Calendar year 2021-22

WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 7, 986-994. Research Article ISSN 2277– 7105

EVALUATION OF IN-VITRO AND IN-VIVO IMMUNOMODULATORY ACTIVITY OF AQUEOUS AND ETHANOLIC EXTRACT OF *BIXA ORELLANA* (L.).

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Article Received on
04 May 2021.
Revised on 24 May 2021.
Accepted on 14 June 2021
DOI: 10.20959/wjpr20217-20080

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ABSTRACT

Objective: The aim of this study is to evaluate if *Bixa orellana* Linn (Bixaceae) leaves have Immunomodulatory properties. **Methods:** Dried leaf powder was extracted in series of solvents, including Ethanolic Extract, chloroform, ethyl acetate, methanol, and water, and extracts were tested for Immunomodulatory effects in Swiss albino mice. Acute oral toxicity investigations have been completed, and animal has been shown to be alive for 24 hours at doses of up to 1000 mg/kg. Using plethysmometer, volume of hind paw is measured before and after inflammation is induced. Level of inflammation in untreated and test drug-treated mice was assessed. **Results:** Ethanolic Extract demonstrated most efficacies at dosage level of 250 mg/kg after 2 hours, according to findings. When compared to conventional medicine as vehicle and control for extract, if inflammation in treated animals is less than that in untreated animals, medicine is regarded to have Immunomodulatory action. Tail immersion method was used to assess analgesic efficacy of different extracts of *Bixa orellana* leaves. Results showed that methanolic extract (12.4 sec) had highest action at dosage of 500 mg/kg 120 minutes after delivery.

KEYWORDS:- *Bixa orellana* Linn, In-Vivo and In-Vitro, Ethanol Extracts, Immunomodulatory Activity.

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© IJCIRAS | ISSN (O) - 2581-5334
April 2021 | Vol. 3 Issue. 11

TASTE-NUMBNESS MASKED ODT OF RILUZOLE INTERNAL TERNARY SOLID DISPERSION

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Abstract

Riluzole, a glutamate antagonist used in management of neurodegenerative disorder Amyotrophic Lateral Sclerosis (ALS) has low aqueous solubility and leaves a sense of intense and persistent numbness in the mouth. The purpose of present study was to optimize orally disintegrated tablets (ODTs) of Riluzole by solid dispersion technology using hydrophilic polymer PVP K30 and surface modifying carrier Syloid® 244 FP for solubility enhancement and effective taste and numbness masking. Saturation solubility of prepared solid dispersion showed increase in solubility as compared to Riluzole in water, pH 1.2, 4, 6.8, 7.4 and 0.1 N HCl. Differential Scanning Calorimetry (DSC), Fourier Transform Infrared Spectroscopy (FTIR) and in vitro dissolution studies were done to characterize the solid dispersion system. Optimized taste masked ODTs showed 90% release of Riluzole in 45 mins comparable to that of the marketed film coated tablet. Thus, results conclusively demonstrated successful taste masking and rapid dissolution rate of the optimized ODT..

Keyword: Riluzole, Syloid® 244 FP, PVP K30, internal ternary solid dispersion, orally disintegrating tablets, taste masking

1.INTRODUCTION

Neurological disorders constitute a significant medical challenge, hence neuroprotective agents play pivotal role in managing this growing global burden of everlasting neurological care. Amyotrophic Lateral Sclerosis (ALS) is terminal and rare neurodegenerative disease identified by a slow deterioration of nerve cells accountable for controlling voluntary muscle movement. [1-3] Dysphagia is one of the most critical problems affecting people with ALS and leads to increased mortality in more than 85% of patients. [4-7] Riluzole is the only licensed drug used in the management of ALS.[3,8] The marketed preparations of Riluzole are available as film coated tablets and oral suspensions. National Health Service (NHS) guideline for Riluzole tablets states that the tablets should be crushed and administered with a spoonful of sugar or yoghurt.[9] However, crushing of tablets increases the chances of inaccurate dosing, changes in drug product performance and safety concerns.[10] Crushing also disrupts film coating on the tablet that is designed to reduce anaesthetic effect and bitter taste of the drug.[4,10,11] The objective of present study was to develop taste masked orally disintegrating tablets (ODTs) of Riluzole that disintegrate rapidly so as to correct the above mentioned drawbacks or demerits. The USFDA has defined ODTs as "A solid dosage form containing medical substance or active ingredient which disintegrates rapidly, usually within a matter of seconds when placed upon the tongue" therefore the disintegration time for ODTs are limited from seconds up to a minute. [10,11]

Riluzole,[2-amino-6-(trifluoromethoxy) benzothiazole] is a glutamate antagonist that slows the progression of the early disease. It has slight bitterness and prolonged local anaesthetic effect in the mouth (>20–30 minutes) and belongs to Biopharmaceutical Classification System (BCS) Class II, characterized as poorly soluble compound resulting in low bioavailability. [3,12,13]

Colloidal solid dispersion is a novel advancement that overcomes solubility issues of low solubility drugs by using a technology that prevents recrystallization, by forming strong hydrogen bonds between the drug and polymer complex that is adsorbed onto the porous

RESEARCH JOURNAL OF PHARMACY AND TECHNOLOGY
Year : 2021, Volume : 14, Issue : 2
First page : (605) Last page : (609)
Print ISSN : 0974-3618. Online ISSN : 0974-360X.
Article DOI : 10.5958/0974-360X.2021.00108.6

RP-HPLC method development and validation for estimation of dicyclomine hydrochloride in its Bulk and Drops Form

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Online published on 30 April, 2021

Abstract

A simple, precise, accurate and rapid Reverse Phase High-Performance Liquid Chromatography (RP-HPLC) method was developed for estimation of Dicyclomine hydrochloride. Detection was carried out at 218nm using UV-visible detector. Chromatographic separation of the drug was carried on Shimadzu shim-pack GIST C18 (250mmX4.6mm, 5µm) column using mobile phase as a mixture of Acetonitrile and Buffer pH5.9 in the ratio of 70: 30 at 1.0ml/min flow rate. The Retention time for dicyclomine HCL was found to be 4.4 minutes. The calibration curve was found to be linear over a concentration range of 50–150µg/ml with correlation coefficient of 0.997 at selected wavelength. The percentage RSD was found to be less than 2% for Accuracy and Precision of the method. This method was validated using parameters such as linearity, accuracy, precision, robustness, specificity, system suitability and solution stability. It can be concluded that the proposed method can be effectively used for estimation of Dicyclomine hydrochloride in pure form as well as in pharmaceutical formulations.

