3.2.1 - Number of papers published per teacher in the Journals notified on UGC website during the year (2023-2024)

Sr. No	Title of paper	Name of Author	Year of Publication
1	In vitro antibacterial activity of the crude methanol,Extraction of fruit of carissa carandas	Dr. Pravin Vasantrao Gomase	2024
2	Formulation, Evaluation and Stability Studies of Nicardipine Hydrochloride microspheres	Fayyaz Ahmad, Pravin Gomase et.al.	2023
3	Development and evaluation of herbal bath soap Containing some ayurvedic varnya herbs	Dr. P. V. Gomase	2023
4	Evaluation and hepatoprotective activity of caesalpinia Bonduc (L.) Roxb on experimentally induced liver damage in animal	H.V. Deore, Dr. P. V. Gomase et.al.	2024
5	Antidiabetic effect of ethanolic extract of caesalpinia bonduc seed in streptozotocin induced diabetic rat	Dr. P. V. Gomase	2024
6	Stability indicating rp-hplc method development and Validation for determination of ranitidine in bulk and Pharmaceutical dosage form	V.L. Badgujar, Dr. P. V. Gomase et.al.	2024
7	Development and validation of simple rp-hptlc method for Estimation of agomelatine in bulk and pharmaceutical Formulation	Vinod A. Chaur, Ravindra R. Patil1, Pravin V. Gomase et.al.	2024
8	Engineering of mesenchymal stem cells in hepoxic condition for pancreatic regeneration in diabetic rodant model	Jgruti shimpi,manesh kokani et.al.	2024
9	Box-Behnken Design Employed Stability Demonstrating RP-HPLC Method Development of Sorafenib Tosylate for Rapid and Sensitive Quantification	Manisha M Patil, Aejaz A A Rafique	2024
10	Physiochemical investigation of unani formulations With antiinflammatory Properties	Ansari Imtiyaz Ahmed Tufail Ahemad, Qazi Majaz Ahamad,Manisha M Patil et.al.	2024
11	Pharmacological Assessment of Boswellia Serrata and Urtica Dioica Leaf Extract Mixture: Implications for Oxidative Stress and Inflammation	Sujatha Samala, Shreyasi, Dighe , Ansari Imtiyaz Ahmed et.al.	2024
12	A Precise Review on Tenofovir Disoproxil	Vinod A Chaure,	2024

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	Fumarate: An Analytical Profile	Saurabh B Ganorkar	
13	Analytical Review on Escitalopram oxalate and their combinations in Bulk and Pharmaceutical Formulation	Dinesh B. Marathe, Rohini M. Koli, Kunal S. Mahajan, Dr. R. R. Patil, Vinod A. Chaure	2023
14	Formulation and evaluation of herbal hair colourant oil	J.J.Naik, T.S.Wankhede, S.R.Valvi	2024
15	Solubility enhancement and tablet formulation of ritonavir	J.J.Naik	2024

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IN VITRO ANTIBACTERIAL ACTIVITY OF THE CRUDE METHANOL EXTRACT OF FRUIT OF *CARISSA CARANDAS*

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ABSTRACT

Infectious infections are the leading cause of morbidity and mortality in underdeveloped nations, making them a severe public health issue. The antibacterial activity of the crude methanol extract of *Carissa carandas*fruits was evaluated at three different concentrations by the agar well diffusion method. The methanol extract of the fruits exhibited antibacterial activity leaves against four pathogenic bacteria *Escherichia coli, Pseudomonas aeruginosa, Streptococcus pyogene* and *Staphylococcus aureus*. The methanol extract was most active against pathogenic bacteria. The inhibitory effect of the extract was compared with standard antibiotics ampicillin.

Keyword: Antibacterial Activity, *Carissa carandas*

INTRODUCTION

Since the mid-1970s, the emergence of a number of new pathogens and reemergence of older diseases has highlighted the fact that, contrary to expectations, epidemics of infectious disease remain a problem of public health concern [1]. Infectious diseases remain the largest global cause of death. Infectious infections are the leading cause of morbidity and mortality in underdeveloped nations, making them a severe public health issue. Despite the availability of antibiotics, the situation is worse due to drug resistance. Antimicrobial resistance is a serious problem in hospitals these days due to the widespread

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Advances in Bioresearch

ORIGINAL ARTICLE

Formulation, Evaluation and Stability Studies of Nicardipine Hydrochloride Microspheres

Fayyaz Ahmad*[1], Aejaz Ahmad[2], Quazi Majaz[3], Pravin Gomase[4], Ansari Yaasir Ahmed[2], Kabir Shaikh[5], Mohd.Razi Ansari[6], Pathan Mujahed[7]

