment. Despite recent advances in symptomatic care, there are few medicines that can affect survival. However, a better understanding of the underlying etiology would substantially aid the task of finding effective treatments. In the etiology of MND, many potential external risk factors have been hypothesized as part of a gene-environment interaction. Following reports of a greater than predicted incidence of MND in professional athletes, there has been an increasing interest in the role of intensive physical exercise in the development of the disease. Current hypotheses about the cellular and genetic causes of MND also support this conclusion. Epidemiological evidence, on the other hand, is contradictory and inconclusive. FTD/motor neuron disease is the name given to a motor neuronopathy that complicates frontotemporal dementia (FTD) (MND). FTD is marked by severe personality changes, abnormal social behavior, and executive difficulties caused by frontal and temporal neocortical atrophy. Bulbar palsy and limb amyotrophy are symptoms of motor neuron disease. Micro vacuolation of the cerebral cortex is the most common histological alteration, along with atrophy of the bulbar neurons and anterior horn cells of the spinal cord. Large pyramidal cortical neurons, surviving cranial nerve nuclei, and anterior horn cells all have ubiquitinated inclusion bodies. Evidence is accumulating that some patients with classical MND/amyotrophic lateral sclerosis (ALS) who are not regarded to be demented show frontal executive function abnormalities. Moreover, frontal lobe abnormalities have been demonstrated by neuroimaging.

Keywords: MND, FTD, ALS, motor neuron, behavior, physical activity, cognitive change.

INTRODUCTION

"The gradual degeneration of upper and lower motor neurons is known as motor neuron disease (MND). In 1874, Jean-Martin Charcot coined the term "amyotrophic lateral sclerosis" to describe the condition (ALS). ALS is currently a name that describes the most common type of the disease and is frequently used interchangeably with MND." [1] "Amyotrophic lateral sclerosis (ALS) is characterized by muscle atrophy or

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Research Article

EVALUATION OF THE IMPACT OF GREEN TEA PLANT EXTRACT ON INTESTINAL ABSORPTION OF ASPIRIN USING EVERTED SAC TECHNIQUE

Ankita M. Kadam*, Pradnya N. Jagtap, Sumit K. Musale, Vaishnavi P. More, Shweta S. Bobade, Pratibha P. Deshmukh, Komal D. Pol, Ashwini M. Kunjir

Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India

**Corresponding author: ankitakadam3056@gmail.com*

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ABSTRACT

In vivo Absorption investigations are time-consuming and expensive in order to find the best medication formulation. Models were employed to research drug permeability and dissolution in order to streamline the search for a recommended formulation. One example of an *in vitro* model is the use of a goat intestinal section (sac) to assess the absorption of related drugs prior to formulation and clinical investigations. The investigation of excipient and additive effects on drug permeability is an intriguing use of this method. In this paper, the impact of epigallocatechin -3-gallate (EGCG), on the intestinal penetration of acetyl salicylic acid was investigated. When Aspirin was kept with green plant extract, the concentration of absorbed Aspirin was 12, 32 ,45, 49 and 51µg/ml after 15, 30, 45, 60 and 75 min respectively; whereas 14 ,16 ,17 ,18 and 23 µg/ml of Aspirin was absorbed when kept alone. The study clearly showed that the green tea extract enhances the absorption of Aspirin from goat intestine and this absorption enhancement activity of the plant is due to polyphenolic content, presence of polyphenols like catechins and epicatechins.

Keywords: Everted sac, Green tea extract, Aspirin, Buffer.

1. INTRODUCTION

One of the most crucial routes for drug administration is oral. In terms of testing parameters and reproducibility, studying a drug's or molecule's absorption qualities is crucial [1].

The dissolution of the drug from the dosage form, the drug's solubility as a result of its physicochemical features, the drug's effective permeability to the intestinal mucosa, and the drug's pre systemic metabolism can all be thought of as significant steps in the oral drug absorption process. Numerous factors may influence the aforementioned procedures, which in turn may influence the pace and volume of oral medication absorption. Three categories can be used to group these variables. The first category refers to a drug's physicochemical characteristics, which include solubility, intestinal permeability, pKa, lipophilicity, stability, surface area, and particle size. Physiological aspects fall under the second group. These include gastrointestinal pH, stomach emptying, small intestine transit duration, bile salt, absorption mechanism, and others. The third group includes dosage form elements including suspension, capsule, pill and solution [2].

The ability of medications to pass through biological membranes is thought to be a crucial component in their absorption and distribution. Poor permeability resulting from structural characteristics as well as membrane-based efflux processes may induce poor distribution throughout the body or poor absorption across the gastrointestinal mucosa [3].

Through various *in vivo* and *in vitro* techniques, including the Using chamber, isolated epithelial cells, and the everted gut sac model, the mechanism of the intestinal absorption of chemical compounds has been researched for many years. Wilson and Wiseman developed the everted sac model in 1954 to investigate intestinal drug delivery. The model has since been developed, being used in the chemical and pharmaceutical industries for a variety of applications, including kinetic mechanism, absorption, metabolism, transport, and so forth [4]. In this technique, the intestinal sac of goat, sheep or rat is everted to expose the mucosal surface in suitable

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A REVIEW ON: SCREENING MODELS OF ANTIDEPRESSANTS

Shweta S. Bobade[1]*, Ankita M. Kadam[2], Pradnya N. Jagtap[3] and Sumit K. Musale[4]

Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

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***Corresponding Author**
Shweta S. Bobade
Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, India.

ABSRTACT

Depression is a common psychiatric disorder, with different indications and tall comorbidity with other brain dysfunctions. Due to this complexity, small is known around the neural and hereditary mechanisms involved in depression pathogenesis. In a huge extent of patients, current upper treatments are frequently incapable and/or have undesirable side impacts, fueling the hunt for more successful drugs. Animal models mirroring different indications of discouragement are irreplaceable in considering the biological mechanisms of this infection. The improvement of antidepressants requires straightforward behavioral tests and in vitro assays for initial screening some time recently undertaking more complex preclinical tests and clinical assessment. The majority of clinically utilized antidepressants diminish the length of fixed status. Antidepressants moreover increment the inactivity to stability, and this extra degree can increase the affectability of the behavioral lose hope test within the mouse for certain classes of antidepressant. Here, we summarize a few well known in vitro and in vivo screening models for evaluating depression-like symptoms in animals and their utility in screening upper drugs.

KEYWORDS: Depression, Major depressive disorder, Antidepressants, Inhibition, Antagonism, synaptosomes.

INTRODUCTION

"Depression is the most common of the affective disorders. It may range from a very mild condition, bordering on normality, to severe (psychotic) depression accompanied by hallucinations and delusions. Depression is prevalent among all age groups, in almost all walks of life".[1] "True clinical depression is a mood illness characterized by feelings of

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Research Article

EFFECT OF ORANGE PEEL EXTRACT ON INTESTINAL ABSORPTION OF ASPIRIN USING EVERTED SAC TECHNIQUE

Komal Dattatraya Pol*[1], Pradnya Nilesh Jagtap[1], Sumit Kailas Musle[2], Shweta Shivaling Bobade[3], Ankita Mahadeo Kadam[4], Vaishnavi Pradeep More[5], Pratibha Pradip Deshmukh[6], Ashwini Mahadev Kunjir[7]

Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India

**Corresponding author: polkomal94@gmail.com*

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ABSTRACT

Drug distribution and absorption are significantly influenced by the biological membrane's permeability. Since aspirin requires high and frequent doses and undergoes substantial presystemic metabolism during oral absorption, there is a higher risk of GIT adverse effects. The purpose of the current study was to use the everted sac technique on goat intestine to examine the impact of orange peel (Citrus Aurantium Dulcis) extract on intestinal absorption. When kept with orange peel extract, the concentration of absorbed aspirin was 20, 26, 30, 38, and 50µg/ml after 15, 30, 45, 60, and 75 minutes, compared to 14, 16, 17, 18 and 23 µg/ml when kept alone. According to the study, aspirin is absorbed more readily from goat intestines when orange peel extract is used. Citrus peel contains a lot of phenolic chemicals, including flavonoids and phenolic acids. In addition, limonene, citral, neohesperidin, naringin, rutin, rhamnose, eriocitrin, and Vitamin-C etc. are found in the peel. They might be in charge of the plant's capacity to boost absorption.

Keywords: Everted sac, Orange peel, Aspirin, Buffer, Absorption.

1. INTRODUCTION

A number of factors can affect the systemic availability of pharmacological compounds given orally. While some of them have systemic causes, others are related to medicines [1-2]. Product technology and material science have researched and altered drug-related properties such as solubility, partition coefficient, ionic charge of molecule, penetrability, particle size and shape, salts, isomers, polymorphs, and stability in great detail [3-5]. But altering systemic elements like membrane transporters, intestinal enzymes, membrane permeability, areas or sites of absorption, methods of absorption, etc. can be difficult. The oral route is one of the most important drug administration techniques. The investigation of a drug's or molecule's absorption properties has been shown to be challenging in terms of testing parameters and consistency [6]. The mechanisms driving medication interactions, drug metabolism, and drug absorption are all highly complex processes that necessitate in-depth study. The intestinal epithelium has a number of carriers and pumps that aid in intestinal absorption in addition to passive absorption. Drug substrates are moved by one type of pump (influx transporter) from the intestinal mucosa to the serosal side, and by another pump (efflux transporter) from the serosal side to the mucosal side [7]. The potential of drugs to cross biological membranes is believed to be a key factor in their distribution and absorption. The medication's solubilisation or dissolution under particular physiological conditions, the permeability of the gastrointestinal system, and the drug's release from the solid dosage form after oral administration all affect how well the drug is absorbed. Poor permeability caused by structural features and membrane-based efflux mechanisms may occur in inadequate gastrointestinal mucosal absorption or inadequate body distribution. Some materials' permeability parameter using the everted sac method, pharmacological substances can be evaluated in vitro." [8] "To maintain the tissue, the intestinal sac of a goat, sheep, or rat is everted in this method to display the mucosal surface in a healthy state. Following administration of the test chemical into the mucosal fluid,

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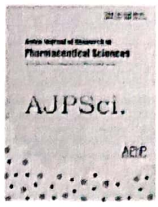

REVIEW ARTICLE

A Review on Ayurved in the Treatment and Management of Motor Neuron Disease

Shweta S. Bobade*, Komal D. Pol, Mahesh S. Mali, Pradnya N. Jagtap, Sumit K. Musale
Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India. 412301.
*Corresponding Author E-mail: **bobadeshweta5233@gmail.com**

ABSTRACT:
Motor neuron disease (MND) is a devastating neurodegenerative disease with a poor prognosis and severe disability. Many potential external risk factors have been proposed as part of a gene-environment interaction in the etiology of MND. This result is also supported by current hypotheses concerning the cellular and genetic origins of MND. A motor neuronopathy that exacerbate frontotemporal dementia is known as MND (FTD). Frontal and temporal neocortical atrophy induce severe personality changes, inappropriate social conduct, and executive difficulties in people with FTD. Motor neuron disease causes symptoms such as bulbar palsy and limb amyotrophy. Frontal executive function deficits are seen in MND/amyotrophic lateral sclerosis (ALS) patients who are not considered demented. Furthermore, MRI has revealed anomalies in the frontal lobe. MND, according to Ayurveda, are caused by Vata Dosha. Vatais in charge of the nervous system's autonomic, peripheral, and central functions. It oversees the brain's cognitive and neurological processes. This article gives the information about the Ayurveda in management of MND, Panchakarma treatments for MND, various herbs and herbal formulations like Ashwagndha, Brahmi, Gotu kola, Shilajit, Kapakacchu, VrihatVatchintamani Ras, Medhyachurna used in the treatment and management of MND.

KEYWORDS: MND, FTD, Physical activity, Ayurveda, Panchakarma.

1. INTRODUCTION:

Motor neuron disease is the slow degeneration of upper and lower motor neurons (MND). The name "amyotrophic lateral sclerosis" was coined by Jean-Martin Charcot in 1874 to describe the disease (ALS). The most common type of the disease is now known as ALS, and the terms are frequently interchanged with MND.[1] Muscle atrophy or weakness in one or more limbs or bulbar areas is a symptom of Amyotrophic lateral sclerosis (ALS).[2] A combination of upper and lower motor neuron loss leads to widespread muscle weakness. MND start age, location of onset, and rate of progression are all highly variable, with each of these factors having a significant impact on life expectancy.[1]

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For a long time, it was thought that classic motor neuron disease/amyotrophic lateral sclerosis (cMND/ALS) spared cognitive abilities. However, there are multiple historical allusions to behavioral problems in MND, as well as descriptive language like schizophrenia and dementia. FTD/MND syndrome is significant because it has the potential to provide insight on the evolution of symptoms in FTD due to its slower progression. It refers to the early cognitive and anatomical changes that occur in FTD prior to the illness spreading and secondary degenerative processes. Furthermore, FTD/MND may have an impact on our understanding of the cognitive changes that occur in cMND/ALS.[3]

1.1 AYURVEDA IN MANAGEMENT OF MOTOR NEURON DISEASE:

Ayurveda defines health as a state in which the physical body, senses, and psyche are in their original or natural state in terms of body and function. Vata is thought to be the most important component in the body's

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Evaluation of Pharmacological Impact of Syzygium Cumini and Ginkgo Biloba on Platelet Aggregation And Blood Coagulation in Experimental Animals

Ankita M. Kadam[1], Pradnya N. Jagtap[2], Vishakha V. Jagtap[3]

[1]Student of Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India 412301
[2]Head of Department of Pharmacology, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India 412301
[3]Assistant Professor, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India 412301

Corresponding Author: Ankita M. Kadam

ABSTRACT

The leading causes of morbidity and mortality in developed nations include thrombotic disorders like deep vein thrombosis, pulmonary emboli, ischemic stroke, hypercoagulable states, strokes and heart attacks. There are variety of treatment to treat those hypercoagulable states like anticoagulant drugs consisting of warfarin heparins, vitamin K antagonists, and their derivatives have been used for the treatment. Although their efficacy remains undisputed, the deleterious life-threatening side effects of these drugs have also been well documented. Which include bleeding and significant hemorrhage. There are many traditional medicinal plants that have been reported to have antiplatelet and anticoagulation activity, and many of them have shown potent effect but there is need of herbal drug having both anticoagulant as well as antiplatelet effect in combination. Syzygium cumini is use in treatment of coagulation from long time, while anticoagulation and antiplatelet effect of Ginkgo biloba is rarely studied. Hence, the present study aimed to determine antiplatelet and anticoagulation activity of both herbs by combining those herbs and to study Synergistic effect of both herbs. The administration of herbal extract of Syzygium cumini and Ginkgo biloba orally at doses of 500, 1000 and 1300 mg/kg showed antiplatelet and anticoagulation effect by significantly reducing platelet aggregation and blood fibrinogen level along with prolongation of Prothrombin and activated partial thromboplastin time.