Top

Keywords

Dicyclomine hydrochloride, HPLC, Method development, Validation, Analysis.

Top

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Current Drug Therapy

Editor-in-Chief »

ISSN (Print): 1574-8855
ISSN (Online): 2212-3903

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Review Article

Use of Medicated Foams for Skin Diseases

Author(s): Pradnya Palekar-Shanbhag*, Utala Mishra, Madhura Patil, Anusha Kamath and Riddhi Kini

Volume 16, Issue 2, 2021

Published on: 06 January, 2021

Page: [133 - 141]

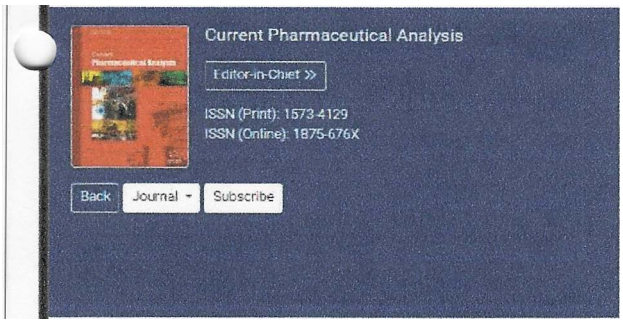
Pages: 9

DOI: 10.2174/1574885515666210106115717

Price: $65

Abstract

Skin diseases remain a serious reason behind disability worldwide and they are ranked as the fourth most common cause of human illness affecting one-third of human population worldwide. Many conventional treatments are available for treating skin diseases but they have their own drawbacks. Currently, medicated foam serves the most effective purpose. The speedy development in the field of topical foams is because they are efficient and deliver instant absorption and have patient compliance. Various categories of drugs such as anti-inflammatory, anaesthetics, antifungal, skin emollients, antiseptics, antipruritics, etc. can be delivered in the form of medicated foams and have become very important delivery system for topically active agents in dermatology.



Research Article

Novel Rapid Isocratic RP-HPLC Method for Simultaneous Estimation of Phenylephrine Hydrochloride, Paracetamol, Caffeine, Diphenhydramine Hydrochloride

Author(s): Revati Sonone , Leena Telange and Vandana Saini*

Volume 17, Issue 6, 2021

Published on: 30 April, 2020

Page: [792 - 800]

DOI: 10.2174/1573412916999200430091855

Price: $65

Pages: 9

Abstract

Background: A tablet dosage form widely used in the treatment of cough and cold, containing phenylephrine hydrochloride, paracetamol, caffeine, and diphenhydramine hydrochloride as active pharmaceutical ingredient was selected for the development of a novel, rapid, simultaneous isocratic reversed phase-high performance liquid chromatography (RP-HPLC) method.

Objective: The objective of this paper was to develop and validate a novel, rapid, simple, precise, accurate and reproducible RP-HPLC method for simultaneous estimation of phenylephrine hydrochloride, paracetamol, caffeine, diphenhydramine hydrochloride in bulk and pharmaceutical dosage form.

Method: Optimized chromatographic conditions were an isocratic elution with prontosil C18-column (250×4.6 mm, 5 µ), methanol and 20mM phosphate buffer (55:45 v/v, pH 3) as mobile phase, flow rate 1.0 mL/min and UV detector set at λ max 220 nm. The method was validated for specificity, precision, linearity, accuracy, sensitivity, and robustness as per the International Council for Harmonization guidelines.

Result: The retention times of phenylephrine hydrochloride, paracetamol, caffeine, diphenhydramine hydrochloride were found to be 2.8 min, 3.3 min, and 4.0 min and 7.3 min, respectively. The novel method was found to be rapid, simple, linear (R^2> 0.99), precise at the standard deviation (< 2.0 %), accurate (recovery 98-102%), sensitive and robust.

Conclusion: The proposed novel isocratic RP-HPLC method is rapid (short run time below 10 min), highly selective, precise, accurate, sensitive and robust. The method was successfully applied for the simultaneous analysis of phenylephrine hydrochloride, paracetamol, caffeine, diphenhydramine hydrochloride in a pharmaceutical dosage form.

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World Journal of Pharmaceutical Sciences
ISSN (Print): 2321-3310; ISSN (Online): 2321-3086
Available online at: https://wjpsonline.com/
Research Article

Formulation and evaluation of herbal lipstick and hand lotion from mango butter

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Received: 27-10-2021 / Revised Accepted: 19-11-2021 / Published: 01-12-2021

ABSTRACT

Cosmetics have been incredulously in demand since historical times till today. Herbal cosmetics are gaining wide popularity because of their natural ingredients and less toxic effects. Aim of the present study was made to formulate lipstick and hand-lotion using mango butter extracted from *Mangifera indica*. as a substitute for cocoa butter. The prepared lipstick and hand lotion were evaluated for their organoleptic properties such as melting point. pH. surface anomalies, irritancy. spreadability. washability. and other parameters. The prepared herbal cosmetic formulations have shown promising results upon evaluation. The present work also highlights the value addition of agro-industrial waste of mango seeds by incorporating the mango butter into suitable cosmetic formulations.

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Quest Journals
Journal of Research in Pharmaceutical Science
Volume 7 ~ Issue 7 (2021) pp: 37-58
ISSN(Online) : 2347-2995
www.questjournals.org

Research Paper

An electronic survey on general awareness of consumption of protein powders amongst the youth in India

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Abstract: *Sports nutrition products are developed and targeted mainly for athletes to improve their nutrient intake, performance, and muscle growth. Although athletes may have elevated physiological protein requirements and they may benefit from dietary supplements, the evidence regarding the role of dietary protein and supplements in the nutrition of recreational sportspeople and sedentary populations is somewhat complex and contradictory. The fastest growing consumer groups for these products are recreational sportspeople and lifestyle users. In high-protein diets, more undigested protein-derived constituents end up in the large intestine compared to moderate or low-protein diets, and hence, more bacterial amino acid metabolism takes place in the colon, having both positive and negative systemic and metabolic effects on the host.*

Keywords: *dietary supplements market, sports nutrition, high-protein diets*

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IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Research Article
September 2021 Vol.:22, Issue:2

