

PRELIMINARY BIOCHEMICAL AND PHARMACOLOGICAL EVALUATION OF SIDDHA FORMULATION SIVANAR VEMBU CHLOORANAM

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Article Received on
29 March 2017,

Revised on 19 April 2017,
Accepted on 09 May 2017

DOI:10.20959/wjpr20176-8445

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ABSTRACT

Sivanar vembu Chooranam (SVC) is a single herbal formulation which is being used clinically for the treatment of several types of skin diseases and it is exclusively used for the effective management of *Kalanchaga padai* (Psoriasis). Although this disease may not affect the survival of the patients, the chronic stable plaques may also progress rapidly with symptoms such as intense pruritis and burning and can affect the quality of life. The present study was conducted in-vivo using experimental animal models of albino rats with water extract of *SVC* for evaluating the analgesic, acute and chronic anti inflammatory

activity and the results were compared with standard drugs paracetamol and ibuprofen respectively. In-vitro model of guinea pig ileum was used as to evaluate the antihistaminic activity in which the study drug *SVC* was given to observe the inhibitory effect of histamine induced contractions. Preliminary qualitative analysis of biochemical constituents was also performed to have a basic knowledge of the phytoconstituents responsible for the pharmacological action of *Sivanar vembu Chooranam (SVC)*. Upon comparing the pharmacological action of *SVC* with standard drugs, the results showed that the single herbal formulation *SVC* had good analgesic, moderate anti-inflammatory and significant anti histaminic effect.

KEYWORDS: *Siddha*, *Sivanar vembu Chooranam (SVC)*, analgesic action, anti inflammatory activity, antihistaminic activity, Herbal drugs.

INTRODUCTION

The traditional Siddha system of medicine has been in existence since several centuries. In recent times this system of medicine has progressed to gain its credit worldwide and there is an emerging demand towards the contribution of natural medicines in health care system. The literature of Siddha system has an enormous classification of various kinds of Skin diseases, its etiology, diagnosis and remedial measures. "Kalanchaga padai"^[1] (Psoriasis) is one such common, recurrent, immune mediated disease of skin and joints, which can have a profound impact on the patient's quality of life. The social ramification of living with the disease, can saddle the life style, mental and emotional well being of a person. Though the etiology of this disease has a strong genetic component, environmental factors such as infection also play as an important role in the presentation of the disease. From the existing study reports, the prevalence of psoriasis in India ranges from 0.44 to 2.8%.^[2] While there is no radical treatment available for this skin ailment around the globe, the ancient wisdom of Siddha medicine offers this time tested formulation *Sivanar vembu Chooranam* (SVC).

Sivanar vembu Chooranam is a single herbal preparation from the plant *Indigofera aspalathoides* belonging to the fabaceae family. The drug has been indicated in Siddha Materia medica-Herbal division for the treatment of all kinds of skin diseases associated with hyperpigmentation, Itching, scaling and oozing.^[3] Hence this study was performed to evaluate the preliminary biochemical and pharmacological aspects (Anti histaminic, analgesic, Acute and Chronic anti inflammatory action) of the drug Sivanar vembu Chooranam. (SVC). The results of pharmacological study were statistically analysed and compared with the control.

MATERIALS AND METHODS

Sivanar vembu Chooranam. (SVC)

The ingredient *Indigofera aspalathoides* (Sivanar vembu) was purified and allowed to dry in shade. The dried herb was powdered and was sieved into fine powder using a mesh and then stored in a air tight bottles.

Dosage and vehicle

1gram twice daily with honey.



Fig1. Ingredient-Indigofera aspalathoides (Sivanar vembu)

Bio - chemical analysis of *Sivanar vembu chooranam*

Preparation of the extract

5gms of *Sivanar vembu Chooranam* was placed in a 250ml clean beaker to which 50ml distilled water was added, dissolved well and then boiled for about 10 minutes. The solution was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid was taken for analysis.

Pharmacological analysis

Preparation of the test drug

1gm of Sivanar Vembu Chooranam was suspended in 10ml of water. 1 ml of suspension contains 100 mg of test drug. This was used for the evaluation and pharmacological studies.