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Nicardipine Hydrochloride is having vasodilation action. It is also a potent calcium channel blocker. It acts by interfering with the release of calcium from the sarcoplasmic reticulum, by inhibiting ion-control gating mechanisms. The Nicardipine Hydrochloride Microspheres were subjected to physicochemical studies, in-vitro drug release, and stability studies. In-vitro release studies show that 91% of the drug was released from all the formulations were within 12 h. DSC and FTIR studies showed there was no interaction between drugs and polymers. The formulation showed optimum hardness & sustained drug release within 12 h. The formulations were subjected to stability studies and shown there were no significant changes in drug content, physicochemical parameters, and release patterns. Developed Nicardipine Hydrochloride Microspheres shows effective drug release over a prolonged time frame that led to greater therapeutic efficacy.

Keywords: Nicardipine HCL, Microsphere, Formulation, Evaluation, Stability Studies.

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INTRODUCTION

The most favored dosage forms include tablets, capsules, and solutions because of their ease of manufacture and administration. Failure to systemically deliver select compounds through the oral route led to research on alternate routes of drug delivery. Lack of adequate absorption through the gastrointestinal tract was the single most predominant reason for such efforts. Researchers resorted to the parenteral route as an easy solution to the problem but have major disadvantages such as patient compliance, health hazards, higher cost of therapy due to the use of highly qualified health care workers, and expensive equipment/ tools. The use of the nasal route for the administration of drugs has engaged the attention of mankind since ancient times. Psychotropic drugs & hallucinogens have been used as snuffs by the natives in South America for centuries (Ranade and Hollinger, 2010). Nasal therapy has been a recognized form of treatment in the Ayurvedic systems of Indian medicine, it is called "NASAYA KARMA". The use of intranasal (IN) administration to target therapeutics to the central nervous system (CNS) has many benefits in the treatment of neurologic disorders. (1-3)

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DEVELOPMENT AND EVALUATION OF HERBAL BATH SOAP CONTAINING SOME AYURVEDIC VARNYA HERBS

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ABSTRACT

The use of cosmetics was directed not only towards developing an outwardly pleasant and attractive personality, but towards achieving merit. Plants with medicinal properties are being used as traditional medicine from times immemorial. The active constituents responsible for such medicinal values are employed topically as creams, soaps, oils and ointments for treating skin related ailments like acne, wounds, eczemas, and ring-worms, as an anti-microbial agent and for cosmetic purposes. The aim of the present work is to prepare an herbal Bath soap containing the extracts of Ayurvedic Varnya Herbs like *Glycyrrhiza glabra* roots, Curcuma *longa* rhizome and *Phyllanthus emblica* fruit analyzing its physicochemical properties.

Keywords: Varnya Herbs, Herbal Soap, *Glycyrrhiza glabra* roots, Curcuma *longa* rhizome, *Phyllanthus emblica*

INTRODUCTION:

The ancient science of cosmetology is believed to have originated in Egypt and India, but the earliest records of cosmetic substances and their application dates back to Circa 2500 and 1550 B.C, to the Indus valley civilization. There is evidence of highly advanced ideas of self beautification and a large array of various cosmetic usages both by men and women, in ancient India. Many of these practices were subtly interwoven with the seasons (Sanskrit: Rutus) and the normal rituals of life (Sanskrit: Dinacharya).

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Evaluation of Hepatoprotective Activity of *Caesalpinia Bonduc (L.) Roxb.* on Experimentally Induced Liver Damage in Animals

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KEYWORDS

Hepatoprotective activity, *Caesalpinia bonduc (L.) Roxb*, Liver damage, Animals.

ABSTRACT:

Hepatoprotective activity of the Ethanolic extract of *Caesalpinia bonduc* (Caesalpiniaceae) seed was investigated in rats by inducing toxicity with Carbon tetrachloride, Paracetamol, Ethanol. The extract has been shown to possess significant protective effect by lowering the level of AST, ALT, ALP, LDH, Cholesterol and bilirubin. The Ethanolic extract of *Caesalpinia bonduc* at a dose of 125mg/kg, 250mg/kg, and 500mg/kg showed significant hepatoprotective activity which was comparable to that of a standard hepatoprotective agent (Silymarin).

INTRODUCTION

Liver is the important organ concerned with the biochemical activities in the human body. It has great capacity to detoxicate toxic substances and synthesize useful principles. Therefore, damage to the liver inflicted by hepatotoxic agent is of grave consequences. There is an ever increasing need of an agent which could prevent it from such damage[1]. In view of severe undesirable side effect of synthetic agents, there is growing focus to follow systematic research methodology and to evaluate scientific basis for the traditional herbal medicines which are claimed to possess hepatoprotective activity[2].