Design and Optimization of Novel Vaginal Microsphere Gel of Clotrimazole

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Submitted: 25 August 2021
Accepted: 31 August 2021
Published: 30 September 2021

HUMAN JOURNALS
www.ijppr.humanjournals.com

Keywords: Vaginal drug delivery system, Clotrimazole, Residence time, Microspheres, SVF

ABSTRACT

The objective of the study was to develop and evaluate sustained release microsphere gel for the drug clotrimazole to be administered through the vaginal route. The effect of polymer ethylcellulose and carbopol 934 on entrapment efficiency and diffusion behavior were investigated respectively. A 3^2 full-factorial design was used to optimize the formulation of Microsphere gel. Microspheres were characterized by SEM, FTIR, Entrapment efficiency, and particle size. Gels were evaluated for *in-vitro* drug release in simulated vaginal fluid. The microsphere loaded with clotrimazole in bioadhesive carbopol gel formulation was evaluated for various physicochemical studies and was found to be satisfactory. The rheological profile shows the gel formation at desired condition. It is evaluated for spreadability, drug content, *In-vitro* drug diffusion, stability study, and bioadhesive study. It may be concluded that spray drying is a suitable method for microsphere preparation and microsphere gel can be used as a novel drug delivery system to prolonge release of clotrimazole for vaginal candidiasis.

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WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
SJIF Impact Factor 7.632
Volume 10, Issue 12, 1827-1844 Review Article ISSN 2278 – 4357

FIRE AND EXPLOSION HAZARD IN PHARMACEUTICAL INDUSTRY-AN OVERVIEW

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Article Received on
20 October 2021,
Revised on 10 Nov. 2021,
Accepted on 30 Nov. 2021,
DOI: 10.20959/wjpps202112-20730

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ABSTRACTS

Hazard is a term associated with substances that has the potential to cause injury in a given environment or situation. Industrial hazards in manufacturing are major occupational health and safety issues. In recent years chemical safety and sound management of chemicals have seen great progress on a global scale. At the same time, the rapid increase in the production and proliferation of chemicals, both natural and synthetic, has raised concerns about their impact on the natural environment and human health. In this way industry has come to a unique position. Practically no other commercial enterprise exists such as the wide variety of potentially toxic exposures or the rapidly changing arrival of new chemical substances. In industry, this dynamic situation has been created by the increasing application of organic chemical synthesis as a technology for the production of therapeutic substances. This is what makes the job of a plant physician so instructive. Industrial safety is required to investigate all possible possibilities of accidents to prevent loss of life and permanent disability of any industrial worker, any damage to machine and material causing damage to the whole establishment.

KEYWORDS: Hazard Safety Management Industry Toxic Effects Fire and Explosion.

INTRODUCTION

Many gases, liquids and powders used in the manufacture of products are highly flammable, explosive, reactive and/or toxic. In addition, facilities have the capacity to perform many of the operations typically required – from delivery to processing in the reactor to filtration, drying, milling/micronizing, blending and packaging explosive generate environment. It is

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WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
SJIF Impact Factor 7.632
Volume 10, Issue 12, 847-857 Review Article ISSN 2278 – 4357

AIR BASED HAZARD IN PHARMACEUTICAL INDUSTRY: AN OVERVIEW

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Article Received on
12 Oct 2021,
Revised on 02 Nov. 2021,
Accepted on 23 Nov. 2021
DOI: 10.20959/wjpps202112-20214

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ABSTRACT

The pharmaceutical industry is a needed component of health care systems all over the world essential in discovery, development, manufacture, and marketing of medicines for human as well as animal health. This study is conducted to determine the air circulation maintenance in pharmaceutical industry as well as air based hazard that can occur by industry. Quality of the pharmaceutical product is also based on the quality of air which are supplied in the manufacturing or the working environment in the industry. to control the sterile environment it is need to know the sources, types of air based hazards, way to reduce the hazard health effect of air pollution on the workers and on the products. This article provides a comprehensive review of various air hazards generally encountered by the pharmaceutical industry, its management and regulation in India.

KEYWORD: Air Basesd Hazard, Acute and Chronic Effect, Air Control, Prevention of Air Hazard.

INTRODUCTION

Air pollution means the presence of unwanted chemicals or compounds in the air and which reduces the quality of the air or cause detrimental changes to the quality. Sterile pharmaceutical products are very captious and sensitive. The specific requirements of these products are that these products should be handled very carefully in aseptic environmental conditions, by fully trained personnel. Any failure in the requirements directly affects the safety of the patient being treated. A lot of requirements have to be met to ensure that the

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International Journal of Research and Review
DOI: http://doi.org/10.52403/ijrr.20211013
Vol.8, Issue: 10, October 2021
Website: www.ijrrjournal.com
Original Research Article
E-ISSN: 2349-9788, P-ISSN: 2454-2237

Formulation and Evaluation of Floating Bioadhesive Tablet of Candesartan cilexetil Using 3^2 Factorial Designs

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Corresponding Author: Asish Dev

ABSTRACT

Objective: The objective of the work is to formulate candesartan cilexetil floating bioadhesive tablets which can considerably improve the bioavailability of medicine underneath the condition of redoubled continuance of drug in abdomen.

Methods: Floating bioadhesive tablet was ready by direct compression of chemical compound like HPMCE15 and Carbopol934p together.

Result: After analysis of different evaluation parameter and drug release, F4 batch was selected as promising formulation for delivery of candesartan cilexetil floating bioadhesive tablets with 91.22% drug release at 12th h.

Conclusion: Among the further batches, the F4 batch was selected as an optimized batch as a result of the pre-compression and post-compression parameters results area unit satisfactory.

Keywords: Candesartan cilexetil, Floating bioadhesive tablets, Polymer, Total floating time.