Keywords: Deep vein thrombosis, Thrombotic disorders, Antiplatelet, Anticoagulation, Hypercoagulable states, Synergistic effect

INTRODUCTION

Blood coagulation can be defined as formation of blood clot. Coagulation of blood is the process by which a thrombus or clot forms, preventing extra blood from draining. Fibrin and platelets combine to form this substance that resembles gel. Blood Coagulation is the end result of several processes in the blood clotting mechanism.[1]

Coagulation process is mostly utilised to treat wounds, lesions, and other types of injuries by eventually stopping the bleeding. Haemostasis is the process through which blood clots, dissolves, and is followed by the healing of the wounded tissue.[2] Platelet association and coagulation factor are involved in coagulation. Usually, a number of inhibitors that restrict clot formation prevent the spread of thrombus by inhibiting the coagulant process. Anticoagulants are substances that stop blood clots from forming.[3] There are total 12 clotting factors which plays active role in clotting process. Mainly there are two major pathways for blood coagulation, Extrinsic pathway and Intrinsic pathway.

Which include series of clotting process through formation of specific clotting factors and further both pathways follow common pathway by involvement of tissue factor.[4,5,6] Hyper-coagulability is imbalance between clotting and clot-busting factors. It is believed to happen when there is a higher concentration of tissue activation factor and a lower concentration of plasma antithrombin or fibrinolysins.[7]

Anticoagulant medications such as warfarin heparins, vitamin K antagonists, and their derivatives have been utilised to treat thromboembolic illnesses as a result of their crucial role in both prevention and treatment. The harmful, potentially fatal adverse effects of these medications have also been thoroughly documented. The leading causes of morbidity and

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Piperine: A Potent Antioxidant from Black Pepper in Treatment of Glucose-Induced Cataract

Shweta S. Bobade*[1], Sumit. K. Musale[2], Pradnya. N. Jagtap[3], Vaishnavi P. More[4], Ankita M. Kadam[5], Komal D. Pol[6]

*[1]*Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth GovindRaghunath Sable College of Pharmacy, Saswad, Pune, India. 412301*
*[2]*Assistant Professor, Department of Pharmacology, Pune District Education Association's Seth GovindRaghunath Sable College of Pharmacy, Saswad, Pune, India. 412301*
*[3]*Head of Department, Department of Pharmacology, Pune District Education Association's Seth GovindRaghunath Sable College of Pharmacy, Saswad, Pune, India. 412301*
*[4,5,6]*Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth GovindRaghunath Sable College of Pharmacy, Saswad, Pune, India. 412301*

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ABSTARCT

Cataract is an opacity within the clear natural crystalline lens of the eye that causes eyesight impairment over time. Ageing, free radical production, diabetes, and oxidative stress-induced protein denaturation are all factors that contribute to cataract formation. Antioxidants protect the eyes by minimizing the effects of free radicals. In this study, we tested the anti-cataract effect of antioxidants such as piperine and ascorbic acid using an in vitro glucose induced cataract model. The current work used goat lenses to test the anti-cataract efficacy piperine in vitro against glucose-induced cataractogenesis. Clear isolated goat lenses are separated into six experimental groups and cultured in produced aqueous humor. For a period of 24 hours, 15µg/ml, 30µg/ml, and 60µg/ml of piperine are incubated simultaneously with glucose (55mM) and glucose (5.5mM). Higher levels of Na+ and MDA (P0.001) were seen in cataract-inducing lenses, as well as lower sodium-potassium ATPase activity and water-soluble protein content. The typical medication is ascorbic acid (40µg/ml). The opacity of the lens is measured at the end of the incubation period by photographic evaluation. The piperine shows significant prevention of cataractogenesis of eye lenses by piperineat 60µg/ml.

KEYWORDS: Anti-cataract, piperine, glucose, in-vitro, ascorbic acid, antioxidants.

I. INTRODUCTION

"Because increasing levels of glycosylated hemoglobin are involved in an increased risk of cataract formation, the disease cataract, or lens opacification, occurs commonly in diabetic patients of advanced age".[1]"According to varied experimental data, numerous cataract-inducing variables have been identified; nonetheless, the molecular cause of cataractogenesis remains unknown. Cataracts are caused by a variety of reasons, the most common of which is the aggregation of proteins on the eye lenses. The activity of the lens's Na+ — K+ -ATPase plays a critical role in maintaining the lens's transparency, and its imbalance causes Na+ deposition and K+ loss, as well as water absorption through the lens fibers, resulting in cataract formation". [2] "A variety of medicines have been tried for the treatment of cataracts, but none of them have proven to be effective". [3]

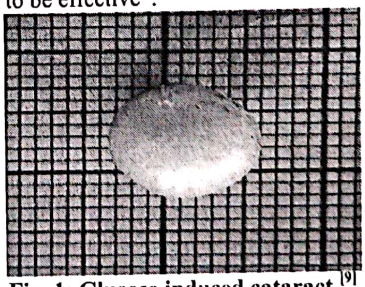

Fig. 1: Glucose induced cataract [9]

"The enzyme aldose reductase is thought to play a role in the development of eye problems such as cataracts". [4]"The aldose reductase converts sugar molecules such as glucose, galactose, and xylose into their corresponding alcohols via metabolic pathways. These alcohols, known as polyols, accumulate within the lens, causing osmotic consequences. As a result, polyols do not easily diffuse out and do not metabolize

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A Research On: Effect of Vinca Plant Extract on Intestinal Absorption of Aspirin using Everted Sac Technique

[1]Shweta S. Bobade, [2]Pradnya N. Jagtap, [3]Sumit K. Musale, [4]Vaishnavi P. More, [5]Komal D. Pol, [6]Pratibha P. Deshmukh, [7]Ankita M. Kadam, [8]Ashwini M. Kunjir

[1]Student of Master of Pharmacy, [2]Head of Department of Pharmacology, [3]Assistant Professor, [4]Student of Master of Pharmacy, [5]Student of Master of Pharmacy, [6]Student of Master of Pharmacy, [7]Student of Master of Pharmacy, [8]Student of Master of Pharmacy.

[1]Department of Pharmacology

[1]Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India. 412301.

ABSTRACT

Drug distribution and absorption are significantly influenced by the biological membrane's permeability. Since aspirin requires high and frequent doses and undergoes substantial pre-systemic metabolism during oral absorption, there is a higher risk of GIT adverse effects. By applying the everted sac technique on goat intestine, the current study sought to examine the impact of vinca plant (Catharanthus roseus) extract on intestinal absorption. After 15, 30, 45, 60, and 75 minutes, respectively, the concentration of absorbed aspirin when kept with vinca plant extract was 20, 26, 30, 38 and 50 µg/ml, compared to 14, 16, 17, 18 and 23 µg/ml when kept alone. According to the study, vinca plant extract increases the absorption of aspirin from goat intestines. The vinca alkaloids are crucial as cancer preventatives. There are four main vinca alkaloids that are used in medicine: vincristine, vinblastine, vinorelbine and vindesine. They may be responsible for the plant's ability to increase absorption.

KEYWORDS: Everted sac, vinca, Aspirin, buffer, absorption.

INTRODUCTION

"The systemic availability of pharmacological molecules administered orally is influenced by a variety of circumstances. Some of them have to do with drugs, while others have systemic causes." [1][2] "Drug-related characteristics like solubility, partition coefficient, ionic charge of molecule, penetrability, particle size and shape, salts, isomers, polymorphs, and stability have been thoroughly explored and modified through product technology and material science." [3][4][5] "However, it can be challenging to change systemic components such membrane transporters, intestinal enzymes, membrane permeability, areas or sites of absorption, mechanisms of absorption, etc. One of the most crucial methods for drug administration is the oral route. When it comes to testing parameters and reproducibility, the study of a drug's or molecule's absorption qualities has been proven to be troublesome." [6] "Drug interactions, drug metabolism, and drug absorption are all rather complex processes that call for in-depth research to comprehend the underlying mechanisms. In addition to passive absorption, the intestinal epithelium contains a number of carriers and pumps that help with intestinal absorption. One sort of pump (influx transporter) moves drug substrates from the intestinal mucosa to the serosal side, whereas an efflux pump moves drug substrates in the opposite direction, from the serosal side to the mucosal side (efflux transporter)." [7]

"The ability of medications to pass through biological membranes is thought to be a crucial component in their absorption and distribution. After oral administration, the release of the drug substance from the solid dosage form, the drug's solubilization or dissolution under specific physiological conditions, and the permeability of the gastrointestinal tract all play a role in how well the drug is absorbed. Poor permeability brought on by structural characteristics as well as membrane-based efflux processes might result in subpar distribution throughout the body or subpar absorption across the gastrointestinal mucosa. The permeability parameter of some pharmacological compounds can be tested in vitro using the everted sac technique." [8] "In this procedure, the intestinal sac of a goat, sheep, or rat is everted to reveal the mucosal surface in a healthy state to preserve the tissue. The test substance is then administered into the mucosal fluid, and the absorption process is researched and/or compared." [8][9]

"The most popular and commonly used analgesic and antipyretic medicine is aspirin (acetyl salicylic acid), which is safe when used within the therapeutic dose range for a variety of medical conditions. The medication is also helpful for post-myocardial infarction, rheumatoid arthritis, acute rheumatic fever, and osteoarthritis. Since it is a mild acid, the stomach and upper intestinal system absorb it. The barrier to absorption, however, is Aspirin's limited water solubility." [9] "Orally administered aspirin requires high and frequent doses, which is linked to an increased risk of GIT side-effects since it undergoes substantial pre-systemic metabolism in the GIT and liver, converting it to salicylic acid." [10] "Numerous studies to improve drug absorption have been conducted, and they have revealed

Design and Development of nanoparticle based antidiabetic formulation of Gymnema Silvestre Plant

Mrunal K. Shirsat[1], Vaibhav C. Shilimkar[2]

Abstract

Millions of individuals worldwide suffer with diabetes, a chronic metabolic disease that has a significant impact on human survival. In India, awareness of the well-known endocrine illness diabetes mellitus is growing. Using suitable animal models, researchers examined the pharmacological effects of a Gymnema Silvestre leaf extract, including its antidiabetic efficacy. Then, nanoparticles were created and characterised using a number of techniques. After that, a tablet was developed and tested in a variety of pre and post compression circumstances.

Key Words: Nanoparticles, Gymnema Silvestre, Anti-diabetic activity

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Introduction

Knowledge and use of plants as herbal medicines has occurred in various populations throughout human evolution, beginning when man was learning to select plants for food, and to relieve ailments and diseases. However, during the second half of the twentieth century, especially in the Western world, herbal medicines were gradually replaced by allopathic medicines. Allopathic treatments are currently more widely used than traditional medicines, especially in developed countries. However, most developing countries continue to use these natural medicines, most likely because obtaining a synthetic drug is expensive. According to the World Health Organization, 80% of people in developing countries depend on traditional medicinal practices to meet and/or supplement their basic health needs.[1]

Currently, despite marketing and encouragement from the pharmaceutical industry during the development of allopathic medicines, a large segment of the population in many countries continues to utilize complementary practices for their health care. Many of these practices are derived from medicinal plants. However, due to economic, political, and social changes that have occurred worldwide, the therapeutic use of these natural resources, which are mainly used by people who cannot afford different treatments, has greatly diminished.[2]

Elucidating the chemical composition of medicinal plants and their popular uses has become a research focus for all scientific communities. This research may lead to increasingly innovative products, with fewer side effects than existing drugs. Furthermore, the enormous diversity of structures of natural products, as well as their physicochemical and biological properties, has impressed researchers. However, except when they are used for local health care needs, a low percentage of plants have been tested for their medicinal potential. Therefore, there is a lack of information to describe any true potential.

The biological activity of medicinal plants from all over the world has been studied by several groups of researchers. These studies are based on the popular uses of different species, as well as on popular knowledge and scientific studies describing medical plant use, with a focus on how these plants could benefit the pharmaceutical industry.

Corresponding author: Mrunal K. Shirsat
Address: [1]SBSPM B-Pharmacy College, Ambejogai, Dist-Beed, Maharashtra-431517, [2]Research Scholar, Sunrise University, Alwar, Rajasthan, India

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Phytochemical evaluation of the marketed drakshasava formulation by spectroscopic & chromatographic methods

Mr. Ganesh B. Nigade
Assistant Professor, PDEA's Seth Govind Raghunath Sable College of pharmacy, Saswad
Corresponding author email: ganeshpharma2984@gmail.com

Dr. Meenakshi N. Deodhar
Principal, Lokmanya Tilak Institute of Pharmaceutical Sciences, Pune

Dr. Rajashree S. Chavan
Principal, PDEA's Seth Govind Raghunath Sable College of pharmacy, Saswad

Abstract---Background: Drakshasava is a general health tonic, carminative and blood purifier. It is used in the treatment of anemia, digestive & cardiac disorders. A review of the literature suggested that modern analytical methods are not reported for the phytochemical evaluation of drakshasava. Objective: To report phytochemical evaluation of Drakshasava Formulation by Spectroscopic & Chromatographic Methods. Materials and methods: Total phenolic, flavonoid, sugar and reducing sugar content in marketed drakshasava formulations were estimated by a UV-Vis spectrophotometer. The markers and extract of drakshasava formulations I & II were scanned by FTIR spectrophotometer individually to find the common bands of the vibrational spectra of markers and formulations. The markers and extract of drakshasava formulations I & II were subjected to HPLC analysis. Results: UV-Vis spectrophotometer analysis revealed that total phenolic, flavonoid, total sugar, & total reducing sugar of marketed drakshasava formulations were within the limit of ayurvedic pharmacopeia. The gradient mobile phase solvent A (HPLC grade water containing 0.85% w/v ortho phosphoric acid) and solvent B (acetonitrile) were optimized by considering the resolution, peak shape, and symmetry. Conclusion: The evaluation parameters reported in this article could be used as a standard reference for quality management of marketed drakshasava formulations.

Keywords---Phytochemical, Drakshasava, spectroscopic, chromatographic.