Caesalpinia bonduc (L) Roxb (Caesalpiniaceae) is a large scandant prickly shrub found throughout the interior part of India, Sri Lanka and West Indies. It is common in southern parts of India and is often grown as a hedge plant (Wealth of India) This plant has profound medicinal use and is a proved anti-inflammatory[3], anthelmintic and antimalarial [4],Antitumour activity and antioxidant[4],adaptogenic activity[5], antidiabetic activity [6].

This plant contain various chemical constituents such as Alkaloid , Glycoside (Bonducin) , tannin , furanoditerpenes – α caesalpin, β caesalpin, γ caesalpin ,δ caesalpin ,ε caesalpin and caesalpin –F . Fatty acids – palmitic ,stearic oleic and linoleic acid , amino acid – aspartic acid, arginine and citrulline. Carbohydrates ,starch β- cartene, gum and resins.

MATERIALS AND METHOD

Plant

The plant was collected from Karwand near Shirpur in the month of July. The plant was authenticated by Dr. D.A. Patil, Department of Botany, S.S.V.P.S College of Science, Dhule, Maharashtra, India.

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Antidiabetic Effect of Ethanolic Extract of Caesalpinia Bonduc Seeds in Streptozotocin-Induced Diabetic Rats

Hemant V. Deore[1]*, Dr. Shaikh Muzaffar[2], Pravin Gomase[3], Rahil Khan[4], Touseef Begum[5], Dr. Ravindra R. Patil[6], V.L. Badgujar[7], T.J. Shaikh[8], Irfan Ahmad[9], Dr.Syed Umar Faruq[10], Siddiqui Nameera[11], Shaikh Saniya[12], Shahid F.Pathan[13], Qazi Wasil[5], Nawaz Sharif [14], Ansari Yaasir Ahmed[11]

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KEYWORDS
Diabetes, Anti-diabetic, Streptozotocin, *Caesalpinia bonduc* etc.

ABSTRACT:
Purpose: A study of historical literature reveals that diabetes was widely recognized and understood in India. Herbal medicines have long been used to treat a range of diseases. Nature has provided an extensive number of medicinal plants that are useful to all living things. While the fundamental merits of many plants have long been recognized, many others remain to be fully researched. Therefore, it is necessary to look into their uses and conduct pharmacognostic and pharmacological research in order to determine their therapeutic characteristics. Actually, diabetes is becoming a global problem. Thus, the purpose of this research is to open up new avenues for improving the medicinal uses of *Caesalpinia bonduc* for the specific ailment of diabetes. Method: The goal of the current study is to assess the anti-diabetic effects of *Caesalpinia bonduc* seeds against STZ-induced diabetics. Result: The body weight and blood glucose level of the seed extract of *Caesalpinia bonduc* was found to be significantly lower and comparable to that of a standard anti-diabetic medicine (Metformin). Conclusion: In the current study, albino wistar rats were used as test subjects to evaluate the anti-diabetic activities of a methanolic seeds extract of *Caesalpinia bonduc*.

1. INTRODUCTION

Diabetes mellitus, a metabolic disorder characterized by a continuously elevated blood sugar level, is an important health issue worldwide. It typically comes on by insufficient insulin secretion or insulin sensitivity. Diabetes mellitus has been extensively investigated because of its rapid increase and associated issues1. Worldwide, the affected population is estimated to be around 230 million. Only half of those who suffer from its worldwide receive proper care, and most are ignorant of the illness. It occurs when brought on by either an insulin shortage, an insulin resistance, or both. The pancreatic β-cells release insulin to regulate blood glucose levels. Some of the symptoms that diabetic

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STABILITY INDICATING RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR DETERMINATION OF RANITIDINE IN BULK AND PHARMACEUTICAL DOSAGE FORM

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ABSTRACT : During study of ranitidine in dosage form, a new stability indicating HPLC method has been developed and validated with different parameters. At a flow rate of 1 ml/min, the chromatographic conditions were optimized using a mobile phase of Acetonitrile: Water (0.1% OPA) (25:75). Particle size capacity of column was 5µm; and Column (C18) of 4.6 × 250 mm dimension was used as a stationary phase. The detection was carried out at 314 nm. The method was validated according to ICH guidelines for System suitability, Accuracy, linearity, precision (Intraday & Interday), LOD and LOQ and Robustness of the system. The response was found to be linear in concentration range of 50-300 mgm/ml of Ranitidine. The method was linear, simple, precise and accurate and therefore suitable for routine analysis of drugs in tablet form. The forced degradation studies were also done through exposure of analyte solution to four different stress conditions.