INTRODUCTION

Among the assorted routes of administration oral intake has long been the foremost convenient and ordinarily utilized route. There are a unit some ways to intend changed unleash dose forms for oral administration and one amongst them is floating bioadhesive tablets.[1] In recent years, several tries are created give to supply to produce} dose kind which is able to provide longer transit time and additional economical absorption for specific medicine that have a window of absorption or stability issues.[2] Floating dose kinds are designed to possess decent buoyancy to float on the highest of abdomen contents and prolong viscus duration of the dose forms. additionally, interest has been directed to the event or oral bioadhesive systems to find the oral dose kind on the tissue layer wall of the abdomen or internal organ to extend the residence of the drug within the gastrointestinal tract.[3] FBDS may be a gastro-retentive dose kind, which may prolong the viscus duration to provide a suitable drug bioavailability. Floating bioadhesive drug delivery system (FBDDS) is appropriate for medicine with associate degree absorption window within the abdomen or the higher gut, for medicine that acts domestically within the abdomen and for medicine that area unit poorly soluble or unstable within the viscus fluid FBDDS or hydro-dynamically balanced systems have a bulk density not up to viscus fluid and so stay buoyant within the abdomen while not poignant the viscus voidance rate for a protracted amount of your time. supported the mechanism of buoyancy. 2 clearly completely different technologies, i.e., non-effervescent and effervescent systems are employed in the event of FBDDS. The bubbling system uses matrices ready with swellable polymers and effervescent elements, for instance, saleratus and acid or saturated fatty acid. In non-effervescent FBDDS, the drug mixes with a gel-forming matter, that swells in reality with viscus

Available Online at

http://www.ijcpa.in

January-March 2021

International Journal of
CHEMICAL AND PHARMACEUTICAL
ANALYSIS

eISSN: 2348-0726; pISSN: 2395-2466

DOI: http://dx.doi.org/10.21276/ijcpa

Review Article | Volume-8 | Issue-2 | Article ID: 0056

NANO VACCINE A BOON FOR DRUG DELIVERY: REVIEW

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Received: 22 January 2021/ Revised: 15 March 2021 / Accepted: 29 March 2021 / Available online: 31 March 2021

ABSTRACT

Due to the emergent necessity against fatal diseases, the need to understand more regarding the complex immune system was emerged. The traditional vaccines were not capable enough against such disease's so nano vaccine concept arrived. The nano vaccine contain nano particle usually in the size range of 1-1000 nm. This article summarize the nano system's and adjuvants in vaccine delivery, route of administration, advantage's and disadvantage's, clinical scenario.

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Int. J. Pharm. Sci. Rev. Res., 70(2), September - October 2021; Article No. 01, Pages: 1-5 ISSN 0976 – 044X

Research Article

Novel, Rapid, Isocratic RP-HPLC Method for Simultaneous Estimation of Piperine and Embelin in Herbal Formulation

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Received: 10-06-2020; **Revised:** 04-09-2021; **Accepted:** 13-09-2021; **Published on:** 15-10-2021.

ABSTRACT

The objective of this paper was to develop and validate a novel, simple, rapid, precise and accurate, reverse-phase high-performance liquid chromatographic (RP-HPLC) method for simultaneous quantitative estimation of piperine and embelin in the herbal formulation as per the International Conference on Harmonization guidelines (ICH). Chromatographic separation was achieved using a Cosmosil C-18 (250*4.6mm) SH 5.0 µm column with a mobile phase consisting of methanol and 0.02 M phosphate buffer in ratio 98:2 v/v, (pH adjusted to 2.3 with ortho-phosphoric acid) at a flow rate of 1 mL/min and column temperature maintained at 28°C and ultraviolet (UV) detection at 288 nm. The retention time of piperine and embelin was found to be 4.15 and 5.69 min respectively. The linearity of piperine and embelin was tested in the range of 5-40 µg/mL. The correlation coefficient for piperine and embelin was found to be 0.997 and 0.995, respectively. The recovery values (98-102%) indicate a satisfactory accuracy. The method was found to be precise as the percentage relative standard deviation was found to be <2 %. The proposed novel isocratic RP-HPLC method is rapid (short run time below 10 min), precise, accurate and sensitive. The method was successfully applied for the simultaneous analysis of piperine and embelin in herbal formulation.

Keywords: Piperine, embelin, herbal formulation, Reverse-phase high-performance liquid chromatographic, Validation.

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World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

[Research Article]

Check for updates

Antidepressant and nootropic activity of aqueous extract of *Bougainvillea glabra*

Parikshit V. Choudhari [1,*], Vanita G. Kanse [2], A. Venkatachalam [3] and Punam R. Pal [4]

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World Journal of Advanced Research and Reviews, 2021, 10(01), 334–339

Publication history: Received on 14 March 2021; revised on 23 April 2021; accepted on 26 April 2021

Article DOI: https://doi.org/10.30574/wjarr.2021.10.1.0163

Abstract

The aim of this analysis was to assess antidepressant & nootropic capacity of Bougainvillea Glabra aqueous extract (BGAE). Forced swim test, tail suspension test, & tetrabenazine mediated catalepsy & ptosis models were used to assess BGAE's antidepressant efficacy in mice at doses of 250 & 500 mg/kg orally. Morris water maze with elevated plus maze (EPM) was used to test nootropic behaviour. Normal medications for antidepressant & nootropic function were imipramine (25 mg/kg) & piracetam (300 mg/kg), respectively. Antioxidant assays such as DPPH & TBARS were used to validate antidepressant & nootropic function. When comparison to car, pre-treatment with BGAE resulted in substantial dose-dependent decrease in immobility time in both FST & TST. (P0.005) Tetrabenazine-induced catalepsy & ptosis were both decreased dramatically. Furthermore, in MWM & EPM, BGAE demonstrated dose-dependent cognitive enhancing behaviour. In DPPH assay, BGAE had IC50 of 17.39 g/ ml, & in TBARS assay, it had IC50 of 398.71 gm/ mL BGAE has antidepressant & nootropic activities that are equivalent to imipramine & piracetam at doses of 250 & 500 mg/kg, respectively, which may be due to its effect on neurotransmitters & antioxidant function.

