

RESEARCH

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# Evaluation of bone healing activity of *Cissus quadrangularis* (Linn), *Cryptolepis buchanani*, and *Sardinella longiceps* in Wistar rats



Somasundaram Ramachandran<sup>1\*</sup>, Laith Fadhil<sup>1</sup>, Chandravadivelu Gopi<sup>2</sup>, Masa Amala<sup>1</sup> and Magharla Dasaratha Dhanaraju<sup>3</sup>

## Abstract

**Background:** The object of the present study is to evaluate the effect of alcoholic extracts of *Cissus quadrangularis* (CQ), *Cryptolepis buchanani* (CB), and *Sardinella longiceps* (SL) either alone or in the combination (100 mg/kg) in the management of femur bone healing of Wistar albino rats for 8 weeks. After the period of treatment, femur bones were examined by using biochemical, radiographical, and histopathological studies.

**Result:** Biochemical evaluation results reveal that there is a steep increase of serum calcium level in the experimental animals during the entire period of treatment which led to an adequate supply of serum calcium to the fractured bone for healing and increases the thickness of the femur bones soon compared to control group. It had been estimated by a calibrated ocular micrometer. Radiographical images of the bones also disclose that the complete bridging of fractured bone occurred in the experimental animals after the treatment of natural compound extracts. In addition to that, all the organs of animals were safe in the experimental animals during the entire study.

**Conclusion:** The present study strongly recommended that these ethanolic extracts (CQCBSL) either alone or in the combination restoring the strength of the bone and reduced bone repairing period due to the rich content of calcium and other natural phytochemicals presents with them.

**Keywords:** *Cissus quadrangularis*, *Cryptolepis buchanani*, *Sardinella longiceps*, Femur bone healing

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takes place from the fractured bone which consists of three major phases called inflammatory, repair, and remodelling stages [5]. The practice of the synthetic compounds and minerals with NSAID on fractured bones are raising poor compliance among the patient due to severe side-effects such as swelling, reduction in blood flow, color changes in skin and nails, discomfort, pain, nephrotoxicity, gastrointestinal bleeding, delayed blood clotting, and prolongation of treatment [6]. Therefore, there is a necessity of a newer method of treatment required to treat the fractured bone. The recent literature study stated that usage of phytochemicals in the treatment of bone healing offering promising results without side effects and reducing repair period [7]. In this study, we had taken three varieties of natural sources such as


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## Research Article

# A COMPARATIVE STUDY OF DYEING EFFICIENCY AND RETENTION CAPACITY OF FORMULATED POLYHERBAL HAIR DYE

Surya A., Deepan T\*, Alekhya V and Dhanaraju M.D

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#### Keywords:

Herbal hair dye, Patch test, Phytochemical

### ABSTRACT

The weakness of every human being irrespective of their gender is to look beautiful. It has been started as ancient as from the origin of human being. Hair plays an important role in beautification. Greying of hair is the world's major concern so people practiced for hair dyeing or hair colouring to change the colour of the hair. But due to hinderances by the present marketed synthetic hair dyes, herbal hair dyes came to demand. In present research work we have been focussed on dyeing efficiency and retention capacity of formulated poly herbal hair dye. As most of the herbal hair dyes have poor retention capacity this composition provides a non-toxic way to colour the hair which also maintains hair glint and supplement that add natural beauty to hair. The used ingredients are evaluated for various parameters such as patch test, physicochemical and phytoconstituents. The results shows herbal dye can be used as alternative for synthetic dye irrespective of any side effect.

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### INTRODUCTION

The hair is a complex structure contains shaft and root. Hair root is underneath portion of hair that functions with dermal papilla, hair bulb, arrectopili, sebaceous glands which are used in the formation and nourishment of hair. Hair shaft is projected outward portion which contains outer cuticle that bears shingle like cells meant for protection. Middle layer cortex provides strength, colour and texture of hair while it also consists of hair blackening pigment called melanin which exists in two forms as Eumelanin that imparts brown and black colour & Pheomelanin that produces yellow, blonde, red colours and white colour in case of absence of any of these pigments. Innermost layer medulla comprises of round cells<sup>1</sup>


Hair colour an indicator of youthfulness and beauty, but greying of hair is a natural phenomenon or due to many reasons like environmental pollution, hereditary, stress or climatic conditions. Hence to maintain the elegance of hair, dyeing becomes essential aspect<sup>2</sup>. Usually, a dye can be described as a coloured substance that has an affinity to impart colour to fibre, fur or hair. The dye is generally applied as aqueous or like semisolid substance, which may require a mordant to improve the fastness of dye on hair. Natural dyes also referred as mordant dyes. Different mordant will give different shade with same dye. Thus, mordant can be defined as an agent which allows a reaction to occur between dye and hair.