Key words : HPLC, ranitidine, development, validation, forced degradation.

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INTRODUCTION

High performance liquid chromatography (HPLC) is a type of liquid chromatography. It is utilized to separate complex mixtures based on affinity of drug moiety with the stationary phase. HPLC has 2 types *i.e.* NP-HPLC and RP-HPLC (Ahmed *et al*, 2020; Ansari Yaasir *et al*, 2019). In this chromatographic study, we have selected RP-HPLC. In RP-HPLC method, mobile phase is polar and stationary phase is non-polar. Chromatographic separation in HPLC is a result of specific interaction of drug with mobile and stationary phase (Arshiya Fatima *et al*, 2016; Priyanka *et al*, 2018; IHT Guidelines, 2005). Mobile phase run the solution of drug through the column. Column acts as stationary phase. HPLC contains different parts from Mobile phase reservoir, Degasser, column to the detector for analyzing different samples (Singhvi *et al*, 2007; Patel *et al*, 2015; Raval *et al*, 2008; Priyanka *et al*, 2014). Ranitidine is rarely used combination. Ranitidine is an Antacid drug. Ranitidine is a medication that decreases stomach acid production (Pravin Shende *et al*, 2017; Rao *et al*, 2017). It is commonly used in the treatment of peptic ulcer, GERD, and Zollinger-Ellison Syndrome. It is safe in pregnancy (Meyyanathan *et al*, 2012; Santoshkumar *et al*, 2011). It is an H_2 histamine

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DEVELOPMENT AND VALIDATION OF SIMPLE RP-HPTLC METHOD FOR ESTIMATION OF AGOMELATINE IN BULK AND PHARMACEUTICAL FORMULATION

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ABSTRACT : Novel, simple, accurate and reliable Reverse Phase High-Performance Thin-Layer Chromatographic (RP-HPTLC) method for analysis of Agomelatine (AGM) in bulk and tablet formulation have been developed and validated. The method was reverse phase chromatography performed on RP-18 Silica gel $F_{254}S$ TLC plates, with methanol: water (80: 20 %, v/v) as mobile phase. HPTLC quantitation of AGM was done by TLC-densitometry at 276 nm. The quantitation by HPTLC method was performed over the concentration range of 500-3000 ng/band for AGM with a high correlation coefficient (R^2= 0.999). The HPTLC method resulted into a compact and well resolved band for AGM at retention factor (Rf) of 0.43 ± 0.02. The limit of detection and limit of quantification were found to be 5.85 ng and 17.73 ng for RP-HPTLC, respectively. The accuracy of the proposed method was determined by recovery studies and found to be 99.23 to 99.98 %. The proposed method is applicable to routine analysis of AGM in bulk and tablet formulations. The proposed method was validated according to various ICH parameters like linearity, accuracy, precision, specificity, limits of detection and limits of quantification.

Key words : Agomelatine, validation, ICH guidelines, RP-HPTLC.

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INTRODUCTION

In February 2009, the European Medicines Agency (EMA) approved agomelatine (AGM), a sleep modulating antidepressant, for the treatment of major depressive disorder (MDD) in adults (EMEA, 2009) and it is awaiting approval from the Federal Drug Administration in the USA. Agomelatine became the first approved drug to mediate its effect through the melatoninergic system rather than the monoaminergic system. Agomelatine is a White or almost off-whit to yellow powder. Chemically it is N-[2-(7-methoxynaphthalen-1-yl) ethyl] acetamide, the chemical structure of agomelatine was shown in Fig. 1. Agomelatine was soluble in methanol, practically insoluble in water with having molecular formula $C_{15}H_{17}NO_2$ and having molecular weight is 243.301 g/mol (Abdelrahman *et al*, 2018; Abuseada *et al*, 2012). Agomelatine has main pharmacology and pharmacokinetic property with high selective action at melatonin receptors (MT1 and MT2 receptors) and antagonist at serotonin-2C (5-HT2C) receptors, binding studies indicate that it has no effect on monoamine uptake and no affinity for α, β adrenergic, histaminergic, cholinergic, dopaminergic and benzodiazepine receptors (Ansari Yaasir *et al*, 2021; Ansari Yaasir *et al*, 2020). Literature survey reveals that few analytical methods were available for the estimation of Agomelatine in bulk and tablet dosage form such as high-performance liquid-chromatography (Barbosa *et al*, 2017; Bertaina-Anglade *et al*, 2006; Descamps *et al*, 2009; El Shaheny *et al*, 2014; Guideline I.H.T., 2005), high-performance thin layer chromatography (Labib *et al*, 2021; Millan *et al*, 2003; Papp *et al*, 2003; Prasad *et al*, 2021) and UV-Spectrophotometry (Reddy *et al*, 2022; Singh *et al*, 2012) have been reported for AGM. The