Keywords: Depression; Nootropic activity; Bougainvillea Glabra; Antioxidant

1. Introduction

Sadness, lack of appetite or satisfaction, feelings of low self-worth, disrupted sleep, & decreased concentration are all symptoms of depression. Global rate of depression is consistently high, with recent WHO figures suggesting that about 350 million individuals are afflicted by depression worldwide. By 2020, World Health Organization estimates that unipolar depression will be second most common source of illness-induced disability [1]. Selected serotonin reuptake inhibitors (SSRIs), selective serotonin & noradrenaline reuptake inhibitors (SNRIs), & other antidepressants work by increasing catecholamine levels throughout brain. However, new treatments have drawbacks, such as adverse side effects like sedation, sexual dysfunction, & dizziness [2]. Furthermore, there is significant body of research that depressive patients' cognitive performance is compromised [3]. Serotonin (5-HT) depletion in hippocampus, cortex, & thalamus, which are densely innervated by serotonergic & cholinergic neurons, may cause cognitive dysfunction. Tricyclic antidepressants can also exacerbate dementia due to their anti-cholinergic effects [4]. Plants will therefore act as potential pool of experimental antidepressant medications owing to side effects of existing antidepressants & relatively untapped wealth of natural capital. Several ayurvedic plants have since been tested for antidepressant properties. Many of these species, such as Withania somnifera & Celastrus paniculatus [5,] have shown promise in preclinical & clinical trials. Many plants have been shown to have nootropic function, but only handful have been found to have both antidepressant & nootropic properties, such as Piperin from Piper longum & Piper nigrum. Plant IT is

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ISSN 0974-3618 (Print)
0974-360X (Online)

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RESEARCH ARTICLE

Evaluation of Antidepressant Activity of Ethanolic Extract of *Cissus quadrangularis* on Swiss Albino Mice

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ABSTRACT:

Background: *Cissus quadrangularis* has been used for cure of various ailments that includes bone cracks, frail bones (osteoporosis), scurvy, malignant growth, annoyed stomach, hemorrhoids, peptic ulcer sickness, excruciating menstrual periods, asthma, jungle fever (malaria), and mental distress. Specially it is used for bone healing properties. According to this background, the aim of the study was to evaluate the antidepressant-like effect of the ethanolic extract of *Cissus quadrangularis* (EECQ) in different behavioral models such as forced swimming test (FST) and tail suspension test (TST) on mice after two weeks treatment. **Methods:** Mice were divided into six groups (n=6/group): control group (normal saline), stress control (normal saline), standard group where Imipramine (15mg/kg) was used as standard drug and three test groups where three doses of ethanolic extract of C. quadrangularis (EECQ) (100, 250, and 350mg/kg) was used for two weeks treatment. All the medication and test samples were managed by means of gavage through oral course. To evaluate the antidepressant like impact of EECQ forced swim test (FST) and tail suspension test (TST) have been done in mice. **Results:** The outcomes demonstrated that a solid and dose-dependent antidepressant effects in various mice models. The main findings of the EECQ significantly decreased the duration of immobility times in the forced swimming test ($p<0.5$). Likewise, the extract significantly decreased the immobility time in the tail suspension test ($p<0.5$) when compared against stress control as well as against imipramine which was used as a standard. **Conclusion:** The present results clearly demonstrate that the ethanolic extract of C. quadrangularis possesses antidepressant-like activity in the animal behavioral models. *Cissus quadrangularis* plant can be used for the treatment of neurological disorders and may be recommended as a supplement for the antidepressant activity.

KEYWORDS: *Cissus quadrangularis*, Imipramine, Antidepressant-like effect, Forced swimming, Tail suspension, Biochemical analysis.

INTRODUCTION:

Depression is an extremely common psychiatric condition. It is a type of serious mood affective disorder which refers to a pathological change in mood state; depression varies from mild to severe depression accompanied by hallucinations and delusions.[1] It is recognized to be symptomatically, psychologically and biologically heterogeneous.[2,3]

According to WHO, depression is expected to become the second leading cause of disease related disability by the year 2020, following heart disease. Currently available treatment of depression is often associated with several undesirable side effects and it is effective only in a certain portion of the patients.[4] A search for novel pharmacotherapy from medicinal plants for psychiatric illnesses has progressed significantly in the past decade. A large number of herbal preparations for antidepressant activity have been evaluated in a variety of animal models.[5] Now, Depression has been found to be the fourth leading cause of overall disease burden and the leading cause of nonfatal disease burden worldwide[6].

Received on 06.06.2020 Modified on 16.08.2020
Accepted on 19.10.2020
Research J. Pharm. and Tech. 2021; 14(8):4197-4202.
DOI: 10.52711/0974-360X.2021.00727

ISSN 0974-3618 (Print)
0974-360X (Online)

www.rjptonline.org

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RESEARCH ARTICLE

Antihistaminic activity of Ethanolic extract of *Capparis moonii W.* fruit.

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ABSTRACT:

The purpose of the present work were intended to determine the antihistaminic activity of ethanolic extract of *Capparis moonii W.* fruits (EECM). *Capparis moonii W.* had been historically used in the diagnosis of cough and asthma and so we undertook this study to validate scientifically using appropriate animal models. Antihistamine is considered to be helpful for the treatment of allergic. thus, the antihistamine activity of an ethanolic extract of *Capparis moonii* W. in the current work was evaluated. To determine the doses, acute oral toxicity tests were conducted. Clonidine and haloperidol that induced cataleptic effect in Swiss albino mice were evaluated for antihistaminic activity at the different doses of 50mg/kg, 100mg/kg and 200mg/kg, p.o. and the evaluation is also done on guinea pig ileum tissue. The ethanolic extract of *Capparis moonii* W. fruits (50, 100, 200mg/kg, p.o.) and chlorpheniramine maleate (i.p.,10mg/kg) significantly inhibited (****P<0.0001) clonidine induced catalepsy but the extract donot inhibit haloperidol-induced catalepsy and histamine-induced contraction in guinea pig ileum tissue preparation shows that ethanolic extract of *Capparis moonii* W. inhibited the contractile activity of histamine. The result of our work shows that the ethanolic extract possesses antihistaminic activity. It can be reported that flavonoid present in the extract may be important for an antihistaminic effect and therefore may have a role in the asthma treatment.

KEYWORDS: Antihistamine, Clonidine, Haloperidol, Catalepsy, *Capparis moonii W.*, Guinea pig ileum.

INTRODUCTION:

Histamine is referred to common symptoms and allergic reactions. They are mostly comparable with histamine intolerance. Many typical reactions to this allergy can vary, which include migraine or headache, trouble with nasal congestion or sinus, fatigue, hives, stomach issues, abnormal menstrual period, nausea, and vomiting. Histamine is the compound for the immune response produced by the mastocyte. Antihistamines are a type of medication which is often used to manage a different variety of allergic problems in your body. Antihistamines are drugs used for the prevention of allergic rhinitis and allergies[1,2].