The increased demand reshaped the cosmetic industry, to dump various artificial and semi synthetic products in to the market. They got good attention because of their high efficacy as they penetrate the hard cuticle layer, thus high colour retention is achieved<sup>3</sup>. The preparations of synthetic and semi synthetic hair dye composed of chemicals such as ammonia, hydrogen peroxide, irritants like sodium lauryl sulphate, resorcinol, ethanolamine, paraben, lead acetate and mostly p-phenylene diamine of about 25%, posing multiple dangerous contrary effects like hypersensitive reactions, breast, bladder and skin cancers, reproductive abnormalities by EDCs (resorcinol, paraben), skin irritation, erythema, loss or hair, damage etc<sup>4-6</sup>

To overcome these adverse effects herbal formulations are highlighted. This taken us a way to formulate an herbal hair dye. Herbs like madayantika, bhringraj, nilika, bibhitika, walnut, black catechu are known for their hair blackening effects<sup>7</sup>. An ideal hair should be unctuous, have strong roots and should be black while these qualities are satisfied by herbal products and are safe<sup>8</sup>

### MATERIALS AND METHODS

In the present work a comparative study of dyeing efficiency and retention capacity of formulated polyherbal hair dye the following ingredients were used.

  
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Review Article

**POSSIBLE CHARACTER OF CLASSICAL  
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THE PREVENTION AND THE EXECUTIVES OF  
NOVEL CORONA VIRUS**

**Anil Kumar V.\*<sup>1</sup>, Kamini Sethy<sup>2</sup>, Dr. Himasree P.<sup>1</sup>**

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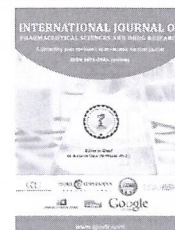




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## Research Article

# Method Development and Validation of Gas Chromatography-Mass Spectrometry Method for Quantification of Sonidegib in Capsule Dosage Form

Jayavarapu Kumar Raja<sup>1</sup>, Sundararajan Parimala Krishnan<sup>1\*</sup>, Vankayala Devendiran Sundar<sup>2</sup>

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## ABSTRACT

A new simple and precise gas chromatography-mass spectrometry (GC-MS) method was developed and validated for the quantification of sonidegib in the capsule formulation. The proposed work depends on the modification of sonidegib into its derivative with N, O-bis(trimethylsilyl)-trifluoroacetamide (BSTFA) with 1% trimethylchlorosilane (TMCS). Selective ion monitoring technique and electron ionization method at 70 eV were utilized for the quantification of sonidegib at m/z 278. The calibration plot was rectilinear in the concentration range of 0.5 to 10 µg/mL. The relative standard deviation (RSD) value for within-day precision was ≤ 2.47% and for between-day precision was ≤ 2.45%. The bias value for within-day and between-day accuracy was found between -1.51 to 1.87. The intra- and inter-day recovery findings of sonidegib were found to be between 98.34 to 102.654% for pharmaceutical formulation. The limits of detection and quantification of sonidegib were 0.1 and 0.3 µg/mL, respectively. No interfering peaks were observed from the excipients of dosage form during the analysis of formulation. The developed procedure was successfully applied to quantify commercial sonidegib capsule dosage form to estimate the sonidegib and check the dosage form uniformity of content.

## INTRODUCTION

Sonidegib chemically designated as *N*-[6-[(2*S*,6*R*)-2,6-Dimethylmorpholin-4-yl]pyridin-3-yl]-2-methyl-3-[4-(trifluoromethoxy)phenyl]benzamide with molecular formula of C<sub>26</sub>H<sub>26</sub>F<sub>3</sub>N<sub>3</sub>O<sub>3</sub> and molecular weight of 485.498 g/mol (Fig. 1). It is utilized to treat basal cell carcinoma, which has relapsed radiation therapy or after surgery in adult patients. It effectively obstructs the regulator called smoothed (SMO), inhibiting the hedgehog path from functioning. Consequently, cancers that depend on the hedgehog path were incapable of growing.<sup>[1-3]</sup> The drug prevents a transmembrane protein called SMO, which plays an important role in the hedgehog (Hh)-signal transduction; this results in the

prevention of Hh-signalling and anti-tumor activity in several animal models.<sup>[4,5]</sup>

The literature on the drug revealed that no GC-MS methods were reported for the quantification of sonidegib.<sup>[6,7]</sup> The main aim of the present work was to develop and validate the GC-MS method with a simple and rapid sample preparation protocol to quantify sonidegib in pharmaceutical formulations.