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RESEARCH ARTICLE

Engineering of Mesenchymal Stem Cells in Hypoxic Condition for Pancreatic Regeneration in Diabetic Rodent Model

Jagruti Shimpi[1], Shivani Desai[2,*], Ramesh Bhonde[3,*], Avinash Sanap[4], Prajakta Kamble[1], Rohit Kumbhar[1], Manesh Kokani[1] and Avinash Kharat[4]

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Abstract: ***Aim***: This study aimed to evaluate the effect of Buccal Fat Pad (BFP) derived from Mesenchymal Stem Cells (MSCs) preconditioned with hypoxia on the management of diabetes mellitus in Wistar rats.

Background: Type 1 diabetes mellitus is the most common disorder with difficult management, affecting the quality of life. Stem cell therapy has been proven to have regenerative ability. The current study has involved using the existing stem cell therapy and modifying it.

Objective: The objective of this study was to manage hyperglycemia in a diabetic rodent model by using hypoxia-preconditioned BFP-MSCs, and to study their effect on serum and pancreatic insulin and pancreatic regeneration.

Method: In this study, the Streptozotocin (STZ)-induced diabetes rat model was used. The diabetic rats were administered the test therapy, *i.e.*, hypoxia-preconditioned BFP-derived MSCs in three doses by intramuscular route. Thereafter, monitoring of blood glucose levels was carried out till the end of the study. Changes in the serum insulin and pancreatic insulin were also observed. Histopathology of the pancreas was performed to assess the effect of preconditioned stem cells on pancreatic regeneration.

Result: The effect of hypoxia-preconditioned BFP-derived MSCs on the body weight and that of food-water intake was non-significant. Their effect on blood glucose levels was found to be significant ($p < 0.0001$). After the administration of test therapy, the blood glucose level in the test group decreased, ultimately resulting in the management of diabetes. Histopathology of the pancreas showed regeneration of the pancreatic cells in the test group.

Conclusion: The above research findings suggest that hypoxia-preconditioned BFP-derived MSCs can be considered a promising therapy in the management of type 1 diabetes. Stem cell therapy can be the future of the management of diabetes; however, further research is needed on the current therapy.

Keywords: Type 1 diabetes mellitus, buccal fat pad, mesenchymal stem cells, hypoxia, streptozotocin model, wistar rats.

1. INTRODUCTION

Diabetes mellitus is a group of metabolic disorders in which the blood sugar level is increased for a prolonged period of time. According to the International Diabetes Federation, 8.8% of adults are diagnosed with diabetes globally. However, type 2 diabetes is more common compared to type 1 diabetes. Type 1 diabetes mostly occurs in children < 15 years, and there is an increase of 90,00,000 patients every year [1]. Type 1 diabetes mellitus mostly occurs due to genetic and environmental factors, which activate a cascade of events that trigger an auto-immune response and eventually lead to the destruction of the beta cells of islets of the pancreas. This destruction results in impaired or no insulin secretion. It is reported that various genes are involved in the manifestation of the disease, although the exact genetic basis is not known. The major genetic determinants include the alleles of the histocompatibility locus Human Leukocyte Antigen (HLA) at the HLA-DRBI and DQBI loci [2]. The environmental factors that are associated with the disease are diet in early life, deficiency of vitamin D, exposure to enter-

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Research Article

Box-Behnken Design Employed Stability Demonstrating RP-HPLC Method Development of Sorafenib Tosylate for Rapid and Sensitive Quantification

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ABSTRACT

Sorafenib tosylate (SFN) is a tyrosine kinase inhibitor used clinically to treat liver, kidney, and thyroid carcinoma. This research aims to accurately quantify SFN using a quality-by-design (QbD) approach with reverse-phase high-performance liquid chromatography (RP-HPLC). Chromatographic settings were optimized using a Box-Behnken design, measuring responses such as retention time, tailing factor, theoretical plate, and peak area. At the same time, independent variables were flow rate, mobile phase composition, and wavelength. A C18 column (4.6 × 250 mm, 5 µm) served as the stationary phase, with a mobile phase of methanol and 0.1% *o*-phosphoric acid in a 41.59 v/v ratio. SFN detection occurred at 267 nm in isocratic mode at a flow rate of 1.1 mL min^{-1}. Method validation followed International Council for Harmonization (ICH) guidelines, yielding a coefficient of determination (R^2) of 0.9998, indicating linearity in the 5 to 25 µg mL^{-1} range. Results showed detection (LoD) and quantification (LoQ) limits of 0.04 and 0.12 µg mL^{-1}, respectively. Additionally, the method demonstrated precision, accuracy, and robustness consistent with ICH criteria. Overall, this simple, accurate, rapid, and robust RP-HPLC method is suitable for routine SFN analysis in various formulations.