Received on 18.05.2020 Modified on 27.07.2020
Accepted on 07.09.2020
Research J. Pharm. and Tech. 2021; 14(8): 4403-4407
DOI: 10.52711/0974-360X.2021.00761

Histamine is activated by Mast cells activation and basophils, via immunology and non-immunological mechanisms which Contribute to Allergic and Anaphylaxis reactions[2]. Catalepsy is a disorder of animal experiences long imposed posture before he regained his normal posture. Catalepsy is an indication of the extrapyramidal syndrome of medications inhibiting dopaminergic transmission or through the release of histamine into the brain[3]. Ayurveda, An Indian medicine method that identified many medicines for use in the diagnosis of asthma and allergy from indigenous natural sources[3]. *Capparis moonii W.* belonging to the Capparidaceae/Cappararaceae family. Widely known as the Large Caper, Rudanti in Sanskrit and Waghati in Marathi. *Capparis moonii Wight* is distributed in Maharashtra, Goa, Karnataka, Tamil Nadu and it is frequently found in Konkan and Sri Lanka which grows normally in the hot climate. *Capparis moonii* Wight Fruits are sub-globose or ovoid. The fruit contains several large seeds. *Capparis moonii W.* fruits extract contains beta-sitosterol, 1-stachyhydrin, natin, as well as

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ISSN 0974-3618 (Print)
0974-360X (Online)

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RESEARCH ARTICLE

Novel Isocratic RP-HPLC Method for Simultaneous Estimation of Berberine and Aloe-emodin

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ABSTRACT:

The present paper describes a novel, isocratic, simple, precise, accurate, and robust reversed-phase high-performance liquid chromatographic (RP-HPLC) method development and validation for simultaneous quantitative estimation of berberine and aloe-emodin in polyherbal formulation. The proposed chromatographic estimation was carried out isocratically using Cosmosil C18 (250 × 4.6mm) 5H 5.0µm column, the mobile phase was a mixture of 0.05 M potassium dihydrogen phosphate buffer (pH adjusted to 2.5 using *ortho* phosphoric acid): acetonitrile in a ratio of 60:40 v/v with a flow rate of 1 mL/min and column oven adjusted to 30°C with injection volume 10µL. The ultraviolet (UV) detection was carried out at 225 nm. The retention time of berberine and aloe-emodin was found to 4.78±0.2 min and 15.49±0.2 min respectively. Calibration curves were linear over the tested concentration range of 4 to 20µg/mL. The present study reveals that this novel isocratic HPLC method is well validated, reliable and can be used for routine analysis of berberine and aloe-emodin in polyherbal formulations containing these phytoconstituents as one of the ingredients.

KEYWORDS: Berberine, Aloe-emodin, HPLC, ICH guidelines, Validation.

INTRODUCTION:

Herbal preparations are medicinal preparations, containing a single plant or a mixture of two or more different types of medicinal plants[1]. Herbal medicines are traditionally used in various parts of the world to cure different diseases[2]. There is a great demand for the herbal medicines from both the developing as well as developed countries because of their safety, and lesser side effects[3]. Standardization is an important aspect of maintaining and assessing the identity, purity, efficacy, quality, and safety of the polyherbal formulation[4,5]. The standardization of herbal products can be achieved only if they are evaluated and analyzed using sophisticated modern analytical techniques[6]. Analytical techniques such as high-performance liquid chromatography (HPLC), thin-layer chromatography (TLC), high-performance thin-layer chromatography (HPTLC), and gas chromatography (GC) are some of the valuable tools for quality control and standardization of herbal products[7].

Received on 20.03.2020 Modified on 19.04.2020
Accepted on 26.05.2020
Research J. Pharm. and Tech. 2021; 14(2): 657-661.
DOI: 10.5958/0974-360X.2021.00117.7

The selected marketed preparation (Evecare capsule) is a well-known polyherbal formulation used for uterine disorders, reproductive system problems, anti-inflammatory, endometrial defects, and menstrual disorders. This formulation contains many crude drugs so the phytoconstituents, from which two important phytoconstituents were selected for quantification namely berberine (*Tinospora cordifolia*) and aloe-emodin (*Aloevera*). Berberine possesses anti-inflammatory, and antioxidant properties[8,9]. Aloe-emodin is reported to possess anti-inflammatory, antifungal, antimicrobial, and antibacterial properties[10-12].

The present study focuses on the standardization of polyherbal formulation using the HPLC method for the simultaneous estimation of berberine and aloe-emodin. Literature survey revealed that there are several isocratic HPLC method for quantification of berberine and aloe-emodin alone or in combination with other phytoconstituents[13,14]. Few HPLC methods are also reported for simultaneous estimation of berberine and aloe-emodin but using gradient mobile phase[15-18], but so far no isocratic HPLC method has been reported for

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April 2021 | Vol. 3 Issue. 11

TASTE MASKED ORALLY DISINTEGRATING GRANULES OF IBUPROFEN BY MELT GRANULATION TECHNIQUE: A COMPARATIVE STUDY

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Abstract

Nonsteroidal anti-inflammatory drugs (NSAIDs) used for treatment of pain and fever relief are generally bitter in taste. Ibuprofen is an NSAID, belonging to the class of propionic acid derivatives. Conventional solid dosage forms such as tablets and capsules with bitter taste are not palatable; also geriatric and pediatric patient population usually suffer from swallowing difficulties because of the size and weight of these dosage forms. The objective of the study was to formulate taste masked orally disintegrating granules of ibuprofen with polymer and low melting waxes using melt granulation technique. Formulations using stearic acid with Eudragit EPO and combination of different types of waxes such as glyceryl monostearate, glyceryl behenate with stearic acid were prepared for effective taste masking of the drug. The ratio of ibuprofen and stearic acid 1:1 was able to give optimal result in masking the bitter taste and obtained desired in vitro release. The granules were found to have excellent flow properties. The in vitro release of the gronules was compared with marketed tablet. Optimized formulations of granules showed 90% release of ibuprofen in 60 mins which is comparable to that of the marketed tablet.