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ORIGINAL ARTICLE

Validated Stability-Indicating RP-HPLC Method for Daclatasvir in Tablets

Hemlata M. NIMJE[1]* Smita J. PAWAR[1], Meenakshi N. DEODHAR[2]

[1]Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Department of Pharmaceutical Chemistry, Pune, India
[2]Lokmanya Tilak Institute Pharmaceutical Sciences, Department of Pharmaceutical Chemistry, Pune, India

ABSTRACT

Objectives: The current study goal was to create a precise, sensitive, and validated reverse phase-high performance liquid chromatography (RP-HPLC) method for assessing the direct-acting antiviral daclatasvir (DCV) as well as to evaluate the stability of DCV in both drug and tablet formulations. The current investigation was to display stability indicating methods under different stress conditions, including hydrolysis (acidic, basic, and neutral), oxidation, and photolysis.

Materials and Methods: All experiments were performed on HPLC Agilent 1100 with a stainless steel Hypersil C_{18} column having a particle size of 5 µm and a dimension of 4.6 x 250 mm. The mobile phase chosen was acetonitrile: 0.05% *o*-phosphoric acid (50:50 *v/v*) in isocratic mode with 0.7 mL/min flow rate and wavelength 315 nm was selected for detection.

Results: This method was validated for linearity and range, accuracy, precision, limit of detection, limit of quantification, and robustness in accordance with International Council for Harmonisation (ICH) requirements. The results were satisfactory. It was observed that retention time (t_R) was 3.760 ± 0.01 min. In acidic conditions, DCV degradans show t_R at 3.863, 4.121, and 4.783 min and tandem mass spectrometry (MS/MS) spectra scans had *m/z* 339.1, 561.2 fragment ions. In basic condition, DCV degradans show t_R at 5.188, 5.469 min and MS/MS spectra scans having *m/z* 294.1, 339.1, 505.2, 527.2 fragment ions. In oxidation conditions, DCV degradans shows t_R at 4.038 min and MS/MS spectra scans having *m/z* 301.1 and 339.1 fragment ions were observed.

Conclusion: All the mass fragments exhibited additional degradation observed for different stress conditions. This will help to identify the structure of the degradant and its pathways. No degradation was observed in neutral and photolytic conditions.

Key words: Daclatasvir, RP-HPLC, tablets, validation, stability-indicating method

INTRODUCTION

Millions of people suffer from hepatitis C virus (HCV) infections. Daclatasvir (DCV) permits once-daily oral treatment, has been shown in *in vitro* experiments to have a very potent antiviral activity against several HCV genotypes.[1,2] Since, direct acting antivirals (DAAs) for HCV have become available, any possible medication interactions between antiretrovirals and DAAs must be assessed before co-therapy.[3] Cirrhosis and hepatocellular cancer have been linked to chronic HCV in various parts of the world.[4] DCV is an effective, new, and non-selective structural protein inhibitor, formerly known as BMS-790052.[5] NS5A, the multifunctional protein which is a crucial part of the HCV replication complex, is inhibited by DCV. It inhibits viral RNA replication and virion development. Data from computer models and *in vitro* investigations point to an interaction between DCV and the protein's *N*-terminus in domain 1 that may result in structural alterations that reduce NS5A activity.[6-8] Chemically, DCV is methyl ((1*S*)-1-(((2*S*)-2-[5-(4'-(2-((2*S*)-1-((2*S*)-2-((methoxycarbonyl)amino)-3-methylbutanoyl)-2-pyrrolidinyl)-1*H*-imidazol-5-yl)-4-biphenylyl)-1*H*-imidazol-2-yl)-1-pyrrolidinyl)carbonyl)-2-methylpropyl) carbamate (Figure 1). The molecular formula of DCV is $C_{40}H_{50}N_8O_6$ and the molecular weight is 738.89 g/mol.[9] Nimje and Deodhar[10,11] developed stability indicating methods for DCV by high-performance

*Correspondence: hemant.mje@gmail.com, Phone: +91 9689953100, ORCID-ID: orcid.org/0000-0002-8969-1885
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RESEARCH ARTICLE

Design, Synthesis and Antimicrobial Activity of 1,3-Diazine Derivatives

Pranali A. Jadhav[1,2], Jayashree R. Jagtap[2,*], Meenakshi N. Deodhar[3], Rajashri S. Chavan[2] and Smita J. Pawar[2]

[1]*Department of Pharmaceutical Chemistry, D. Y. Patil Unitech Society's, D. Y. Patil Institute of Pharmaceutical Sciences and Research, Pimpari, Pune, Maharashtra 411018, India*

[2]*Department of Pharmaceutical Chemistry, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra 411018, India*

[3]*Lokmanya Tilak Institute of Pharmaceutical Sciences, Pune, Maharashtra 411018, India*

Abstract:

Background:

Pyrimidines have been shown to possess numerous biological activities, such as antimicrobial, anticancer, anticonvulsant, antiviral, and anti-inflammatory.

Objective:

Encouraged by these data, the synthesis of 2-((1*H*-benzo[*d*]imidazol-2-yl)methylthio)-4- amino-6-phenylpyrimidine-5-carbonitrile (3a-g) was performed.

Methods:

4-amino-2-mercapto-6-phenylpyrimidine-5-carbonitrile was dissolved in an aqueous sodium hydroxide solution, and to this clear solution, 2-chloromethyl-1*H*-benzimidazole in methanol was added, and the reaction mixture was stirred under reflux to get the desired product. The structures of the newly synthesized compounds were confirmed by their physical, chemical, and spectral data. The synthesized derivatives were screened for their *in vitro* antibacterial activity against Gram-positive bacteria, *Staphylococcus aureus* and *Bacillus subtilis*, and Gram-negative bacteria, *Escherichia coli* and *Pseudomonas aeruginosa*, by using ciprofloxacin as a reference standard. While, their antifungal activity was evaluated against *Aspergillus niger* and *Candida albicans* using fluconazole as a reference drug. The docking study was performed to check the interactions of target compounds (3a-g) with homo sapiens DHFR (PDB: 1S3V), bacterial (*S. aureus*) DHFR (PDB: 2W9T), and DHPS (PDB: 1AD4) protein. The dock score and binding interactions were recorded.

Results:

The antimicrobial activity study indicated compounds with chloro (3b), fluoro (3f), and bromo (3g) substituents to show good antibacterial as well as antifungal activity. The docking study revealed that the same compounds, *i.e.*, 3b, 3f, and 3g, showed good dock score and comparable interactions compared to the reference ligand (trimethoprim/sulfadiazine), which confirmed their selectivity.

Conclusion:

It can be presumed that the synthesized compounds have the capability for further promotion as novel antimicrobial agents.

Keywords: Antimicrobial, Pyrimidine, Antibacterial, Docking, DHFR, DHPS.

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1. INTRODUCTION

According to the World Health Organization (WHO), the emergence and spread of resistance to existing antimicrobial agents have been recognized as one of the biggest threats to global public health. This increased resistance has limited the selection of antimicrobials to treat the disease. Therefore, there is a need to develop new and improved antibacterial drugs with novel targets and that are not liable to the existing resistance mechanisms [1].

Currently, pyrimidine ring-containing compounds have attracted the major interest for antibacterial drug discovery. In view of their good activities and varied mechanisms of action, plentiful pyrimidine-containing heterocyclic compounds have directed the focus of many scientists towards them [2]. Therefore, a large number of pyrimidine derivatives have become of considerable biological and chemical interest. In the

* Address correspondence to this author at the Department of Pharmaceutical Chemistry, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra 411018, India;
E-mail: jayarjagtap@gmail.com

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Research Article

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Development and validation of stability-indicating RP-HPLC method for rivaroxaban in tablet dosage form

Hemlata NIMJE[1*], Rajashree CHAVAN[1], Smita PAWAR[1], Meenakshi DEODHAR[2]

1 Department of Pharmaceutical Chemistry, P. D. E. A. Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune 412301, Maharashtra, India.

2 Department of Pharmaceutical Chemistry, LokmanyaTilak Institute Pharmaceutical Sciences, Mukund Nagar, Gultekadi, Pune, 411037 Maharashtra, India.

* Corresponding Author.E-mail: hemanimje@gmail.com(H.M); Tel. +91 9689953100.

ABSTRACT: The goal of this study was to create an RP-HPLC method for analysing the anticoagulant rivaroxaban (RIV) and estimating associated degradants in drug and tablet dosage forms that are accurate, sensitive and validated. The analysis was carried out on a Phenomenex Luna C18 column (4.6 x 250mm, 5µm particle size) at 40°C in isocratic mode with mobile phase water and acetonitrile (45:55 v/v) at a flow rate of 1.2 ml/min and a wavelength of 249 nm. This method was validated for linearity and range, accuracy, precision, LOD, LOQ and robustness according to ICH guidelines and the findings were satisfactory. The current study was carried out under various stress circumstances in order to determine the chemical structure of the primary degradation products generated when the drug was exposed to hydrolysis (basic, acidic, neutral), oxidation and photolytic conditions. Retention time (t_R) was found to be 4.191±0.01 min. The three primary degradation products D1 (t_R shown at 1.813 min), D2 (t_R shown at 2.229 min), and D3 (t_R shown at 1.850 min) developed during stress conditions in 0.1N NaOH, 0.1N HCl and 30% H_2O_2, respectively, as revealed by chromatogram and mass spectra. Under the ion spray voltage of 5500 V for positive mode, the molecular ion [M+1] m/z 436.3 of RIV was seen. The fragment ion peak was observed at m/z 415.5, 338.6, and 149.2. In basic, acidic and oxidative environments, RIV was found to be degraded. Quadrapole MS/MS was used to identify these contaminants in drugs and drug products.

KEYWORDS: Rivaroxaban; RP-HPLC; tablets; validation; stability-indicating method.

1. INTRODUCTION

Rivaroxaban (RIV) is the first and only oral direct factor Xa inhibitor approved drug for the treatment of thromboembolic diseases [1]. RIV is a blood thinner with a molecular weight of 435.8 g/mol ($C_{19}H_{18}ClN_3O_5S$) (oral anticoagulant). It has a tiny ring of oxazolidinone that binds to factor Xa directly and reversibly [2]. In humans, RIV has a high plasma protein binding rate (92–95%) with serum albumin being the primary binding component [3]. RIV binds to the S1 and S4 compartments of serine endopeptidase, which is responsible for factor Xa inhibition potency [4]. RIV is used in adult patients undergoing knee replacement therapy and is used to treat deep vein thrombosis and pulmonary embolism. Chemical formula of RIV (figure 1) is 5-chloro-*N*-[[(5*S*)-2-oxo-3-[4-(3-oxo-4-morpholinyl)phenyl]-5-oxazolidinyl]methyl]-2-thiophene carboxamide [5]. It is a white to slightly yellowish powder that is soluble in DMF and almost sparingly dissolves in water. Only a few methods of analysis for RIV in tablet dosage forms have been published, including UV Spectrophotometry [6,7] HPTLC [8], UPLC [9], HPLC [10,11], LC/MS and TLC [12,13]. HPLC and LC-MS have been used in a few bioanalytical techniques for RIV [14-16]. Basima et. al. established a sensitive and validated HPLC method for determining RIV and associated impurities in the parent drug and its dosage forms [17]. Burla et. al. used a stability-indicating HPLC method with a UV detector to analyse RIV in bulk and tablet dosage form, but no degradation product was reported by them of RIV [18], whereas the present method shows degradation under given conditions. Effat et. al. [19] established an HPLC based stability-indicating method for RIV using the dissolution test method. Kasad et. al. published a study on RIV base degradation and technique development using RP-HPLC in Bulk [20], but in present study basic, acidic and oxidative conditions show degradation. UPLC-Q-TOF-MS/MS was used to characterise three primary degradation products for RIV under stress settings by Nathalie et. al., but they did not mention the oxidation condition [21]. Ramisetti et. al. published their work on the LC-PDA-MS/MS

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PHASE TRANSFER CATALYSIS: A GREEN APPROACH IN ORGANIC SYNTHESIS

Jayashri R. Jagtap[a*], Pranali A. Jadhav[a], Meenakshi N. Deodhar[a], Rajshree S.Chavan[a]

a. *Department of Pharmaceutical Chemistry, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India- 412301*

ABSTRACT:

Green chemistry, also called sustainable chemistry, is a new field that encourages the look and development of chemicals using principles that minimize the utilization and generation of toxic chemicals. Waste reduction by means of clever strategies and catalysis is the heart of green chemistry. In recent years, catalysts have taken an important role in solving a variety of problems, particularly associated with energy and environment. Catalysts are the primary nanomaterials with wide applications both in academic research and industry. Catalysis research features an incredible opportunity to improve the environment for the reason that the catalytic process can produce cleaner/greener technologies. In this review, the elementary concepts of phase-transfer catalysis (PTC), its classification, applications, and detailed aspects such as the most proficient and environment-friendly green method of organic synthesis, particularly for industrial purpose, have been reviewed.

Key words: Green chemistry, PTC, Applications, PT Catalyst, Greener, soluble PTC etc.

1. INTRODUCTION:

Over three decades, green chemistry has become a significant adoption by industry around the world and for all practitioners and learners in the research community as green chemistry accomplishes an economically beneficial ways for industry and helps to solve the scientific challenges of protecting human health and environment at the molecular level. Green chemistry, likewise known as sustainable chemistry, is defined as the design or synthesis of chemical products and processes which can eliminate or reduce the use or generation of hazardous substances[1].

The increasing use of catalytic process such as Phase- transfer catalysis (PTC) can substantially reduce waste formation at the source, resulting in primary pollution prevention. Phase transfer catalysts are heterogeneous and positive catalysts that facilitate reaction between two substances that have different immiscible phases. These catalysts accelerate the rate of reaction between chemicals and help in solubilizing salts in organic phases. PTC are used in the synthesis of organic chemical compounds *viz.* pharmaceuticals and agrochemicals. PTC are especially useful in green chemistry allowing the use of water so the need for organic solvents are reduced. Normally, the reaction with PTC can be carried out in mild conditions and easy workup procedure so highly used in industrial scale[2]. The objective of this review was to provide brief idea of Phase-transfer catalysis as one of the strategies of green chemistry.