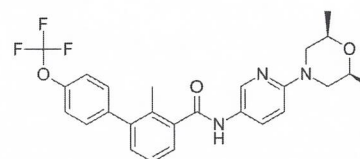


Fig. 1: Chemical structure of sonidegib

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# Influence of Ketogenic Diet and Phenytoin Sodium on Isoniazid Induced Epilepsy in Wistar Rats

Somasundaram Ramachandran\*, Satya Sravanthi, Sri Ramya Manthena, Undru Liza, Masa Amala

Department of Pharmacology, GIET School of Pharmacy, Rajahmundry, Andhra Pradesh, INDIA.

## ABSTRACT

**Aim:** The current research was set up to estimate the influence of ketogenic diet in combination with phenytoin sodium on isoniazid induced epilepsy in rats. **Methods:** In this work 30 rats were used with weight range of 150-200gms were selected and divided into five groups. Group -I (Positive control), Group - II (Negative control), Group - III (Standard), Group - IV (Ketogenic diet), Group - V (Ketogenic diet + Standard). The doses of isoniazid, phenytoin sodium, ketogenic diet were selected and the work was executed for a period of 30 days. **Results:** At the end of the study animals were sacrificed to collect brain for estimating GABA levels in different groups. Results indicated that, there is a notable rise in levels of GABA which helps in reducing seizure latency when the ketogenic diet was added to that of standard drug. **Conclusion:** The change in levels of GABA when compared to the ketogenic diet alone and standard suggest that ketogenic diet along with standard drug may produce antiepileptic activity by increasing the levels of GABA in isoniazid induced epilepsy in rats.

**Key words:** Epilepsy, Ketone diet, Isoniazid, Phenytoin, GABA.

## INTRODUCTION

Epilepsy is the chronic disorder which generates baseless, periodic seizures. A seizure is an unexpected hastens of electrical activity in the brain. There are mainly of two classes 1. Generalized seizures (Damage entire brain), 2. Focal (or) partial seizures (Damage only a region of brain). Epilepsy is a common neurological disorder that has an effect on nearly 65 million people throughout the world. Epilepsy can be seen in any one, but it is more usual in children and older people. It is found slightly greater in males compared to females. It is the group of neurological disorder characterized by epileptic seizures. It mainly has an effect on nearly 1% of population in youngsters and 3% of the population in older people. Mostly 80% of people with the disorder are seen in the developing countries. Epilepsy is a disorder of the brain distinguished by unforeseeable and regular occurrences of a temporary alteration of performance due

to dysfunctional, simultaneous and repeated firing of numerous brain neurons.<sup>1</sup>

Lamentably, the drugs obtainable in present day medicine first they are unsuccessful to manage the seizure activity in some patients next quite commonly generate undesirable effects like neurotoxicity, hepatic failure and sometimes expose to risk of drug interactions. There are many treatment options other than medication, one among them is Ketone diet and it is beneficial for people who don't respond to medication. Ketogenic diet (KD) is a medically supervised moderate- protein diet, high cholesterol and low carbohydrate, which was used successfully in patients with pharmaco resistant epilepsy.<sup>1,2</sup> The classic KD consists of a very high amount of fat combined with protein and carbohydrate.<sup>3,4</sup> KD was developed in 1920 in response to the survey that fasting had anti-seizure activity.<sup>5,6</sup> At the time of fasting, body metabolizes the fat stores by lipolysis and next the fatty acids

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## ABSTRACT

**Aim:** The current research was set up to estimate the influence of ketogenic diet in combination with phenytoin sodium on isoniazid induced epilepsy in rats. **Methods:** In this work 30 rats were used with weight range of 150-200gms were selected and divided into five groups. Group -I (Positive control), Group - II (Negative control), Group - III (Standard), Group - IV (Ketogenic diet), Group - V (Ketogenic diet + Standard). The doses of isoniazid, phenytoin sodium, ketogenic diet were selected and the work was executed for a period of 30 days. **Results:** At the end of the study animals were sacrificed to collect brain for estimating GABA levels in different groups. Results indicated that, there is a notable rise in levels of GABA which helps in reducing seizure latency when the ketogenic diet was added to that of standard drug. **Conclusion:** The change in levels of GABA when compared to the ketogenic diet alone and standard suggest that ketogenic diet along with standard drug may produce antiepileptic activity by increasing the levels of GABA in isoniazid induced epilepsy in rats.