Keyword: orally disintegrating gronules; ibuprofen; melt granulation; taste masking; glyceryl monostearate; glyceryl behenate; stearic acid; Eudragit EP

1.INTRODUCTION

Naturally occurring bitter drugs create important challenges for formulation scientists and pharmaceutical industry. This is because it indirectly becomes the deciding factor in the compliance of the formulation, mainly by the paediatric and geriatric population thus affecting the pharmacotherapy. In order to accomplish desired palatability, addition of flavors and sweeteners is required but has its own limitations; also might not be efficient enough to effectively mask the taste buds. Therefore various technological processes are implemented in formulation development in the field of taste masking.[1]

Various methods are employed for effective taste masking such as use of flavours and sweeteners, microencapsulation, compiexation with ion exchange resins, use of insoluble prodrug, formation of inclusion complexes, gelation, granulation and colloidal dispersions such as liposomes, multiple emulsions etc. Along with the objective to give better patient compliance, formulation scientists also aim at the process and formulation to be economical, rapid and easy, involving least number of equipment and processing steps with minimal use of excipients without adversely affecting the drug and its bioavailability.[2]

The demand for orally disintegrating dosage forms has enormously increased particularly for geriatric and paediatric patients who experience difficulty in swallowing tablets and capsules. Orally disintegrating dosage forms provide patients with more convenient means of taking their medication thus serving as an effective altemative for such patients.

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IJPSR (2021), Volume 12, Issue 5 (Research Article)

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 20 May 2020; received in revised form, 29 September 2020; accepted, 10 October 2020; published 01 May 2021

SIMULTANEOUS HPTLC METHOD FOR DETERMINATION OF GALLIC ACID, VANILLIC ACID AND SYRINGIC ACID IN AGRO-INDUSTRIAL WASTE OF DATE FRUITS

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Keywords:

Phoenix dactylifera, Agro-industrial waste, Valorization, Phenolic acid, HPTLC

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ABSTRACT: *Phoenix dactylifera* is a medicinally important plant. Fruits are traditionally used for the nutritional purpose. Date seeds are the rich sources of phenolic acids which exhibits strong antioxidant property. HPTLC is a simple, versatile method and it provides visualization of separated constituents. The advantage of this method is this method requires a small amount of sample for analysis. The present work describes a simple, precise, and accurate HPTLC method for quantification of gallic acid, syringic acid, and vanillic acid present in seeds of date fruits. The analysis was done on CAMAG ATS4 automatic TLC sampler system. The chromatographic separation was carried out on precoated silica gel 60 F254 aluminum plates, using a mixture of toluene: ethyl acetate: formic acid (4:4:2 v/v) as mobile phase. The evaluation of spots was carried out at 254 nm using Camag TLC scanner 3. The aimed compounds were resolved satisfactorily with R_f 0.47, 0.53, and 0.60 for gallic acid, syringic acid, and vanillic acid, respectively. The developed method was validated by parameters linearity, accuracy, precision, and repeatability. The correlation coefficients for each marker were greater than 0.99, which meets the validation acceptance criteria. The precision was carried out by intra-day and inter-day precision. Repeatability was measured by scanning spots six times without changing the position of the plate. *Phoenix dactylifera* seeds are the rich source of phenolic acids, which attribute to antioxidant properties of *Phoenix dactylifera* seeds. The seeds are the cheaper source that could be useful in medicinal and nutritional areas due to the presence of bioactive phytoconstituents.

INTRODUCTION: The palm date tree (*Phoenix dactylifera*) has played an important role in providing valuable food for middle-east and North Africa region and all over the world [1]. Date fruits are considered for disease prevention through antioxidant and anti-inflammatory activity [2]. The phytochemical study suggests the presence of phenolic acids, alkaloids, flavonoids, fatty acids, tocol and sterols in fruits as well as in seeds [3].

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.12(5).2818-22

This article can be accessed online on www.ijpsr.com

DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.12(5).2818-22

Date fruit contains 4.4 to 11.4% dietary fibers; the consumption of fiber-containing fruits reduces the chances of hypertension, hypercholesterolemia, obesity, and diabetes [4]. In ancient days date seeds were applied to wounds, lesions, inflammation and used as expectorant and laxative [5]. Annually tons of date seeds are produced by date processing industries that contain valuable chemical constituents.

It majorly consists of fatty acids including capric, lauric, myristic, myristoleic, palmitic, stearic, oleic, linoleic, linolenic, arachidic acid [6]. Date seeds also contain a considerable amount of phenolic acids. Phenolics have attracted much attention due to their superb properties as an antioxidant, anti-inflammatory or antitumor properties [7]. Gallic acid is well known for its anti-oxidative, anti-aging,

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Journal of Innovations in Pharmaceutical and Biological Sciences (JIPBS)
ISSN: 2349-2759
Available online at www.jipbs.com

Research article

Lemon juice catalysed efficient one-pot synthesis and *in silico* ADME prediction of 2-(substituted phenyl) phthalazin-1(2*H*)-ones

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Received on: 05/03/2021, Revised on: 29/04/2021, Accepted on: 15/05/2021, Published on: 01/07/2021.

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Keywords: Lemon juice, Phthalazin-1(2*H*)-ones, Phthalaldehydic acid, Substituted phenyl hydrazine, One-pot synthesis, ADME

Vol. 8 (3): 42-48, Jul-Sep, 2021

Abstract

Recently, lemon juice has received a lot of attention as a highly efficient and selective biocatalyst for organic synthesis. Lemon juice has a lot of potential as a green chemistry catalyst because it is readily available, affordable, biodegradable, and nontoxic. A simple one-pot, synthetic method for the preparation of 2-(substituted phenyl) phthalazin-1(2*H*)-ones **3(a-j)** is described through the reaction of phthalaldehydic acid, substituted phenyl hydrazine and lemon juice as catalyst. The major advantages of the proposed method are its simplicity, short reaction time, easy work-up, inexpensive catalyst, and good yields. ADME properties were predicted *in silico* and support the potential of **3(a-j)** to show favorable drug-like properties.

Introduction

Green chemistry involves simple and environmentally friendly synthetic aspects with chemical processes and products through the invention of novel reactions that can intensify the desired products and decrease the by-products, as well as a new synthetic procedure that can streamline operations in chemical production [1, 2]. Greener approaches in organic synthesis always help overcome the use and generation of toxic and hazardous substances which involve the use of non-toxic, and inexpensive biocatalysts. These reactions have been extensively investigated in organic synthesis primarily due to their ability to generate complex molecules from simple starting materials using a one-step reaction [3, 4].

A class of condensed heterocycles known as phalazinones exhibits significant biological activity. Phthalazinones are used to treat a wide range of illnesses, including diabetes [5, 6], asthma [7, 8], hepatitis B [9], hepatitis B [10], vascular hypertension [11], and arrhythmia [12]. Phthalazinones also function as effective antimicrobial agents and poly(ADP-ribose)polymerase-1 inhibitors, and they are useful intermediates in the synthesis of VEGF inhibitors [13]. Azelastine, a phthalazinone derivative, is a well-known antiallergic and antihistaminic medication.