1.1. History:

The term green chemistry was first established as in reaction to the Pollution Prevention Act 1990, which specified that U.S. national policy should minimize pollution by improved strategies such as cost-effective changes in processes, products, raw materials, and recycling as an alternative to treatment and disposal. For inspiring redesign of existing chemical products and processes with diminishing impacts on human health and the environment, in 1991, the U.S. Environmental

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DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR ASSAY OF FLUTICASONE FUROATE FROM NASAL SPRAY FORMULATION

Vitthal Chopade[1*], Vishnu Neharkar[2], Padmanabh Deshpande[3], Makarand Puri[4], Priti Khanapure[1], Vaishnavi Chopade[5], Minal Ghante[6], Jayshree Jagtap[7], Shital Godse[6], Vidhya Bhusari[6], Vasundhara Sawant[6], Sonali Labhade[8], Rajendra Kawade[9], Deepali Kadam[10], Nilesh Jadhav[11], Gaffar Sayyad[12], Dipti Phadtare[13], Shital Godse[6], Pandurang Vijapure[14], Kunal Survade[13], Rahul Mohan[9], Arvind Hatkar[9], Atul Baravkar[15]

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Abstract

The literature search reveals that, several HPLC methods for the determination of Fluticasone furoate in combination with other drugs are reported with long run time, high solvent consumption or with less available instrument as compared with HPLC. There is no any reported HPLC method for individual assay of Fluticasone furoate from nasal spray formulation. So the purpose of present experimental work is to develop a rapid, simple, precise, accurate, specific, and sensitive high performance liquid chromatographic method for assay of Fluticasone furoate from nasal spray formulation. The desired chromatographic separation was achieved on the Inertsil ODS-3V 250 x 4.6 mm, 5µ column, using isocratic elution at 240 nm wavelength. The optimized mobile phase constituted of purified water and acetonitrile in the ratio of 20:80 % v/v delivered at the flow rate 1 ml/min with isocratic elution. The retention time of fluticasone furoate was 5 min. The method was validated according to International conference of harmonization guidelines in terms of accuracy, precision, specificity, robustness, linearity and other aspects of analytical validation. Linearity was established in the concentration range of 27.5 to 82.5 ppm (r^2=1.000). The recoveries obtained were 99.4 -100.5 %. Similarly the % RSD value for precision was also found to be within the acceptable limit. Developed method was simple and convenient which could be successfully applied for the routine analysis.

KEYWORD: Fluticasone furoate, Corticosteroid, Asthma, Allergic Rhinitis, RP-HPLC, Validation, ICH guidelines.

[1]Modern College of Pharmacy, Pune, India. 411044

[2]Rasiklal M. Dhariwal Institute of Pharmaceutical Education and Research, Pune, India. 411019

[3]AISSMS College of Pharmacy, Pune, India. 411001

[4]School of Pharmacy, Vishwakarma University, Pune, India. 411048

[5]PRES College of Pharmacy for Women, Chincholi, Sinnar, Nashik, India. 422102

[6]SMT Kashibai Navale College of Pharmacy, Kondhwa, Pune, India. 411048

[7]SGRS's College of Pharmacy, Saswad, Pune, India. 412301

[8]Dr. D Y Patil Institute of Pharmaceutical Sciences & Research, Pimpri, Pune, India. 411018

[9]Nandkumar Shinde College of Pharmacy, Vaijapur, Aurangabad, India. 413701

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REVIEW ARTICLE

Importance of Pharmacophore in Designing Anticonvulsant Agents

Amol Kale[1,2,*], Rajendra Kakde[3], Smita Pawar[1], Vishal Jagtap[1] and Rahul Dorugade[1]

[1]*Department of Pharmaceutical Chemistry, Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra 412301, India;* [2]*Sudhakarrao Naik Institute of Pharmacy, Pusad, Maharashtra 445204, India;* [3]*Department of Pharmaceutical Sciences, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra 440001, India*

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Abstract: Drug design is one of the critical aspects of the drug development process. The present review focused on different heterocyclic molecules having anticonvulsant activity with structural diversity and common pharmacophoric features. For the first time (1995), Dimmock and his team introduced specific arrangements of three important pharmacophores for anticonvulsant activity. These pharmacophores include two hydrophobic binding sites and one hydrogen binding site. After a few years (2012), Pandeya modified Dimmock's concept by adding one more pharmacophoric feature as an electron donor in the previously suggested pharmacophoric arrangement of the anticonvulsant. As a result, numerous scientists designed anticonvulsant drugs based on Dimmock's and Pandeya's concept. In addition, marketed anticonvulsant preparation containing Riluzole, Phenobarbital, Progabide, Ralitoline, *etc.*, also holds the suggested pharmacophores by Dimmock and Pandeya's pharmacophoric concept. This review mainly focuses on the compilation of reported scientific literature in the last decade on the pharmacophoric features of different heterocyclic anticonvulsants, which will help develop new anticonvulsants.

Keywords: Pharmacophore models, anticonvulsant, maximal electroshock seizure, drug development, electron donor, pharmacophoric features.

1. INTRODUCTION

Epilepsy is a brain disorder characterized by frequent spontaneous seizures of cerebral origin involving the sense of sight, motor, or autonomic effects with or without loss of consciousness [1]. Any brief, unusual behavior, such as loss of consciousness, look, temporary agitation, repetitive thought, unusual feeling, emotional outburst, a strange sensation, odd posturing, or uncontrolled actions, may be signs of epilepsy [2]. Dimmock proposed a model that included an aryl binding site surrounded by an auxiliary binding area and hydrogen binding represented by a semicarbazone ring. Dimmock's pharmacophore model has been modified by Pandeya and he amended it based on new findings of aryl(oxy), aryl semicarbazones as anticonvulsants, an earlier model which included: (i) aryl binding site (proximal aryl ring); (ii) distal aryl ring (distal binding site); (iii) auxiliary binding area; and (iv) semicarbazone handle as H-bonding area, Ureido group is necessary for Hydrogen-bonding. A good anticonvulsant drug should show four essential pharmacophoric elements. These features are well explained by Pandeya and coworkers (2000) [3]. Dimmock & coworkers identified pharmacophoric features (Fig. **1**) at positions A and C as hydrophobic binding sites, while B is a hydrogen bonding site that contributes to anticonvulsant activity [3].

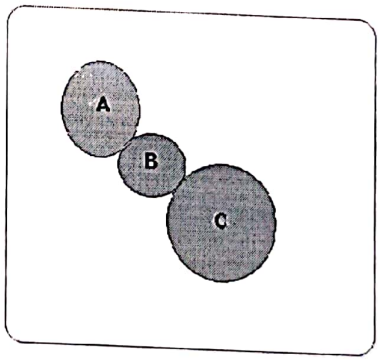

Fig. (1). Proposed binding site of anticonvulsants: The locations A and C are considered hydrophobic binding areas, and B is the hydrogen bonding site [3]. (*A higher resolution/colour version of this figure is available in the electronic copy of the article*).

Pandeya *et al.* outlined the additional structural specifications of a pharmacophore model for anticonvulsants. This pharmacophore model (Fig. **2**) comprises the A-Hydrophobic domain, D-Electron Donor Group, HBD-Hydrogen Bonding Domain, and R-Distal Hydrophobic Domain. This pharmacophore model has been found in the structures of active anticonvulsants (Fig. **2**) [3].

*Address correspondence to this author at the Department of Pharmaceutical Chemistry, Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra 412301, India;
E-mail: amolkale81@rediffmail.com

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An overview of antimicrobial agents

P A Jadhav[1*], J R Jagtap[2], M V Shende[1], P S Gaikwad[1], V H Pawar[1]
[1] Assistant Professor, Department of Pharmaceutical Chemistry, Agriculture Development Trust's, Shardabai Pawar Institute of Pharmaceutical Sciences and Research, Shardanagar, Baramati, Maharashtra, India
[2] PDEA's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India

Abstract
Microorganisms can both be useful and are beneficial in human welfare, whilst others are disease-inflicting and poisonous sufficient to make us ill. Antimicrobial agents are mainly used to cure diseases caused by microorganisms. In this review groups of microorganisms, diseases caused by them, antimicrobial agents, their mechanism of action, mechanism of resistance, strategies used to combat antimicrobial resistance and antimicrobials in current clinical development stage have been discussed.

Keywords: microorganisms, antimicrobial agent, antimicrobial resistance, antibacterial

Introduction

Microorganisms or microbes are minute organisms which are invisible to the bare eyes. These microorganisms are so small in length that they cannot be visible with the unaided eye. Microorganisms are so small that they could simplest be visible beneath a microscope. Some of these, such as the fungus that grows on bread, may be visible with a magnifying glass. Others cannot be visible without the assist of a microscope. This is the motive why they're referred to as microorganisms or microbes. The air we breathe, the meals we eat, the water we drink, the ground wherein we stand, the entirety round us is inhabited via some or the opposite sort of microorganism. They are even present inner our body. Few microorganisms also can face up to severe situations like an area as warm as boiling water, or an area as bloodless as ice. Some microorganisms are located alone, whilst the others are located in colonies. Microorganisms can both be useful and are beneficial in human welfare, whilst others are disease-inflicting and poisonous sufficient to make us ill. Useful microorganisms form a massive a part of the atmosphere and take part with in side the manufacturing of minerals and gases like oxygen, carbon dioxide. They additionally feed at the useless and decaying matter by means of changing the complicated compounds into the easier ones. The bio-geochemical cycle, such as the nitrogen cycle is a critical instance of beneficial microorganisms. These microorganisms are utilized in diverse industries for the manufacturing of diverse metabolites together with ethanol, riboflavin, lactic acid, and butanol. There are some of microorganisms which are chargeable for meals spoilage, illnesses and infections. Such microorganisms are referred to as dangerous microorganisms. Bacteria are the maximum risky of all microorganisms and are chargeable for numerous infectious illnesses together with tuberculosis, cholera, diphtheria, etc. Viruses also are chargeable for sure deadly illnesses together with AIDS, influenza, etc. Fungi also are dangerous and may result in sure pores and skin infections and allergies [1, 2].

Group of microorganisms

- Bacteria
- Fungi
- Viruses
- Algae
- Protozoa

1. Bacteria

Bacteria are unicellular microbes belonging to the prokaryotic group wherein the organisms lack some organelles and a real nucleus. They arise in water, soil, air, meals, and herbal environments. They can live on extremes of temperature, pH, oxygen tension and surroundings pressure. Examples of bacteria: *Escherichia coli*, *Staphylococcus aureus*. Bacteria are categorised into five groups consistent with their fundamental shapes: spherical (cocci), rod (bacilli), spiral (spirilla), comma (vibrio) or corkscrew (spirochaetes). They can exist as single cells, in pairs, chains or clusters [3].

- **Structure of bacteria**

The shape of bacteria is easier than that of different organisms as there's no nucleus or membrane bound organelles. Instead, their regulator centre containing the genetic information is contained in a one loop of DNA.

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RESEARCH ARTICLE

Antinociceptive Investigations of Rubiadin in Chronic pain induced by Freund's adjuvant in mice

Prakash M. Somade[1], Pramod Anil Patil[2], Suraj N. Mali[3], Pratibha S. Gavarkar[4]
Rohan Sharadanand Phatak[1], Rajashree S. Chavan[5], Atul R. Chopade[2]

[1]Krishna Institute of Medical Science "Deemed to be University", Karad - 415539, Maharashtra.
[2]Rajarambapu College of Pharmacy, Kasegaon, District – Sangli, Maharashtra, 415404. India.
[3]Department of Pharmaceutical Sciences and Technology,
Birla Institute of Technology Mesra, Ranchi, (Jharkhand) 835215 India.
[4]Dept. of Pharmaceutical Chemistry, Anandi Pharmacy College,
Kalambe tarf Kale, Tal - Karveer, Dist- Kolhapur 416205.
[5]Principal, Seth Govind Raghunath Sable College of Pharmacy, Saswad, Dist - Pune, Tal - Purandar 412301.
*Corresponding Author E-mail: **prithvirajpatil87@gmail.com**

ABSTRACT:
Main aim of study is to investigate the Rubiadin effects in mice model of chronic inflammation and pain. Complete Freund's adjuvant (CFA) inflammatory model was used for investigation of chronic hypersensitivity. Prior CFA inflammation, Von Frey filaments and acetone induced cold sensitivity test was used to evaluate hypersensitivity, respectively. The paw edema was measured using digital plethysmometer. Intraperitoneally administered Rubiadin (100 and 200mg/kg) prior testing reduced CFA induced mechanical hypersensitivity. Rubiadin reduces evoked acetone cold hypersensitivity. Compared with vehicle, Rubiadin reduces paw edema too. Rubiadin reduced mechanical hypersensitivity significantly when administered two times a day from first to fifth day and from ninth to tenth day. In conclusion study revealed Rubiadin anti-nociceptive activity in chronic pain and also might be potential for effective management of pain.

KEYWORDS: Rubiadin, CFA, Antinociceptive activity.

1. INTRODUCTION:

Rubiadin, is a anthraquinone that has been isolated from *Rubia cordifolia* Linn roots belonging to family-Rubiaceae and good number of activites have been reported regarding its isolation, characterization, analysis and formulation.[1-7] The plant *Rubia cordifolia* bears anti-inflammatory, immunomodulatory, anticonvulsant and anti-tumor activities.[8-10] Rubiadin has been evaluated by our research groups for its analgesic activities.[11] In view of the above points, Rubiadin was evaluated for its role in modulation of chronic pain.

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2. MATERIAL AND METHODS:

2.1 Drugs and reagents- The Rubiadin [chemically it is 1,3-dihydroxy-2-methylanthracene-9,10-dione] purchased from (Product code: R004, Lot. no.: T19D079; CAS No: 117-02-2) Natural Remedies Pvt. Ltd., Bangalore. Rubiadin purity was determined by the manufacturer via HPLC certifying purity above 94.80%. CFA purchased from Sigma (St Louis, MO). Indomethacin purchased from Elder pharma. Analytical grade chemicals and reagents were used in this study.

2.2 Animals- Swiss female mice (weighing in between 25 to 35 g were utilized with freely available food and water. The mice kept under standard environment and fed with standard pellet diet. Food and water were given freely throughout the entire experiments. Approval was obtained from the Institutional Animal Ethics reference number- RCP/18-19/CPCPSEA/P-20. The experiments were carried as per CPCSEA ethical guidelines.