**Key words:** Epilepsy, Ketone diet, Isoniazid, Phenytoin, GABA.

## INTRODUCTION

Epilepsy is the chronic disorder which generates baseless, periodic seizures. A seizure is an unexpected hastens of electrical activity in the brain. There are mainly of two classes 1. Generalized seizures (Damage entire brain), 2. Focal (or) partial seizures (Damage only a region of brain). Epilepsy is a common neurological disorder that has an effect on nearly 65 million people throughout the world. Epilepsy can be seen in any one, but it is more usual in children and older people. It is found slightly greater in males compared to females. It is the group of neurological disorder characterized by epileptic seizures. It mainly has an effect on nearly 1% of population in youngsters and 3% of the population in older people. Mostly 80% of people with the disorder are seen in the developing countries. Epilepsy is a disorder of the brain distinguished by unforeseeable and regular occurrences of a temporary alteration of performance due

to dysfunctional, simultaneous and repeated firing of numerous brain neurons.<sup>1</sup>

Lamentably, the drugs obtainable in present day medicine first they are unsuccessful to manage the seizure activity in some patients next quite commonly generate undesirable effects like neurotoxicity, hepatic failure and sometimes expose to risk of drug interactions. There are many treatment options other than medication, one among them is Ketone diet and it is beneficial for people who don't respond to medication. Ketogenic diet (KD) is a medically supervised moderate- protein diet, high cholesterol and low carbohydrate, which was used successfully in patients with pharmaco resistant epilepsy.<sup>1,2</sup> The classic KD consists of a very high amount of fat combined with protein and carbohydrate.<sup>3,4</sup> KD was developed in 1920 in response to the survey that fasting had anti-seizure activity.<sup>5,6</sup> At the time of fasting, body metabolizes the fat stores by lipolysis and next the fatty acids

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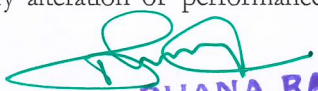
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Phytochemical and Pharmacological evaluation of hibiscus *hispidissimus griff*Alekhya V<sup>\*1,2</sup>, Ganapaty S<sup>1</sup>, Deepan T<sup>2</sup><sup>1</sup>Department of Pharmacognosy, GITAM Institute of Pharmacy, Gandhinagar, Rushikonda, Visakhapatnam-530045, Andhra Pradesh, India<sup>2</sup>Department of Pharmacognosy, GIET School of Pharmacy, NH-16, Chaitanya knowledge city, Rajamahendravaram-533296, Andhra Pradesh, India

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## ABSTRACT

To assess phytochemical with pharmacological studies of *Hibiscus hispidissimus griff* belong to family malvaceae. Preliminary phytochemical analysis reveals the presence of steroids, triterpenes, saponins, steroidal saponins and phenols. Evaluation of anti-inflammatory, anti-microbial with antioxidant action were performed on aerial parts of methanolic extract of *Hibiscus hispidissimus*. In vitro antioxidant activity was performed by 2, 2 -diphenyl-1- picrylhydrazyl (DPPH) assay, hydroxy radical scavenging method and superoxide radical scavenging activity. The results of in vitro antioxidant study reveal that % inhibition of *H. hispidissimus* was higher compared to ascorbic acid. Anti-inflammatory studies were performed using carrageenan-induced rat paw oedema animal model, for anti-inflammatory studies, the extracts were compared with standards like indomethacin, and it shows a remarkable zone of inhibition ranging from 58.97 to 71.73 respectively. The anti-bacterial and antifungal activity of plant extracts were studied for the occurrence of inhibition zones. The activity was performed by the cup plate method. Ethanolic extract of *H. Hispidissimus* shows significant anti-bacterial effect against *S. Aureus*, *B. Subtilis*, *P. Vulgaris* and *E. coli* using ciprofloxacin (50 µg/ml) as standard. The extracts show remarkable inhibition of zone of inhibition, and results were compared with that of standard drugs against the organism tested. In conclusion, the ethanolic extract of *H. hispidissimus* shows significant antioxidant, anti-inflammatory and anti-bacterial properties.