The synthesis of phthalazinones can be accomplished in a number of ways, including cycloaddition [14–18], reduction [19–20], cyclocondensation [21] and biotechnological methods [22]. These methods, however, frequently entail potent acids and bases, harsh reaction environments, and prolonged reaction times, among other things. The creation of new processes for the synthesis of phthalazinones is preferred due to the shortcomings of the reported methods.

In keeping with our ongoing interest in the creation of procedures for the synthesis of biologically significant heterocyclic compounds [23-24], we present a fresh

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Quest Journals
Journal of Medical and Dental Science Research
Volume 8~ Issue 3 (2021) pp. 09-17
ISSN(Online) : 2394-076X, ISSN (Print) 2394-0751
www.questjournals.org

Research Paper

Knowledge, Perception and Preparedness Towards Corona Virus Vaccine Amongst Indian Residents: A Cross-Sectional Survey

Perception towards corona vaccine: A cross sectional survey

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ABSTRACT

Background

Coronavirus disease (COVID-19) which has become a pandemic makes the people more vulnerable to get affected due to insufficient knowledge and unhygienic practices. In this scenario, medical and paramedical personnel can act as reliable information providers. This study aimed to aware and assess the knowledge and perception of COVID-19 vaccine along with providing the knowledge on precautionary home remedies amongst common people in India.

Method

A web-based awareness online survey was conducted from 25th January to 7th February 2021. A 50-awareness fact survey was developed and randomly distributed among the study population. Evaluation of the survey was done electronically using an interface provided by Google forms (paired with a Google spreadsheet) and Microsoft Excel, which uses 'Countif' formula to count the responses of Google form and represent it in the form of bar graph and pie chart.

Results

Total 1003 people participated in the online awareness survey. A high proportion of people belonged to the age category 18-30 (57.5 %) and undergraduates (65.7 %), majority of participants lacked adequate knowledge about vaccines but had enough knowledge about the precautionary home remedies for COVID-19 disease.

Conclusion

As the COVID-19 cases are still prevalent in India, it is critical to improve the awareness and preparedness about vaccines and precautionary home remedies amongst the community members. Experts with their educational background and a basic understanding of vaccine's effectiveness can play a significant role in making common people aware of the prevention of this pandemic situation.

KEYWORDS: *COVID-19 vaccine, precautionary, home remedies, prevention, awareness.*

Received 23 Feb, 2021; Revised: 05 Mar, 2021; Accepted 07 Mar, 2021.

Published with open access at www.questjournals.org

I. INTRODUCTION

Coronavirus disease (COVID-19) is a communicable disease caused by a newly discovered coronavirus (SARS COV-2), it is recognized as a global pandemic affecting more than 10 million cases worldwide for about a year[1]. India has a very large population and it got severely affected by Covid 19 and has affected the mental health and the economy of the country. Ayurveda a natural system of medicine has originated and practiced in India for more than 3,000 years. Ministry of AYUSH, Ayurveda regulatory committee of India has laid down certain guidelines for precautionary measures to be used to boost immunity during this pandemic[2]. India launched its indigenous COVID-19 vaccine Covaxin (Bharat Biotech unitedly with ICMR) and Covishield (Serum Institute of India together with Oxford- Astra Zeneca) approved by DCGI[3]. The efforts of the scientific community in searching for a vaccine for COVID-19 may be hampered by diffused vaccine hesitancy. Because there is a high gap of knowledge between researchers and common people which has made people skeptical

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ISSN: 2249- 5746
International Journal of Ayurvedic and Herbal Medicine 11:1 (2021) 3949-3953
Journal homepage: http://www.interscience.org.uk
DOI:10.31142/ijahm/v11i1.03
Impact Factor: 6.012

Development of a Novel RP-HPLC Method for Simultaneous Estimation of Aloe Emodin, Rhein, and Piperine in a Polyherbal Formulation

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Abstract: The present manuscript describes a rapid, novel, simple, precise, accurate, and robust HPLC method development and validation for simultaneous estimation of aloe emodin, rhein and piperine in a polyherbal formulation. The proposed chromatographic method was carried out isocratically, in a short run time of 10 minutes using Prontosil C_{18} (250 × 4.6 mm) SH 5.0 µm, usingmobile phase acetonitrile and water (0.05% orthophosphoric acid) in the ratio 55:45. Flow rate was set at 1 mL/min. and the UV detection was at 257 nm. Retention time of aloe emodin, rhein and piperinewas found to be 7.064 ± 0.2 min. 7.580 ± 0.2 min and 8.800 ± 0.2 min respectively. Calibration curves were linear over the concentration range of 1 to 30µg/mL.Regression coefficient were 0.998, 0.996, 0.999 for aloe emodin, rhein and piperinerespectively. This study reveals that the developedmethod was well validated, reliable and can be used to for routine analysis of aloe emodin, rhein and piperine in polyherbal formulations, thus conforming to the need of ensuring safety and quality of herbal formulations.

Keywords: Aloe emodin, HPLC, Piperine, Rhein

INTRODUCTION

Medicinal herbs are indispensable part of human society to prevent and cure diseases, from the beginning of civilization[1].Medicinal plants play significant role in world healthcare[2]. According to World Health Organization WHO 80% of the world's population currently uses herbal drugs for major healthcare[3]. Demandfor herbal medicines have increased in developing as well as developed countries for primary health care due to their wide biological activities, medicinal properties, safety and low costs[4]. Standardization of herbal medicines is essential in order to assess quality of products[5]. Analytical method such as high performance liquid chromatography (HPLC) is one of the most valuable tool for quality control and standardization of herbal products[6].

The selected formulationof Constikalp tablets contains *Cassia angustifolia*, *Glycyrrhiza glabra*, *Foeniculum vulgare*, *Piper nigrum*, *Zingiber officinale*, *Cassia fistula*, *Terminalia chebula*, *Terminalia belerica*, *Emblica officinalis*, and *Ricinus communis*. Aloe emodin and rhein belong to class of anthraquinones. The formulation is used for treatment of constipation, the effect of which is mainly attributed to the anthraquinones, while pepper is well documented as a bioavailability enhancer and therefore finds role in many herbal formulations. Apart from purgative property, rhein and aloe emodin are reported to possess hepatoprotective property[7,8].