INTRODUCTION

A tyrosine kinase inhibitor (TKI), sorafenib tosylate (SFN) [IUPAC: 4-[4-[3-[4-Chloro-3-(trifluoromethyl) phenyl] ureido] phenoxy]-*N*-methylpicolinamide-4-Methylbenzenesulfonate (Fig. 1.), has proven to be a highly effective orally bioavailable anti-neoplastic drug, specifically for treating hepatocellular, renal, and thyroid cancer.[1,2] Tyrosine kinase inhibitors target tyrosine kinases, crucial components in transmitting cellular growth signals.[3] At present, Europe has authorized nine tyrosine kinase inhibitors for diverse medical indications. These include lapatinib, nilotinib, pazopanib, dasatinib, erlotinib, gefitinib, imatinib, sunitinib, and sorafenib.

Even though TKIs have demonstrated effectiveness, instances of treatment ineffectiveness, adverse drug reactions, and less-than-ideal responses have been documented in their treatment.[4] The limitations of these inhibitors are probably due to a mix of factors associated with both the tumor and the host, which lead to differences in drug distribution or the emergence of resistance to these treatments.[5,6] With poor water solubility (10–20 µM) and high lipophilicity (log P of 3.8), it is permissible to classify it as a BCS category-II medication.[2,7]

For many years, liquid chromatography has transformed from being a preferred method to an affordable and nearly indispensable instrumental technique for drug analysis. Reverse-phase high-performance liquid chromatography (RP-HPLC) has recently played a crucial role in advancing analytical research due to its wide range of applications in foods, polymers, plastics, environmental monitoring,

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PHYSIOCHEMICAL INVESTIGATION OF UNANI FORMULATIONS WITH ANTI-INFLAMMATORY PROPERTIES

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Abstract

Habb-e-asgand, Habb-e-suranjan and Halwa Gheekwar are the Unani Formulations mainly used for various ailments like arthritis, gout, joint Pain, inflammations, anticancer, antioxidant, and immunomodulator. Unani Formulations are quite safe and effective. Although the formulations of the Unani system of medicine are more recognized, not so much scientific work has been reported so far. Many Pharmaceutical Companies manufacture the formulation for commercial supply but they fail to maintain the desired standards for it. The Unani Formulations was subjected to evaluate physiochemical parameters like Foreign Content, LOD, Ash Value, Extractive Value, Heavy Metals Estimation, Pesticide Residue, Test for Aflatoxins and were found to be under the limit and microbial content were also execute to check the presence of any hazardous substance in the formulation. The evidence produced in this study will lead to develop pharmacopeial standards of Habb-e-asgand, Habb-e-suranjan and Halwa Gheekwar which eventually assist to estimate the Standard, safety and potency of the formulation.

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Pharmacological Assessment of *Boswellia Serrata* and *Urtica Dioica* Leaf Extract Mixture: Implications for Oxidative Stress and Inflammation

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A Precise Review on Tenofovir Disoproxil Fumarate: An Analytical Profile

Vinod A Chaure[1], Saurabh B Gaonkar[1], Ganesh U Chaturbhuj[2], Sanjay J Surana[1] and Anil A Shirkhedkar[1]

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ABSTRACT

Tenofovir Disoproxil Fumarate (TDF) is antiretroviral medicine used treat AIDS as well as chronic Hepatitis-B. TDF is a prodrug of tenofovir and exists as dominant form due to lesser oral bioavailability of parent drug. TDF is now available in a fixed-dose combination with various antiretrovirals like Cobicistat, Efavirenz, Elvitegravir, Emtricitabine, Lamivudine, Rilpivirine, and Nevirapine. Hence, pharmaceutical analysis of TDF and applicability of different analytical methods have gained crucial importance. The present review article assesses the published analytical methods and a variety of approach for investigation of TDF in bulk drug as well as pharmaceutical formulations including combinations. This detailed review includes examination of around eighty analytical methods published during 2008 to 2016 using various techniques which include HPLC, HPTLC, and UV/Visible-Spectrophotometry. The review also illustrates the scope and limitations of many published analytical methods for analysis of TDF. Such detailed review will be of great help to the researcher who is working on TDF. Miscellaneous methods of rare but unique pharmaceutical distinction have also been given due consideration. The diagrammatic illustrations provide the statistical overview about the various methods referred for analysis of TDF.