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IN-VIVO INVESTIGATIONS OF CHRONIC INFLAMMATORY PAIN MODULATING POTENTIAL OF NIRANTHIN

GAVARKAR PS[1*], SOMADE PM[2], CHAVAN RS[2], PHATAK RS[3], CHOPADE AR[4] AND KENGAR SB[5]

1: Dept. of Pharmaceutical Chemistry, Anandi Pharmacy College, Kalambe tarf Kale, Tal- Karveer, Dist- Kolhapur 416205

2: Krishna Institute of Medical Science "Deemed to be University", Karad-415539, Maharashtra

3: Principal, Seth Govind Raghunath Sable College of Pharmacy, Saswad, Dist- Pune, Tal- Purandar, 412301

4: Rajarambapu College of Pharmacy, Kasegaon, District – Sangli, Maharashtra, 415404, India

5: Principal, Yashwantrao Chavan College of Science Karad, 415124

*Corresponding Author: Pratibha S. Gavarkar: E Mail: pratibhagavarkar@gmail.com

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ABSTRACT

Background: It has been well referred that lignan family of natural products has goodpharmacological potential. A lignan, Niranthin, 6-[(2*R*,3*R*)-3-[(3,4-dimethoxyphenyl)methyl]-4-methoxy-2-(methoxymethyl)butyl]-4-methoxy-1,3-benzodioxole] is a common phytoconstituents from various *Phyllanthus* species.

Objectives: This study aims to investigate chronic pain modulatory potential of Niranthin.

Materials and Methods: We have investigated the effects of Niranthin on chronic thermal and mechanical hypersensitivities in rats, which were injected with 3% carrageenan in the left gastrocnemius muscle and hyperalgesia to heat and mechanical stimuli was assessed before and at varying times after injection, till end of 22 days after muscle insult. Histological changes and the determination of prostaglandin E2 (PGE2) concentration were performed after the completion of drug treatment protocol.

Results: Our finding noted that Niranthin causes hypersensitivityactivity, when administered intraperitoneally. There was also reduction in prostaglandin E2 (PGE2) concentration observed during our analysis.

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SILYMARIN: A POTENT ANTIOXIDANT AS ANTI-CATARACT FOR THE TREATMENT OF IN-VITRO GLUCOSE-INDUCED CATARCT

[1]Vaishnavi. P. More, [2]Pradnya. N. Jagtap, [3]Sumit. K. Musale, [4]Shweta. S. Bobade, [5]Ankita. M. Kadam,

[6]Komal. D. Pol.

[1]Student of Master of Pharmacy, [2]Head of Department of Pharmacology, [3]Assistant Professor, [4]Student of Master of Pharmacy, 5Student of Master of Pharmacy, 6Student of Master of Pharmacy,

[1]Department of Pharmacology,

[1]Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy, Saswad, Pune, Maharashtra, India. 412301.

ABSTRACT

Cataract is an opacity in the eye's clear natural crystalline lens that causes vision loss over time. Cataract formation is influenced by a number of variables, including ageing, free radical generation, diabetes, and oxidative stress-induced protein denaturation. Antioxidants shield the eyes from the harmful effects of free radicals. We used an in vitro glucose induced cataract model to examine the anti-cataract activity of antioxidants like silymarin and ascorbic acid. Silymarin's anti-cataract effectiveness in vitro against glucose-induced cataractogenesis was tested using goat lenses in the current study. Silymarin's anti-cataract effectiveness in vitro against glucose-induced cataractogenesis was tested using goat lenses in the current study. Six experimental groups of clear isolated goat lenses are grown in generated aqueous humour. Silymarin in concentrations of 15g/ml, 30g/ml, and 60g/ml is incubated with glucose (55mM) and glucose (60mM) for 24 hours (5.5mM). Cataract-inducing lenses had higher levels of Na+ and MDA (P0.001), as well as decreased sodium-potassium ATPase activity and water-soluble protein content. Ascorbic acid (40 g/ml) is a common treatment. Photographic evaluation is used to determine the lens' opacity at the end of the incubation time. At 60 g/ml, Silymarin prevents cataractogenesis of the ocular lenses, indicating that is effective.

KEYWORDS: Anticataract, Antioxidants, Silymarin, Free radicals, In vitro

INTRODUCTION

The main cause of lens transparency is crystalline lens optical failure. It reduces the amount of light that enters the eye, causing eyesight to deteriorate. Cataract affects around a quarter of the population of 65 percent of people over the age of 80. Cataract progression is usually slow and steady, but it can happen suddenly in some cases, and it usually affects both eyes. Senile cataract, also known as age-related cataract, is the most prevalent type of cataract that affects people of any gender over the age of 50. It is one of the most common causes of blindness and visual impairment globally, accounting for around 42 percent of all blindness and putting a strain on the health-care system. [1]

Diabetes was shown to be one of the key risk factors for cataract advancement in an animal experiment. During hyperglycemia, extracellular glucose diffuses into the lens, triggering post-translational alterations. The fundamental reasons of cataract formation are the synthesis and aggregation of more sorbitol in the lens fibers, as well as subsequent osmotic stress. Sorbitol is produced by aldose reductase utilizing NADPH and is unable to pass through cell membranes. It can accumulate in cells and disrupt osmotic balance, resulting in damage. Glutathione (GSH) deficiency contributes to the pathophysiology of cataract formation by maintaining decreased lens proteins. GSH levels in cataracts, on the other hand, were found to be significantly decreased when compared to normal.[2]

A variety of medicines have been tried for the treatment of cataracts, but none of them have proven to be effective.[3] The aldose reductase enzyme is most likely involved in the development of eye problems such as cataracts.[4] The aldose reductase converts sugar molecules such as glucose, galactose, and xylose into their corresponding alcohols via metabolic pathways. These alcohols, known as polyols, accumulate within the lens, causing osmotic consequences. As a result, polyols do not easily diffuse out and do not metabolise quickly, causing hypertonicity, which leads to cataract formation.[5] The oxidative pathway is also important in biological processes such as cataract development. The production of superoxide radicals in the aqueous humour and in the lens, as well as their derivatization to other strong oxidants, may be responsible for triggering a variety of metabolic damaging processes that contribute to cataract

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A REVIEW ON: PHARMACOGNOSTIC AND PHARMACOLOGICAL ACTIVITIES OF GARLIC

Sumit K. Musale*[1], Pradnya N. Jagtap[2], Shweta S. Bobade[3], Vaishnavi P. More[4], Ankita M. Kadam[5] and Komal D. Pol[6]

[1]Assistant Professor, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy Saswad, Pune.
[2]H.O.D. of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy Saswad, Pune.
[3,4,5,6]Student of Master of Pharmacy, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy Saswad, Pune.

Corresponding Author: Sumit K. Musale
Assistant Professor, Department of Pharmacology, Pune District Education Association's Seth Govind Raghunath Sable College of Pharmacy Saswad, Pune.

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ABSTRACT

Garlic (Allium sativum) has traditional dietetic and medicinal uses as an anti-infective agent. Garlic is a hardy perennial member of onion family. Studies explains that it may be originally native to asia, but has long been naturalized to Europe northern Africa, mexico and all over the world. Garlic is classified as member of family alliaceace. The name "Allium sativum" is derived from the celtic word "all", meaning burning or stinging, and the latin "sativum" meaning planted or cultivated. Allium sativum commonly called as garlic. It is belonging to family Alliceace closely related to onion, shallot. Allicin is organo sulfur compound. When fresh garlic chopped enzyme allinase converts to allin into allicin. The generated allicin is very unstable and quickly converted into other sulfur containing compound such as diallyl disulfide. Allicin have antibacterial, antiviral, antifungal, antiprotozoal activity. Allicin is an oily, slightly yellow liquid that gives odor to garlic. Garlic used in food industries as flavoring agent in sauces and salads.

KEYWORDS: Allium Sativum, Organo Sulfur, Diallyl Sulfide, Antiprotozoal.

INTRODUCTION

"The use of herbal drug is increasing. One of these plants used most intensively and widespread is garlic. Historically, garlic has been used for centuries worldwide by various societies to combat infectious disease. Garlic can be provided in the form of capsules and powders, as dietary supplements, and thus differ from conventional foods or food ingredients. Louis Pasteur was the first to describe the antibacterial effect of onion and garlic juices. Allium vegetables, particularly garlic (Allium sativum) exhibit a broad antibacterial activity against Gram-negative and Gram-positive bacteria. Antifungal activity, particularly against candida albicans. Antiparasitic activity, including some major human intestinal protozoan parasites such as Entamoeba histolytica and Giaradia lamblia. Antiviral activity besides other beneficial effects i.e., reduction of cancer risk, antioxidant effect, antimicrobial effect and enhancement of detoxification foreign compound and hepatoprotection".[1]

"Garlic (Allium sativum) has traditional dietetic and medicinal uses as an anti-infective agent. Garlic is a hardy perennial member of onion family. Studies explains that it may be originally native to asia, but has long been naturalized to Europe northern Africa, mexico and all over the world. Garlic is classified as member of family alliaceace. The name "Allium sativum" is derived from the celtic word "all", meaning burning or stinging, and the latin "sativum" meaning planted or cultivated. The use of higher plants and their extracts to treat infections is an ancient practice in traditional medicine. Many plants have been used because of their antimicrobial treats, which are chiefly synthesis during secondary metabolism of the plants. The herbal medicine may be in the form of powder, liquid or mixtures which may be raw or boiled, ointments linings and incision. Traditional medicine is the sum of the total of knowledge, skill and practice based on the theories, beliefs and experiences indigenous to different culture that are used to maintain health as well as to prevent, diagnose, improve or treat physical and mental illness".[2]

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VGSS's Eknath Sitaram Divekar
College of Pharmacy, Varvand.

Dr. Rakesh Kumar Jatav
(MPh, Ph.D) Professor
College of Pharmacy "Dr. A.P.J Abdul Kalam
University, Indore (M.P.).

Prof. Pradnya Jagtap
(M.Pharm Per Ph.D) Pharmacology
Asst. Professor, Seth Govind Raghunath
Sable College of Pharmacy, Saswad.

Dr. Shweta Shriwas
(Ph.D in Pharmacy) Asst. Professor
Dr. A. P. J. Abdul kalam University, Indore.

Dr. Rakesh Patel,
Professor & Principal, School of Pharmacy,
Dr. A. P. J. Abdul Kalam University, Indore (M.P.).

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PROFESSOR
SCHOOL OF PHARMACY
DR APJ ABDUL KALAM UNIVERSITY
INDORE , MP

DR SANTOSH PAWAR
PROFESSOR
DEPARTMENT OF ELECTRONIC AND COMMUNICATION ENGINEERING
DR APJ ABDUL KALAM UNIVERSITY
INDORE , MP

DR RAKESH PATEL
PROFESSOR
SCHOOL OF PHARMACY
DR APJ ABDUL KALAM UNIVERSITY
INDORE , MP

Authors' Profile

Prof Amita Rahul Padalkar (Dongare)
M.Pharm , Per Ph D

Prof Amita Rahul Padalkar (Dongare) is working as Principal in Varvand Gram Shikshan Sanstha's Eknath Sitaram Divekar College of Pharmacy . She has total 20 years of experience in Academics and Pharmaceutical Industry . She completed her graduation and Masters from Savitribai Phule Pune University and perusing Ph D in Pharmaceutical Sciences . She has written Multiple Choice Question book during the online examination pattern in Covid 19.She has Social Pharmacy, Pharmacotherapeutics , Pharmaceutics I , Diploma Pharmacy handbook for Exit Examination , Industrial Pharmacy and 1 Laboratory Manual in her credit .These all books are based on the ER 2020 OF PCI . She is awarded by Best Administrator Award by Varvand Gram Shikshan Sanstha. She also received Global Icons of India award .

Prof. Pradnya Nilesh Jagtap
M.Pharm, Per Ph D

Prof Pradnya Nilesh Jagtap is working as H.O.D & Assistant Professor in PDEA'S Seth Govind Raghunath sable college of Pharmacy, Saswad. She has total 14 years of experience in Academics. She has completed her graduation and Masters from Savitribai Phule Pune University and perusing Ph D in Pharmaceutical Sciences. She has written Diploma Pharmacy handbook for Exit Examination. She has written a book on Bio organic Chemistry & drug design", Published by Nirali Prakashan. She has also many National and International research and review paper on her credit.

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- AUTHORS -

Mrs. Deepali Bhausaheb Jagtap
M. Pharm (Quality Assurance Technique)

Dr. Rajashree Sunil Chavan
M.Pharm, Ph.D (Pharmaceutical Chemistry)

Pune District Education Association's
Seth Govind Raghunath Sable College of Pharmacy (Poly) Saswad.

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Mrs. Deepali Bhausaheb Jagtap
M. Pharm (Quality Assurance Technique)

Dr. Rajashree Sunil Chavan
M.Pharm, Ph.D (Pharmaceutical Chemistry)

Pune District Education Association's
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2	Name of Student	Ombase Tejas Tanaji
3	Name of Industry/Research Institute	V-Ensure Pharma technology pvt. ltd Navi-Mumbai
4	Title of project	Formulation and evaluation of Gastro Resistant Capsule
5	Name & signature of Internal Guide	Prof. Bhosale N.R.
6	Name & Signature of External Guide with seal	Mr. Saswat Padhi 
7	Date of Joining	09/09/2022
8	Duration (From – To)	12th sept 2022 to 12th sept 2023

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Department of Pharmaceutics
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3	Name of Industry/Research Institute	ALKEM Laboratories Ltd R&D
4	Title of project	Formulation development and in vitro Evaluation of Extended release Bilayer Tablet of hypnotic drug.
5	Name & signature of Internal Guide	
6	Name & Signature of External Guide with seal	25/11/2022 (Manas Ranjan) ALKEM LABORATORIES LIMITED R&D PHARMA
7	Date of Joining	20/08/2022
8	Duration (From – To)	6 months

J.V. Shinde

Name & Signature of HOD

H.O.D.
Department of Pharmaceutics
Poona District Education Association's
Seth Govind Raghunath Sable
College of Pharmacy, Saswad

Principal

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1	Academic Year	2022-2023
2	Name of Student	Jadhav Kunal D.
3	Name of Industry/Research Institute	V-ensure Pharma technology pvt. ltd.
4	Title of project	Formulation & evaluation of IR capsule for treatement of ADHD
5	Name & signature of Internal Guide	Prof. J. V. Shinde
6	Name & Signature of External Guide with seal	Mr. saswat padhi 
7	Date of Joining	09/09/2022
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J.V. Shinde
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H.O.D.
Department of Pharmaceutics
Poona District Education Association's
Seth Govind Raghunath Sable
College of Pharmacy, Saswad

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PUNE DISTRICT EDUCATION ASSOCIATION'S
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1	Academic Year	2022 - 2023
2	Name of Student	Gaware Prasanna K.
3	Name of Industry/Research Institute	V-ensure Pharma. technology pvt. Ltd.
4	Title of project	Formulation and evaluation of Antipschotic Film coated tablet.
5	Name & signature of Internal Guide	Prof. J. V. Shinde
6	Name & Signature of External Guide with seal	Mr. Saswat Padhi 
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H.O.D.
Department of Pharmaceutics
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Subject: Request for **project work** in Industry/Research Institute

Dear Madam

I the undersigned ...zope Dhanashri vijay..., student at your college, roll number...34....and currently pursuing M. Pharm in Pharmaceutical chemistry, would like to conduct research project work in the Industry /Research Institute. I am writing this letter to seek your permission for the same.