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## INTRODUCTION

Plants have been used for medicinal purpose long before prehistoric period. Traditional system of

medicine continues to be widely precised on many accounts. Drugs obtained from natural sources are used as a reservoir for many biochemical products which are used as extractions for development of many formulations which are non-reactive, nontoxic and free from side effects. Drug resistance for transmittable ailments have directed to enlarged importance in the use of natural product as medicine for diverse human illnesses (Das, 2016). *Hibiscus hispidissimus* Griffith (synonym *Hibiscus furcatus* DC. non wild., *Hibiscus aculatus* Roxb. non walter), locally as 'coffort root' or 'Big thicket Hibiscus' or 'Pine Hibiscus' in English and "Uppancham" in Malayalam. Has another name wild hibiscus (*Hibiscus hispidissimus*, 1854) belong to the family malvaceae shown in Figure 1 (India

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## Phytochemical and Pharmacological evaluation of hibiscus *hispidissimus griff*

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HERBAL HOME REMEDIES TO SUPPORT IMMUNITY COVID19 PANDEMIC -AWAKE UP CALL

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ABSTRACT

The COVID19 Pandemic is spreading throughout the world in the blink of eyes. Infecting thousands of people everyday. This public health emergency has got world wide in this time everyone realise the policy of "Prevention is better than cure" as the best way to fight this pandemic many guidelines for common people, issued by many respected health organisation, but most of them are focused on personal hygiene and prevention of the spread the virus, and increase Immunity. In this article, it has been attempted to describes the term home herbal remedies and discuss in detail a few herbal constituents which are well documented to support immune functions of the body." The idea is that if you don't have a potent weapon to combat the enemy, a strong and effective shield is the best bet to protect yourself "

KEYWORDS: COVID19, herbal, hygiene, pandemic, corona virus, immunity.

INTRODUCTION

This Pandemic is not only affecting human life but also has questioned the world wide status of healthcare facilities and resulted in a slowdown of the economy but the fact of SARS-CoV-2 virus, which causes COVID19, has less virulence but a high infection rate than SARS-CoV-1, which caused an outbreak of SARS in 2003. The diseases is mainly transmitted either

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## HERBAL HOME REMEDIES TO SUPPORT IMMUNITY COVID19 PANDEMIC -AWAKE UP CALL

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## Drug Utilization Evaluation On Antidiabetic, Thyroid And Antithyroid Drugs

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To evaluate the drug utilization of antidiabetic, thyroid and antithyroid drugs at an endocrinology speciality hospital among the ambulatory patients. This was a prospective observational study conducted for a period of 6 months. Patients who were diagnosed with either diabetes mellitus (both type-I & type-II) or thyroid disorders and receiving their respective pharmacological therapy irrespective of age and gender were included in this study. Pregnant, lactating women and patients with endocrine problems other than diabetes mellitus and thyroid disorders were excluded from this study. The total number of cases collected and analyzed during a period of 6 months was 246 in which 139 (56.5%) were diabetes mellitus and 107 (43.5%) were thyroid disorders. Among the parenteral hypoglycaemic agents, long acting-insulin glargine and intermediate acting + short acting- NPH + regular insulin were prescribed in almost similar frequency. In case of mono therapy, teneligliptin was the most commonly prescribed medication and this was the unique finding in this study which signified that the trend in prescribing pattern is changing and updating from time to time. In dual combination therapy Glimepiride + Metformin and in triple combination Glimepiride + Metformin + Voglibose combinations were the most commonly prescribed medication. In hypothyroidism, supplementation with levothyroxine was the only treatment alternative as it is related to the underactive thyroid, secreting insufficient amount of hormone. Irrespective of many classes of drugs available in treating hyperthyroidism carbimazole was the most frequently prescribed drug in this study. It was observed that some changes in the prescribing pattern of antidiabetic drugs that signified the trend in drug utilization pattern. Clinical pharmacists should play a key role in observing and identifying the trends in prescribing patterns by performing the drug utilization evaluation studies thereby providing a better pharmaceutical care in collaboration with the other health care professionals.

**Keywords:** Diabetes, Endocrinology, Teneligliptin, Thyroidism.

Diabetes mellitus and thyroid dysfunction are the common conditions among the endocrine disorders with potentially devastating health consequences that affect all populations worldwide, which would be a significant health burden to the present society (Ramachandran *A et al.*, 2009). The

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