1. Introduction

Tenofovir Disoproxil Fumarate (TDF) Fig. 1 is an antiretroviral medicine used to treat HIV/AIDS and chronic hepatitis B (Goicoechea *et al.*, 2008). TDF is a prodrug of Tenofovir (TNF) and exists as dominant form due to low oral bioavailability of TNF. The active substance TNF inhibits the Nucleotide Reverse Transcriptase. TDF is quickly hydrolysed into Tenofovir monophosphate in the body and gets converted into the active drug. The chemical reaction for this conversion *in vivo* is as represented in Fig. 2(Avilhingsanon *et al.*, 2015). TDF is available in the market as tablets; alone and in combination with other drugs. TDF is mostly expelled with Glomerular filtration and in that being transported into renal proximal tubule cells through organic anion transporter-1 (OAT-1). TDF usually considered as a safe drug, but renal toxicities are reported with its use. The reports are available which provides cause of proximal tubulopathy of kidney, Fanconi syndrome, kidney related other toxicities including insipidus calcium and phosphorus dysregulation with bone disease and reduction in Glomerular function (Patel *et al.*, 2010). Besides the aforementioned effects, the antiretroviral therapy (ART) has transformed HIV infection into a manageable, lifelong disease. The first line regimens are critical to successful ART for its long-term treatment (Bygrave *et al.*, 2011).

The present review offers a critical account on analytical methods published during 2008 to 2016 for determination of TDF.

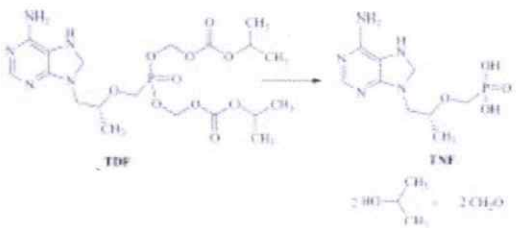

Figure 1: Chemical structure of TDF and its metabolism into TNF.

1.1 *Chemistry of Tenofovir Disoproxil Fumarate*

(TDF) is chemically 9-(*R*)-2-[bis (isopropoxycarbonyl) oxy] methyl] phosphinyl] methoxy] propyl] adenine Fumarate. The molecular formula is $C_{19}H_{30}N_5O_{10}P$ and molecular weight is 521.46. Melting point is 279 °C, drug is faintly soluble in water, soluble in methanol, very slightly soluble in dichloromethane [5].

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REVIEW ARTICLE

Analytical Review on Escitalopram oxalate and their combinations in Bulk and Pharmaceutical Formulation

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ABSTRACT:
As an antidepressant, escitalopram oxalate, a pure S-enantiomer derivative of citalopram, blocks selective serotonin reuptake. By preventing serotonin reuptake and boosting serotonin levels in synaptic clefts, this action exerts an antidepressant effect. The analytical method used to identify Escitalopram oxalate in pharmaceutical formulations, both alone and in combination with other antidepressants, was identified in this review. The simultaneous comparison and discussion of eighteen analytical techniques, including HPLC, HPTLC, stability-indicating strategies, UV spectroscopy, hyphenated techniques and bioanalytical procedures, is best demonstrated by this thorough analysis. Analytical development must be validated in order to produce reliable results for regulatory filings. The invention of drugs resulted in a revolution in human health.

KEYWORDS: Escitalopram, Escitalopram oxalate, Review Article, Analytical Methods.

INTRODUCTION:

Escitalopram oxalate (ESC-OX), shown in **Fig. no.1** chemically, S(+)-1-(3-dimethylaminopropyl)-1-(4-fluorophenyl)-1, 3-dihydroisobenzofuran-5-carbonitrile hydrogen oxalate, is the pure S-enantiomer racemic bicyclic phthalane derivative of citalopram used as an antidepressant. The molecular weight of Escitalopram Oxalate is 414.43gm. Escitalopram Oxalate is white crystalline powder having melting point 146-149°C. It is Soluble in alcohol, sparingly soluble in water and slightly soluble in acetone[1]. Escitalopram Oxalate is produced as the oxalate salt for therapeutic use. The empirical formula of escitalopram oxalate is $C_{20}H_{21}FN_2OC_2H_2O_4$[2]. A review of the literature revealed that while there are a various analytical methods for determining ESC in bulk and pharmaceutical formulations. Analytical techniques such as UV/Visible Spectrophotometry, high performance liquid chromatography, and high performance thin layer chromatography, bioanalytical methods and stability indicating methods[3,4].