If allowed to pursue it, I believe it will be beneficial to uplifting my research and laboratory skills and to gain the powerful knowledge and insights in the improved processes adopted in industry/research institute.

Thank you for kind consideration.

Sincerely,

zope Dhanashri vijay
Name & Signature of Student

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Date:- 28/9/2022

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SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY

SASWAD, TAL. : PURANDAR, DIST. : PUNE - 412 301. MAHARASHTRA, INDIA.
Phone : (O) (02115) 222212 **Fax :** (02115) 222213 / 224192 www.sgrspharma.org.in

Resi. : Amrutwel, 213/1A(W), Gajanan Hsg. Soc.,
Karad, Tal. Karad, Dist. Satara 415 105.
(R) (02164) 273088 **(M)** 99707 05513
E-mail : smitapawar@yahoo.co.in/sjpawar4477@gmail.com

Dr. **Ms. Smita J. Pawar**
Asso Professor in Pharmaceutical Chemistry.

Ref. : 292/2022-23

Date : 07/09/2022

To
Dr. Hotha Srinivas
Department of Chemistry
IISER, Pune

Subject: M. Pharm final year project work at your group/laboratory—reg.

Dear Sir

With respect to above mentioned subject, I would like to recommend our students Ms. Dhanashri Zope who wish to do research project for her M. Pharm Dissertation work at your group esteemed institute. The duration of her project will be from September 2022 to January 2023 (can be extendable up to April 2023 if required). For the said project, as per university requirements you will be the external guide and I will be the internal guide for her work. I am sure the student will fully devote to work as required and would say that this association will be beneficial for uplifting her research and laboratory skills.
Further, it is to be mentioned that the college students are covered under group insurance plan under Savitribai Phule Pune University, Pune and no separate certificate is available for the same.
I request you to kindly consider the above and allow her to carry out her academic research work at your group/laboratory.
Thanking you in anticipation.

Thank you

Sawar

Dr. Smita Pawar

H.O.D.
Department of Pharmaceutical Chemistry
Poona District Education Association's
Seth Govind Raghunath Sable
College of Pharmacy, Saswad.

Accepted.

Ms. Dhanashri Zope started working in my grp.

प्रो. श्रीनिवास होता / Prof. Srinivas Hotha
प्राध्यापक-रसायनशास्त्र / Professor-Chemistry
भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान
Indian Institute of Science Education & Research
पुणे / Pune - 411 008, India

Gmail

Dr. Smita Pawar <sjpawar4477@gmail.cor

Ms Dhanashree Zope

message

otha, Srinivas <s.hotha@iiserpune.ac.in>
o: sjpawar4477@gmail.com
c: dhanashreezope44 <dhanashreezope44@gmail.com>

Thu, Sep 22, 2022 at 1:50 F

Dear Dr Pawar:

I am happy to inform you that Ms Dhanashree Zope has joined my laboratory on 18.09.2022 after getting the necessary safety training. She will be working on the synthesis of poly N-acetylglucosamine derivatives as candidate-vaccines.

This is for your information and records.

Regards,
Hotha

VICM/STP
T. N. A
Chavan
29/9/2022

POONA DISTRICT EDUCATION ASSOCIATION'S
Seth Govind Raghunath Sable
College of Pharmacy, Saswad
Inward Letter No:- 910
Date:- 29/9/22

PUNE DISTRICT EDUCATION ASSOCIATION's

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY, SASWAD

Industrial Project Details

Sr. No	Industrial Project Details	
1	Academic Year	2022 -2023
2	Name of Student	Dhanashri vijay zope
3	Name of Industry/Research Institute	Indian Institute of science education and Research.
4	Title of project	synthesis of poly-N-acetylglucosamine derivatives as candidate-vaccines.
5	Name & signature of Internal Guide	
6	Name & Signature of External Guide with seal	Prof. SRINIVAS HOTHA प्रो. श्रीनिवास होता / Prof. Srinivas Hotha प्राध्यापक-रसायनशास्त्र / Professor-Chemistry भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान Indian Institute of Science Education & Research पुणे / Pune - 411 008, India
7	Date of Joining	19/09/2022
8	Duration (From – To)	19 september 2022 to 19 March 2023.

Name & Signature of HOD

H.O.D.
Department of Pharmaceutical Chemistry
Poona District Education Association's
Seth Govind Raghunath Sable
College of Pharmacy, Saswad.

Principal

PUNE DISTRICT EDUCATION ASSOCIATION'S
SETH GOVIND RAGHUNATH SABLE
COLLEGE OF PHARMACY, SASWAD
TAL. PURANDAR, DIST. PUNE-412301

PUNE DISTR ICT EDUCATION ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY

Journal Club Activity 2022-23

PUNE DISTRICT EDUCATION ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY, SASWAD

Attendance

M. Pharm Sem-III

Journal Club Activity (September 2022)

Date: 12/10/2022

Name of Student: Shweta Zinzad

Title of research article presented: Synthesis, physicochemical properties and antimicrobial activity of some new Benzimidazole derivatives.

Author: K.F. Ansari, C. Lal*

Journal: European Journal of Medicinal Chemistry

Publisher – Elsevier Publisher, **Doi:**10.1016/j.ejmech.2009.04.037

Sr. No	Name of Student/Staff	Signature
1	Dr. R. S. Chavan	
2	Dr. S. J. Pawar	
3	Mrs. J. R. Jagtap	
4	Mr. A. P. Kale	
5	Mr. G. B. Nigade	
6	Ms. Madhuri Kudale	
7	Mrs. Pooja Pisal	–
8	Mrs. Pooja Petkar	–
9	Ahire Shubham Satish	
10	Dalvi Sayali Anil	
11	Gambhire Neha Suresh	
12	Lakade Pratik Bhagwan	–
13	Mane Prajakta Arun	
14	Mane Suneja Sanjay	
15	Misale Kshitij Madhav	–
16	Patil Aditi Dipak	
17	Phadtare Srushti Shantilal	
18	Potdar Divyani Deepak	
19	Zinjad Shweta Babaji	
20	Zope Dhanashri Vijay	–
21	Barakar Manjusha Goraksh	

PUNE DISTRICT EDUCATION ASSOCIATION's
SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY
SASWAD, DIST-PUNE

Notice

Date: 27/08/2022

All students of S.Y.M.Pharm Sem III are hereby informed that the seminars for journal club activity will be scheduled from 06/09/2022 to 15/09/2022

The schedule for seminars of journal club activity is as follows:

Sr.No	Name of Student	First Journal Club	Second Journal Club
1	Ms.Shweta Bobade	06/09/2022	13/09/2022
2	Ms.Pratibha Deshmukh	06/09/2022	13/09/2022
3	Ms.Ankita Kadam	07/09/2022	14/09/2022
4	Ms.Ashwini Kunjir	07/09/2022	14/09/2022
5	Ms.Vaishanawi More	08/09/2022	15/09/2022
6	Ms.Komal Pol	08/09/2022	15/09/2022

Mrs. Pradnya Jagtap
H.O.D.
Department of Pharmacology
Poona District Education Association's
Seth Govind Raghunath Sable
College of Pharmacy, Saswad

Dr. R.S.Chavan
PRINCIPAL
PUNE DISTRICT EDUCATION ASSOCIATIONS
SETH GOVIND RAGHUNATH SABLE
COLLEGE OF PHARMACY, SASWAD
TAL. PURANDAR, DIST. PUNE- 412301.

PUNE DISTR ICT EDUCATION ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY

Academic Research Club 2022-23

PUNE DISTRICT EDUCATION ASSOCIATION's
SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY, SASWAD

Academic Year 2022-23

Academic & Research Activity Schedule 2022 - 2023

S. No.	Name of staff	Designation	Name of Topic	Date of Activity
1	Dr. S. J Pawar	Asso. Professor	Education Policy 2020	19/12/2022
2	Prof. J. R. Jagtap	Asst. Professor	OBE : Mapping & Attainment	03/12/2022
3	Prof. A.P. Kale	Asst. Professor	Synthesis of biological evaluation of heterocyclic compound	25/11/2022
4	Prof. V.C Shilimkar	Asst. Professor	Herbal Medicine	09/12/2022
5	Prof J.V Shinde	Asst. Professor	Novel approaches in CDDS	23/12/2022
6	Prof. N. R. Bhosale	Asst. Professor	Online Pharmacy	23/12/2022
7	Prof. G.B. Nigade	Asst. Professor	Prototype	30/12/2022
8	Prof .P.N. Jagtap	Asst. Professor	Optimization of invitro Methods	13/01/2023
9	Prof. S.M. Deshmukh	Asst. Professor	Studies parameters of Mag. Bhasm	13/01/2023
10	Prof. M.R. Kudale	Asst. Professor	HPLC Analytical techniques	20/01/2023
11	Prof. P.B.Khatate	Asst. Professor	Kawasaki Disease	27/01/2023
12	Prof. S.K. Musale	Asst. Professor	Micro plastics	03/02/2023
13	Prof. V.V.Jagtap	Asst. Professor	Psychology	10/02/2023
14	Prof. P.S.Pisal	Asst. Professor	Stability indicating assay method	17/02/2023
15	Prof. V.S.Hire	Asst. Professor	Suspension	24/02/2023
16	Prof.P.A.Petkar	Asst. Professor	Antimicrobial activity	03/03/2023
17	Prof.Y.M.Nikode	Asst. Professor	Emulsion research article	10/03/2023
18	Prof.S.S.Chavan	Asst. Professor	Research article	10/03/2023
19	Prof.M.G.Baravkar	Asst. Professor	Research article on breast cancer	03/03/2023
20	Prof.V.S. Gaikwad	Lecturer	Prezi Softwares	24/02/2023
21	Prof.D.B. Jagtap	Lecturer	Assistive Technology	17/02/2023
22	Prof.S.V. Bhise	Lecturer	Antidiabetic Activity	10/02/2023
23	Prof.A.M. Kunjir	Lecturer	Antihyperlipidemic Activity	03/02/2023
24	Prof.P.P. Deshmukh	Lecturer	Nephroprotective Activity	23/01/2023
25	Prof. Mrs. P.K. Mhaske	Lecturer	Research article	20/01/2023
26	Prof.S.S.Bhongle	Lecturer	Covid – 19 & Arthritis	13/01/2023
27	Prof. H.S. Patil	Lecturer	Review article	06/01/2023
28	Prof. S.L. Phadtare	Lecturer	Techniques used in covid vaccine	20/01/2023
29	Prof. P.D. Borawake	Lecturer	Research article	23/12/2022
30	Prof. J.G. Nale	Lecturer	Lumpy Skin disease	09/12/2022
31	Prof. S.U. Darekar	Lecturer	MIS in children's	25/11/2022
32	Prof. S.B. Bhate	Lecturer	Tomato Fever	02/12/2022
33	Prof. P.R.Malvadkar	Lecturer	Teaching with animation	19/12/2022

Note -: The Above activity will start at 2.30 pm to 3.30 pm for every Friday

Mr.H.S. Patil
ARC Coordinator

Dr.R.S. Chavan
Principal

PRINCIPAL
PUNE DISTRICT EDUCATION ASSOCIATI
SETH GOVIND RAGHUNATH SABLE COL
OF PHARMACY, SASWAD, TAL. PURAND
DIST. PUNE - 412301.

18/11/2022

The staff members are called in IQAC room at 3.30 pm to attend ARC. session.

Speaker -: Ms. M.G. Barankar
Topic -: Research article on Breast cancer.

Synthesis, in vitro screening & docking analysis of novel pyrrolidine & piperidine substituted ethoxy chalcone as anticancer agents.

Ms. M.G. Barankar discussed in detail about Breast cancer, she explained some c.r. chal cone) drug is useful for cancer.

The following faculty members were present during ARC -

1) Dr. R.S. Chavan - Chavan
2) Dr. S.J. Pawar - Pawar
3) Prof. J.R. Jagtap -
4) Prof. A.P. Kale -
5) Prof. V.G. Shilimkar -
6) Prof. T.V. Shinde
7) Prof. N.R. Bhosale
8) Prof. G.B. Nigade -
9) Prof P.N. Jagtap -
10) Prof. S.M. Deshmukh
11) Prof. M.R. Kudale
12) Prof. P.B. Khatate -
13) Prof. S.K. Mhaske -
14) Prof. V.V. Jagtap -
15) Prof. P.S. Pisal -
16) Prof. V.S. Hire -
17) Prof. P.A. Pethkar -

18) Prof. Y. M. Nikode -
19) Prof. S. S. Chavhan -
20) Prof. M. G. Barawkar -
21) Prof. V. S. Gaikwad -
22) Prof. D. B. Jagtap -
23) Prof. S. V. Bhise.
24) Prof. A. M. Kunjir -
25) Prof. P. P. Deshmukh -
26) Prof. P. K. Mhaske.
27) Prof. S. S. Bhangle -
28) Prof. H. S. Patil -
29) Prof. S. L. Phadtare -
30) Prof. P. D. Boosmatke -
31) Prof. J. G. Nale -
32) Prof. S. U. Zarekar.
33) Prof. S. B. Bathe -
34) Prof. P. R. Bakwadkar -
35)

25/11/2022

The staff members are called in IQAC room at 2:30 pm to 3:30 pm. to attend ARC session.

Speaker -: ① Mr. A.P. Kale

Speaker - ② Mrs. S.U. Sarekar

Topic of Mrs. S.U. Sarekar, - Utility of Rasayana in various diseases.

Topic of Mr. A.P. Kale - Synthesis of biological evaluation of heterocycles comp.

Mrs. S.U. Sarekar discussed in details about Rasayana concept of Ayurveda., Benifits & sources of rasayana, mode of action,

Mr. A.P. Kale discussed in details about drug repurposing:- progress, challenges & recommendations he told about what is drug repurposing., its benifits, he has given so many examples associated with different diseases. he told about recommendations for drug repurposing.