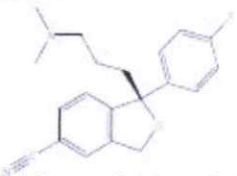

Figure no 1: Chemical structure Escitalopram Oxalate

PHARMACOLOGICAL PROFILE:

ESC inhibits selective serotonin reuptake SERT. This activity has an antidepressant effect by inhibiting serotonin reuptake and increasing the amount of serotonin in synaptic clefts[5]. ESC is also recommended for the treatment of generalized anxiety disorder, panic disorder, social anxiety disorder and obsessive-compulsive disorder[6].

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Formulation and evaluation of herbal hair colourant oil

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Abstract

Hair plays a wide role in the personality of human and for their care we use many cosmetic products. Premature greying and greying hair are serious issues that the general public faces and can be caused by a number of internal and environmental sources. The present study focus on herbal hair oil which shows permanent dye to the applied regions of human hair without causing any hair damage, hair loss, skin irritation compared to the synthetic and semi-synthetic dyes. Three batches of hair dyes F1, F2 and F3 were formulated from plant materials like henna, bhringraj, coffee, black tea, amla, jatamansi, hibiscus, brahmi, cinnamon, black catechu, almond oil, sesame oil, clove, curry leaves, jasmine. From the above formulated hair colorant oil, F1 batch was found to be most optimized formulation with the most promising results on hair colour..

INTRODUCTION

Hair is made up of dead cells. On our heads, we have hundreds and thousands of follicles, pore-like structures within the scalp that produce hair. The papilla produces live hair cells inside the follicle. [1] Each hair consists of keratin, small amounts of water and a binding agent, which holds the keratin and water together. [1] Hair care products are characterized as those compositions that are used to cleanse, alter the texture of hair, alter its colour, restore stressed hair, nourish the hair, and give the hair a healthy appearance. Hair care products can be divided into two categories: hair tonics and hair grooming tools. [2] Hair dye is important cosmetic product for not only women but also for men. Natural hair formulation solves the problem of the destruction of the scalp and hair cuticle, which are safe for use. The need of herbal based natural medicine is increasing Fastly due to their natural goodness and lack of side effect. [8] The aim of this research is to formulate hair colorant oil from natural/plant sources rather than synthetic chemicals, which will reduce any harmful effects that may arise from using synthetic chemicals. This project focuses on the formulation and evaluation of herbal hair colorant oil.

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Solubility enhancement and tablet formulation of Ritonavir

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Abstract

The aim of this study was to prepare and evaluate Ritonavir for enhancing the dissolution rate and Bioavailability several methods and newer emerging technologies have been developed. For the solubility enhancement of ritonavir solid dispersion, complexation, particle size reduction method was used. Solubility enhancement method which showing the best result after evaluation of parameter was selected for preparation of immediate release tablet of ritonavir by using appropriate excipients. Particle size reduction method was selected for the formulation of tablets. The physical state of the ritonavir drug and excipients was characterized by differential scanning calorimetry, powder X-ray diffraction, and U.V spectroscopy. Ritonavir drug were formulated into tablet by direct compression method. On comparing with pure drug and formulated tablet, the dissolution of Ritonavir was enhanced dramatically. Formulation showed faster drug release. The experiment was conclusively indicated that the use of particle size reduction method by using water soluble carriers improved the solubility of Ritonavir.

INTRODUCTION

Poor solubility is one of the most common problems in the world of pharmaceutics, and this is universally acknowledged. When taken orally, drugs that are poorly water soluble frequently exhibit low bioavailability since intestinal absorption of the medication is frequently a rate-limiting step. Therefore, improving the solubility rate of this kind of medicine is crucial [2]. According to the biopharmaceutical classification system (BCS), many current medications fall into the Class II group, which is distinguished by poor solubility and high permeability [1]. Anti-retroviral medication ritonavir, which is frequently administered, is classified as a Class II medicine under the "BCS" system and has a poor oral bioavailability because of its insufficient aqueous solubility. In water and other aqueous solutions, ritonavir is virtually insoluble. Ritonavir needs to improve its oral bioavailability, solubility, and dissolution rate [9]. Several methods have been used to increase the solubility, dissolution rate, and bioavailability of poorly soluble medicines, including solid dispersion, cyclodextrin complexation, use of surfactants and solubilizers, and particle size reduction. Particle size reduction is one method among many for improving the solubility, dissolving rate,