Following members were present during ARC -

① Dr. R.S. Chavan - Chavan
② Dr. S.S. Pawar - Pawar
③ Prof. A.P. Kale -
④ Prof. V.C. Shirsikar -
⑤ Prof. J.V. Shinde -
⑥ Prof. N.R. Bhosale -
⑦ Prof. G.B. Nigade -
⑧ Prof. P.N. Jagtap -

9 Prof. S.N. Deshmukh – Deshmukh
10 prof. M.R. Kudale –
11 prof. P.B. Khatake – Khatake
12 prof. S.K. Mhaske –
13 prof. V.V. Jagtap –
14 prof. P.S. Patil –
15 prof. V.S. Hire –
16 prof. P.A. Pethkar –
17 prof. Y.M. Nikode –
18 prof S.S. Chavan –
19 prof. M.G. Bavankar –
20 Prof V.S. Gaikwad –
21 prof. A.B. Jagtap
22 prof. S.V. Bhoir –
23 prof. A.M. Kunjir –
24 prof. P.P. Deshmukh – Deshmukh
25 Mrs. P.R. Mhaske – 25/11/22
26 Mrs. S.S. Bhangale – 25/11/22
27 prof. H.S. Patil –
28 Prof. S.L. Phadtare –
29 prof. P.O. Bavaskar –
30 prof. Y.K. Nale
31 prof. S.U. Jadhav, Jadhav
32 prof. S.B. Bathe
33 prof. P.R. Malvadkar –
34 Prof J.R. Jagtap –
35 Mrs. V.S. Hire

Date -
02/12/2022

The staff members are called in SEAC room at 2.30 pm to attend ARC session.

Speaker - mrs. S.B. Bothe

Topic -. Tomato Flu or Tomato fever.

Both madam discussed about tomato fever. Symptoms of tomato fever, causes of tomato fever. She shearred all knowledge of tomato fever, i.e. prevention of tomato fever. She discussed various drugs used for tomato flue / tomato fever. ~~She~~ She has discussed in detail about tomato fever.

following members were present during ARC -

Dr. R.S. Chavan - Chavan

Dr. S.J. Pawar - Pawar

I.R. Jagtap

A.P. Kale -

V.C. Shilimkar -

J.V. Shinde -

N.R. Bhosale

~~S.~~ G. Nigade

P.N. Jagtap - Jagtap

S.M. Deshmukh - Deshmukh

M.R. Kudale - Kudale

P.B. Khatate - Khatate

S.K. Mandale -

S.L. Phadtare - Phadtare

S.V. Darekar - Darekar

P.R. Malavdkar -

P.P. Pisal - Pisal

Mrs. V.S. Hire -

Barabukar M.G.

Mrs. Nikude Y.M

Mrs. S.B. Bodhe.

Mr. H.S. Patil

Ms. S.S. Chavan

Ms. V.V. Jagtap

Mr. S.K. Mucale

MS S.S Bhongale

Ms P.S. Mhaske

The staff members are called in smart class room at 2.45pm. to attend ARC session.

Speaker-: Mrs. Jayshree G. Nale

Topic-: Automated drug dispensing system & devices.

Mrs. Jayshree Nale discussed on the topic automated medicine dispensing system & devices. She covers history of ADS / ADM. In this topic she gave detail knowledge about actual dispensing, there is no need of p'cist.

She shown various live videos of actual mfg. of drugs. She discussed about working of Robot. She discussed Robotic dispensing of medicines.

following members were present during ARC-

Dr. R.S. Chavan - Chavan

Mr. S.K. Mucale - Mucale

Mr. S.C. Bhise -

Mr. G.B. Nigade -

Dr. S.J. Pawar - Pawar

Mrs. P.N. Jagtap -

Ms. P.K. Mhaske -

MS S.S. Bhongale - Bhongale

Mrs. S.B. Bathe - Bathe

Ms. S.S. Chavan - Chavan

Mrs. S.U. Darekar - Darekar

Ms. S.L. Phadtare -

Ms. S.M. Deshmukh

MS M.R. Kudale - Kudale

Ms. P.S. Pisal - Pisal

MS. P.A. Petkar - Petkar

MRS. V.S. Mire

MS P.R. Malavdkar - Rao

Mrs. Y.M. Nikude

Mr. N.A. Bhosale
Mr. J.V. Shirke
Mr. H.S. Patil
Mrs. J.R. Jagtap - Ly.
Ms. P.D. Borawake -

17/12/2022

The staff members are called in Smart classroom at 1:00pm to attend ARC.

Speaker - Dr. S. J. Pawar
TOPIC - National Education policy 2020 (NEP)
(Reforming Higher Education Institutions & University)

Dr. Pawar madam deliver Seminar on National Education policy 2020 (NEP). she discuss about role in promoting human & Nation also. she had gave knowledge about history of NEP in this discussed 2068, 2005, 2007, 2010 phases. she told about vision of the policy of NEP. she discussed about relation / imp. of NEP in higher education in India. she discussed about required changes to change the current system. she told about open distance learning. COOL). she also told about holistic multidisciplinary education.

following staff members were present during ARC →

Dr. R.S. Chavan - Chavan
Dr. S.J. Pawar - Pawar

Mr Anup Kale -

Mr. G.B. Nigade -
Mr. S.K. Murale - Murale
P.N. Jagtap
Ms. V.V. Jagtap
Ms. P.B. Khatate - Khatate
Ms. P.R. Malavdkar
Mr. M.G. Banavkar
Ms. P.A. Petkar

Mrs. V.S. Hire

Mr. M.R. Kudale

Ms. S.M. Gothwal

Ms. P.S. Pisal

Mrs. S.A. Bathe

Mrs. S.V. Dandekar

Ms. S.L. Phadtare

Ms. P.D. Borawake

Ms. J.G. Nate

Mrs. Y.M. Mikude

Mr. H.S. Patil

Mr V.C. Shilimkar

23/12/2022

The staff members are called in IQAC room at 3.30pm to attend ARC.

speakers -: ① mr. J. V. Shinde
Topic -: Iontophoresis (Novel approaches in cosmetics)
② ms. P. R. Malwadkar.
Topic -: Space medicine

mr. J. V. shinde sir given knowledge about on Iontophoretis, he gave deep introduction of it. he discussed about working/ mechanism of Iontophoresis., He discussed about ionic polarity, Low-level Amplitude, Electrode size, He discussed about ionic charge/ current, Acid/ alkaline reactions, hyperemia, dissociation & created complications. He also discuss about dose, how to use & calculations of Iontophoresis.

Malwadkar madam given seminar on space medicine. she discussed about history of space medicine, side effects of medicine given to any patient in space. she gave knowledge about longer lasting space medicine, like ibuprofen tab.

following staff members were present during ARC-

Dr. R. S. Chavan	R Chavan
Mrs. P. N. Jagtap	Jagtap
Amol Koli	
Pooja S. Pisal	Pisal
Manjusha G. Barankar	
Ms. Chavan S. S.	
Mrs. S. B. Bathe	Bathe
Ms. J. G. Nale	
Mrs. V. S. Hire	

Mrs. Y. M. Nikude

Ms. S. L. Phadtare

Ms. V. V. Jagtap

Mrs. S. M. Deshmukh

Ms. N. A. Bhosale

S. C. Musale

P. A. Petkar

M. R. Kudale

P. R. Mulgavkar

Mrs. H. S. Paris

Ms. V. C. Shilimkar

Mrs. S. V. Parekar

Date -
31/12/2022

The staff members are called in IQAC room at 11:00 am to attend ARC.

Speakers - ① Mr. N. R. Bhosale
Topic - Retail pharmacy yesterday, today & Tomorrow.
② Ms. P. D. Borawake
Topic - pharmaceutical pollution.
③ Mr. V. C. Silimkar
Topic - Edible vaccine.

Mr. Vaibhav Silimkar Sir has discussed about edible vaccines. He gave detail information about what is mean by edible vaccine, where it is used., source of it. he also gave information about edible vaccine, How to use, various viruses are killed by this vaccine. Its process method discussed by him. He gave knowledge about mechanism of action of edible vaccine.

Mr. N. R. Bhosale Sir has discussed on the topic, Retail pharmacy, yesterday, today & tomorrow. he discuss about retail pharmacy - before 5 to 6 year. he also given knowledge about survey of 2020 to 2026. & he discuss about process involved in online distribution of different medication.

Ms. payal Borawake madam, discussed on the topic review article on pharmaceutical pollutions, in she discussed on how to produce pollution by different pharmaceutical companies & their products. She discuss on water (polluted) is responsible for producing pollution in pharmaceuticals.

Following staff members were present during ARC -

Mrs. J.R. Jagtap -
Mr. G.B. Nigade -
Ms. P.S. Pisal -
Dr. S.J. Pawar -
Mrs. P.N. Jagtap -
Ms. S.S. Chavan -
Mr. J.V. Shinde -
Mr. H.S. Patil -
Mrs. S.B. Bathe
Ms. J.G. Nale
Mrs S.M. Deshmukh
Ms. M.R. Kudale
Mr N.P. Bhosale
Mr V.C. Shilimkar
Ms. P.B. Khatate
Mrs. V.S. Hire
Mrs. M.G. Baravkar
Ms A.M. Kunjir
MS. P.A. Petkar
MS. P.D. Borawake
Dr. R.S. Chavan

Date -
02/01/2023

The staff members were called in IQAC room at 3.30 pm to attend ARC.

Speakers - ① Mr. G.B. Nigade
Topic - prototype.
② Ms. J.R. Jagtap.
Topic - OBC, mapping & Attainment.

Mr. Nigade Sir has discussed on the topic prototype., Need of prototype, functions/ Imp. of prototypes. He told types of prototype & also testing of prototypes. He gave detail about advantages & disadvantages of prototypes.

Mrs. Jagtap madam discussed topic, outcome Based Education, (mapping & Attainment). She discussed about demerit of outcome Based Education, she told about Key components of OBE, vision of OBE, mission of OBE, programme outcomes, course outcomes. she told about the Assessment of COs. she gave detail information about Attainment & target.

Following staff members were present during ARC.

1. Dr. S.J. Pawar - Pawar
2. Mrs. P.N. Jagtap - Jagtap
3. Ms. V.V. Jagtap - Jagtap
4. Ms. P.A. Petkar - Petkar
5. Mrs. M.G. Barakar - Barakar
6. Mrs. Y.M. Nikude - Nikude
7. Mrs. V.S. Hire - Hire
8. Mrs. S.V. Darekar - Darekar
9. Ms. S.S. Chavan - Chavan
10. Mr. G.B. Nigade - Nigade

Mrs. J.R. Jaglap -
Mr V.C. Shilimkar -
Ms. J.G. Nale -
J.V. Shinde
N.B. Bhosale
P.B. Khatate Khatate
S.M. Deshmukh
Anand Kale -
Mrs. H.S. Patil -

Date - 13/01/23

The staff members are called in IQAC room at 3.30 pm. to attend ARC.

Speaker -: Mrs. P.N. Jagtap

Topic -: Understanding & Interpretation of ECG.

Mrs. Jagtap madam discussed on the topic Understanding & Interpretation of ECG. She discussed history of ECG. She told about Limb leads, Augmented leads, chest leads, ECG paper, calibration of ECG machine, steps for Interpretation of ECG. She discuss in details about how to calculate ECG, by using cardiograph papers.

Following staff members were present during ARC -

1. Dr. R.S. Chavan — Chavan
2. Dr. S.J. Pawar — Pawar
3. Mrs. P.N. Jagtap — Jagtap
4. Mr. H.S. Patil —
5. Mr V.C. Shilimkar —
6. Mr. G.B. Nigade —
7. Ms. P.S. Pisal — Pisal
8. Mrs. S.V. Darekar — Darekar
9. Mrs. S.B. Bathe — Bathe
10. Mrs. V.S. Hire —
11. Mrs. Y.M. Nikude — Nikude
12. Mr. P.B. Khatate — Khatate
13. Ms. V.V. Jagtap — Jagtap
14. Ms. S.S. Chavan — Chavan
15. Mr. S.K. Musale —
16. Ms. P.D. Borawake —
17. Mrs. M.G. Baravkar —
18. Ms. P.A. Petkar —

Mrs. J.R. Jaytap -
Mr. Amol Kale -

20/01/23

The staff members are called in IQAC room at 03.30 PM to attend ARC

Speaker - Ms. S.S. Bhongale
Topic - Covid 19 & Post Arthritis.

Ms. Bhongale madam discussed on the topic covid 19 & post Arthritis. She discussed about what is covid 19, causes of covid 19, signs & symptoms of disease. She also discussed about what is post arthritis, pathogenesis of arthritis, clinical features, symptoms, diagnosis of reactive arthritis & treatment of the disease.
- She also discussed the correlation between covid 19 & Post arthritis.

Following members were present during ARC-

1. Dr. R.S. Chavan - RSchavan
2. Dr. S.J. Pawar - Pawar
3. Mrs. P.N. Jagtap - Jagtap
4. Mr. V.C. Shilimkar - VShilimkar
5. Mr. G.B. Nigade -
6. Mr. J.V. Shinde -
7. Mrs. J.R. Jagtap -
8. Ms. P.J. Pisal - Pisal
9. Mrs M.G. Baravkar -
10. Ms S.S. Chavan - Chavan
11. Ms. P.B. Khatak - Khatak
12. Ms. P.A. Petkar
13. Mrs. T.M. Nikude
14. Mrs. S.B. Bathe - Bathe
15. Ms. V.V. Jagtap -
16. Mr N.B. Bhusale

Date-
29/11/2023

The staff members are called in IQAC room at 12.30 pm to attend ARC.

Speaker-: Ms. Prabhha P. Deshmukh
Topic-: Artificial Intelligence.

Ms. Deshmukh madam discussed on the topic artificial intelligence. madam had discussed about what is artificial intelligence. she told about Role of AI in healthcare, virtual assistant. she also discussed about AI in pharmacy. (R&D, drug development, clinical trials.) madam told about AI in drug discovery. i.e. - in drug design, viz. also she discussed Role of AI in manufacturing. use of AI in future. she discussed about challenges of AI. she discussed Regulations of A.I. in pharmacy.

Following members were present during ARC -

1. Dr. R.S. Chavan — RSchavan
2. Dr. S.J. Pawar — Pawar
3. Mrs. P.N. Jagtap — Jagtap
4. Mrs. Y.M. Nikude
5. Mrs. M.G. Baravkar
6. Ms. S.S. Chavan
7. Ms. V.V. Jagtap
8. Ms. P.B. Khatate — Khatate
9. Ms Smita M. Deshmukh — Deshmukh
10. Mr V.C. Shilimkar
11. Mr. G.B. Nigade
12. Mr. S.K. Mustale
13. Ms N.B. Bhosale

14 Mrs. H.S. Patil –
15 Mrs. S.B. Bathe – Bathe
16 Ms. P.S. Pisal – Pisal
17 Ms. P.D. Borawake – Borawake
18 Mrs. S.U. Darekar – Darekar
19 Amol Kale – Kale
20 Ms. S.L. Phadtare – Phadtare

Date-
10/02/2023

The staff members are called in ISAR room at 03.00 pm to attend ARC.

Speaker ① mrs. Ashwini kunjir
Sub- Blockchain Technology
② ms. Padmaja mhaske.
sub- Pharm Party

mrs. Ashwini kunjir mam has discussed on the topic Blockchain technology. She discussed about what is blockchain technology, history of blockchain technology, how this technology works. She also discussed about transaction process of blockchain, types of blockchain networks, Application of blockchain technology.

ms. Padmaja mhaske mam has discussed on the topic Pharm Party. She discussed about concept of pharm party, drug misused & abuse, drugs which are commonly abuses, common drug abuse scenario in India & maharashtra. She also discussed about rational use of medicine

Following members were present during ARC-

1) Dr. R. S. Chavan — Chavan
2) Amol Kale —
3) Mr V. C. Shilimkar —
4) Mrs. J. R. Jaytap —
5) Mr. P. J. Pisal —
6) Mrs. V. S. Hire —
7) mrs S. B Bodke — Bodke
8) P. N. Jaytap —
9) S. V. Dalvkar —
10) Y. M. Nikude —
11) P. D. Borawake — Borawake
12) Ms J. G. Nale —

Date
17/02/2023

The staff members ~~were~~ are called in IQAC room at 3:30 pm to attend ARC.

Speaker ① - S.M. Deshmukh -
Topic - studies on quality parameter of
Speaker ② - P.S. Pisal -
Topic -

S.M. Deshmukh has discussed about the topic Bhasma., madam told about uses, types of bhasma. she focused on objectives, standardization of herbal medicines, like nagar bhasma. she discuss details on shodhana process for nagar bhasma. she told about antidiabetic study protocol of Nagar bhasma.

following staff members were present during ARC -

1) Dr. R.S. Chavan - Chavan
2) Dr. S.J. Pawar - Pawar
3) Mr V.C. Shilimkar -
4) Mr. G B Nigade
5) M. N.A. Bhosale
6) P.M. Jagtap
7) P.A. Petkar
8. S.S. Chavan
9 Mr. V.S. Hire
S.M. Deshmukh
P.S. Pisal
Mrs. Y.M. Mikyde
S.K. Mahale
Mr. H.S. Patil
Mr P.R. Mane

PUNE DISTR ICT EDUCATION ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY

TPC 2022-23

MACLEODS

MAC/OFF/RD/05508/23

23/01/2023

Mr GAJANAN NAVANATHARAO KALE

* Scan to verify

Dear Mr GAJANAN KALE

This has reference to your application and subsequent personal interview you had with us. We are pleased to offer you the post of **ASSOCIATE** in our **PDR** department in our organization at our **R & D CENTER** on terms and conditions mutually agreed between us.

The resignation acceptance letter from your previous organization should be produced within 15 days of acceptance of offer letter or else the offer letter will be considered void and nullified. You are requested to join the duties latest by **30/01/2023**

We will issue you regular appointment letter with details on the actual date of your joining. You are requested to return the duplicate copy of this offer as a token of your acceptance and confirm the exact date of your joining our organization.

You are requested to bring with you the following documents at the time of joining your duties:

i) Four passport size photographs.

ii) Copies of educational/professional qualifications and experience certificates.

iii) Relieving letter from your present & two previous employers incase applicable.

iv) Certificates in support of date of birth.

v) PAN Card & AADHAR Card Copy.

vi) Copy of permanent address proof.

vii) Medical Certificate of fitness duly signed by a qualified Doctor (Not less than a MBBS).

We look forward for your long & happy association with Macleods Pharmaceuticals Limited.

With best regards.

For Macleods Pharmaceuticals Limited

Saidutta Nanda

SAIDUTTA NANDA
PRESIDENT HR

Acceptance:

I have read the above terms and conditions and I do hereby agree to the same and accept the offer.
I will join on _____.

Signature valid
Digitally signed by SAIDUTTA NRUSINGHA NATH NANDA
Date: 2023.01.24 11:11:23 +05:30

Mr GAJANAN NAVANATHARAO KALE

*** Scan the QR code to verify the authenticity of the offer letter.**

MACLEODS PHARMACEUTICALS LIMITED

Regd. Office :
Atlanta Arcade, Church Road,
Near Leela Hotel, Andheri-Kurla Road,
Andheri (East), Mumbai-400 059, India.

Phone : 91 - 22 - 6676 2800
Fax : 91 - 22 - 2925 6599
Email : customercare@macleodspharma.com
Website: www.macleodspharma.com
CIN : U24239MH1989PLC052049

STAFFING SOLUTIONS
PRIVATE LIMITED
Tomorrow's People Solutions Today

Date: 04-10-2023

To,
- Mr. Samadhan Gade
Contact number: 7887840192
Email Id: samadhangade15@gmail.com

Sub: <u>Offer Letter</u>

Dear **Samadhan,**

Consequent to your interview, we are pleased to offer you a purely contractual appointment as **"Junior Trainee"**, for a fixed period from **06-10-2023** to **04-10-2024.** During this period of contractual appointment, you will be deputed to our client, M/s. **"Lupin Ltd, Pune."**

We are enclosing the details of the salary package, payable to you.

As per the terms discussed, a formal Appointment Letter will be issued on completing onboarding formalities on LSS HRMS portal and submission of following documents on the portal:

- CV
- Passport size Photo
- Aadhaar Card (Mandatory)
- PAN Card Copy (Mandatory)
- Certificate of Educational Qualifications (10th, 12th and Degree)
- Experience Certificates, Relieving Letter & Salary slips from previous employer
- 1 cancelled chq of the bank in which you want the salary to be transferred
- Previous UAN no & ESIC No. (Mandatory)

Kindly note in any case if you fail to upload documents or if we found any of the documents submitted are false then this offer will become invalid. This offer is open up to **06-10-2023** and will stand withdrawn thereafter automatically.

Kindly digitally sign the copy of this letter as a token of your acceptance.

With warm regards,

For Lobo Staffing Solutions Pvt. Ltd.

Authorized Signatory.

I hereby accept the above-mentioned terms and conditions.

Name: Samadhan Gade Signature:

Date: 04-10-2023

STAFFING SOLUTIONS
PRIVATE LIMITED
Tomorrow's People Solutions Today

Annexure I

Name : **Samadhan Gade**
Designation : **Junior Trainee**
Location : **Pune**
Start Date : **06-10-2023**
End Date : **04-10-2024**

SALARY COMPONENT	AMOUNT
BASIC+DA	16,739
HRA	837
ADVANCE TO SATUTORY BONUS	1,394
GROSS SALARY (A)	**18,970**
	Benefits: (B)
PF EMPLOYER (Gross-HRA-Bonus)	1,950
ESIC EMPLOYER	617
COST TO COMPANY (A+B)	**21,537**
	Deductions: (C)
PF EMPLOYEE	1,800
ESIC EMPLOYEE	142
PROFESSION TAX	200
NET TAKE H0ME (A-C)	**16,828**

***Note:**
1. Basic pay indicated above includes Dearness Allowance / Special Allowance as applicable
2. You will be eligible for General Medical Insurance Cover (GMC) and Group Personal Accidental Cover (GPA) for self only of Rs. 100,000/- (Rupees One Lakh Only)

I hereby accept the above-mentioned terms and conditions.

Name: Samadhan Gade Signature:

Date: 04-10-2023

TMPCON092363333

Model Contract of Apprenticeship Training for Major/Minor* Apprentices

1.	Name and Registered Address of Establishment	: Shalina Laboratories Private limited (E03212700870)
	with Telephone no. & E-mail address	: plot no E 2 MIDC jejuri, Tal - Purandar , Dist-Pune, Jejuri ,Pune .Pune, Maharashtra : 02115-331508 : suresh.singi@shalina.com
2.	(a) Name of Apprentice (Block Letters)	: ASHISH UMESH RAUT (A0923175118)
	(b) Father's/Mother's /Spouse's Name	: UMESH S. RAUT
3.	Address of apprentice	: AT - hivarkar MALA, Taluka PURANDAR, Mah : arashtra, Pune, 412301, SASWAD : Pune, Maharashtra
4.	Gender	: Male
5.	Date of Birth	: 19-11-2001
6.	(a) Whether belongs to SC/ST/OBC/PwD/ Minority	: Yes
	(b) Name of the Category	: Obc
7.	Educational Qualification (Highest)	: Graduate - B.Pharma
8.	(a) Category of Apprenticeship	: Optional
	(b) Name of the trade for which Apprentice is training	: Chemist- In-process Quality Assurance (Pharma, Biologics and Medical Device)
9.	Apprenticeship Training duration (Total)	: 360 Days
	(a) Duration of Basic Training	: 4 Weeks
	(b) Period of On-the-Job Training	: From 24-09-2023 to 17-09-2024
10.	Apprenticeship Training Location	: Plot No.E-2/E-3,MIDC jejuri pune
	(a) Name and address of facility where Basic Training is to be provided	: N/A
	(b) Name and address of the facility where On-the-Job Training is to be provided	: Shalina Laboratories Private limited Plot No.E-2/E-3,MIDC jejuri pune Pune Maharashtra
11.	(a) Date of execution of contract	: N/A
	(b) Age of Apprentice on the date of execution of contract	: 21 years, 10 months and 4 days
12.	Is the establishment opting for benefits under NAPS*? *If yes, Annexure 2 to this contract will also be applicable.	: Yes

***For DBT cases- Partial stipend support by the Government of India under NAPS will be limited to 25% of the stipend paid, upto a maximum of Rs. 1500 per month per apprentice during the apprenticeship training period.**

For Non-DBT cases- Full stipend will be paid by the employer

13. Monthly stipend amount

Year of training	Total stipend amount (in Rs.)	Break up of total stipend amount (in Rs.)	
		Employer's share out of col. 2	Government of India's share out of col. 2(25% of stipend paid upto a maximum of Rs. 1500 per month per apprentice)
(a) During 1st year of training	12000	12000	0
(b) During 2nd year of training	N/A	N/A	0
(c) During 3rd and 4th year of training	N/A	N/A	0

The Establishment agrees and understands that the minimum monthly stipend amount is prescribed in the Rule 11(1) of Apprenticeship Rule, 1992. The Establishment confirms that the agreed monthly stipend amount entered above must be higher than these minimum rates.

If the minimum rates are modified through legislation (either through modification of rules, or through modification of minimum wages payable) during the course of apprenticeship, this revised rates will apply as the minimum payable to Apprentice

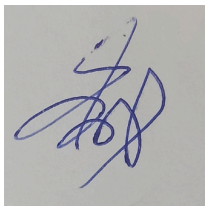
14. (a) Name and Address of Guardian In case Apprentice is under 18 years of age (Minor) : N/A

    (b) Relationship with the Apprentice : N/A

15. (a) Whether Apprentice was identified through approved Third Party Aggregator : No

    (b) Name of TPA (if applicable) : N/A

16. We, the Establishment, Apprentice/Guardian solemnly declare that we have read the Apprentices Act, 1961 and the Apprenticeship Rules, 1992 as amended from time to time, regarding the contract of apprenticeship training including obligations and terms and conditions contained in Schedule V and VI of the said rules and will comply with the same.
17. I, the Apprentice, declare that all details shared by me, including educational qualifications and other personal information shared, is correct and will provide original documents for verification at any time
18. We, the Establishment, have examined the Apprentice's information, including personal details, and will seek relevant documentation for verification as and when required.
19. In case of default by either the apprentice or the employer, we agree to compensate the other party as per the provisions of the Apprenticeship Rules, 1992 (Main Provisions of the Rules may be seen in the Annexure 1).
20. The Establishment, Apprentice/Guardian hereby also declares to comply with the terms and conditions of National Apprenticeship Promotion Scheme (NAPS),if applicable.



Signature of the Employer with seal

Signature of Apprentice

Signature of Guardian

FOR OFFICE USE ONLY

Contract Registration No. : TMPCON092363333

(To be given by the Office of the Apprenticeship Adviser)
(Mandatory only for Registered Trades)

Signature of Registering Authority
(Apprenticeship Advisor)
(Registration required for Designation trade only)

Annexure 1 Contract of Apprenticeship Training

Some provisions of the Apprenticeship Rules relating to the Contract of Apprenticeship Training are reproduced below for sake of convenience.
Both the Establishment and Apprentices have read and are bound by the provisions of the directions in have read the Apprentices Act, 1961 and the Apprenticeship Rules, 1992, which will apply to this Contract of Apprencticeship

1. The stipend for a particular month shall be paid by the tenth day of the following month. No deduction shall be made from the stipend for the period during which an apprentice remains on casual leave or medical leave. Stipend shall, however, not be paid for the period for which an Apprentice remains on extraordinary leave.
2. Where the Contract of Apprenticeship is terminated through failure on the part of the employer in carrying out the terms and conditions of the Contract (as notified under the Apprenticeship Rules, 1992), he shall pay to the apprentice compensation as determined by Apprenticeship Advisor.
3. In the event of premature termination of Contract of Apprenticeship for failure on the part of apprentice to carry out the terms and condition of the contract (as notified under the Apprenticeship Rules, 1992), the apprentice hereby guarantees to employer the payment of such amount as determined by the Apprenticeship Adviser as and towards the cost of training.

Annexure -2 | Covenants and conditions specific to NAPs scheme

1. For availing benefit under NAPS scheme, the course under which apprenticeship training is being provided, should be NSQF aligned.
2. Assessment and Certification shall be done jointly by the establishment and SSC/ NCVT/ other bodies as notified from time to time under NAPS guidelines.
3. The Establishment warrants and confirms that they have studied, understood and agree to comply with the guidelines that are applicable to Establishments that are part of the NAPS scheme. These guidelines are published at (https://www.apprenticeshipindia.gov.in) and maybe updated from time to time.