Experimental Animals

Male / Female Wistar Albino rats weighing 150-200gms were used in three groups. The animals were acclimatized to the laboratory conditions 7 days prior to the study and were allowed free access to food and water. The animals were selected for the study based on their positive response to the stimulus within a given time. After which they were divided into 3 groups each group consisting of 2 rats. They had free access to standard pellet diet and water ad libitum. The study was done during the year, 2006-2009 at Govt Siddha Medical College, Palayamkottai, Tamil Nadu.

Tail flick method^[4]

The analgesic action of Sivanar vembu Chooranam was evaluated on Albino rats by tail flick method using the Hot water bath. The hot water was maintained at 55°C. The tip of the tail was immersed into the water bath and the time at which the rat flicked the tail was noted.

Group-I was given the *Sivanar vembu chooranam*-100mg/100gm body weight and served as a test group. Group-II was administered with standard drug Paracetamol at a dose of 20mg/100gm of body weight and served as standard control. Group-III was given 1 ml of water and served as control group which did not receive any treatment. After the drug administration, the reaction time of each rat was observed after ½ an hour, 1 hour and 1½ hour were noted in each group. When a rat fails to flick the tail, it should not be continued beyond 8 seconds to avoid injury and the average was calculated. The results of Group-I, Group-II and Group-III were tabulated and analysed statistically.

Careegenan induced paw edema^[5]

The acute anti inflammatory action of *Sivanar vembu Chooranam* was performed in Albino rats by Hind Paw Method. 2ml of the prepared test drug solution was administered to Six Albino rats divided into 2/group. Before administration of drugs, The hind paw volume of all rats were measured by dipping the hind paw up to the tibio tarsal junction in a mercury Plethysmograph. After the measurement the drug was administered. Group-I was kept as control and received only water. Group-II received Ibuprofen at a dose of 20 mg/100gm body weight. Group-III animals received *Sivanar vembu chooranam* (100mg/gm). One hour after the administration of drug a subcutaneous injection of 0.1ml of 1% w/v of carrageenan in water was made into plantar surface of both the hind paw of each rat. After 3 hours the hind paw volume was measured and the difference between the initial and final value were noted and the acute anti inflammatory action of the test drug was compared with standard as well as control group

Cotton pellet method^[6]

The chronic anti-inflammatory activity of the test drug *Sivanar vembu chooranam* by cotton pellet method. Each rat was anaesthetized with ether and cotton-pellets were implanted, subcutaneously in the groin two in each side. From the day of implantation Group-I animals received 1ml of the test drug *Sivanar vembu chooranam* orally at a dose of 100mg/100gm of body weight. Group-II received distilled water 1ml/100gm of body weight. And Group-III received Ibuprofen in a dose of 20mg/100gm of body weight. On the eighth day the rats were sacrificed and the pellets were removed, weighed and dried in an incubator at 60°C to 80°C and then again weighed. The weight of the granulation tissue formed is the difference between net weight and dry weight. The results of the control and test group were compared and the results are tabulated.

Bio-Assay Method^[7]

Anti-histaminic effect of Sivanar vembu Chooranam was evaluated by using Bio-Assay Method Histamine (1 in 1, 00, 000 strength). A segment of ileum from guinea pig (450gms) was obtained by stunning with a sharp blow on its head and cutting its throat to bleed it to death after a period of starvation of 48hours. The removed ileum was then placed in a shallow dish containing "Tyrode solution". The lumen of the length generally 4cm was in a fully relaxed state and the sutures were made with needle and tied at either ends. The segment was suspended in an isolated organ bath and aerated by an oxygen tube and immersed in Tyrode solution at 37°C. The study drug was given to observe the inhibitory effect of histamine induced contractions

RESULTS AND DISCUSSION**Analgesic effect**

S. No.	Name of the Drugs /Groups	Dose/100gm body weight	Initial reading in Seconds	After Drug Administration			Mean difference
				After ½ hour Average	After 1hr Average	After 1½ hr Average	
1	Control (Water)	2 ml	2.5	2.5	2.5	2.5	2.5
2	Standard (Paracetamol)	20 mg	2.5	3.5	5.0	6.5	6.5
3	Sivanar Vembu Chooranam	100mg	3.0	3.0	4.5	5.5	5.5

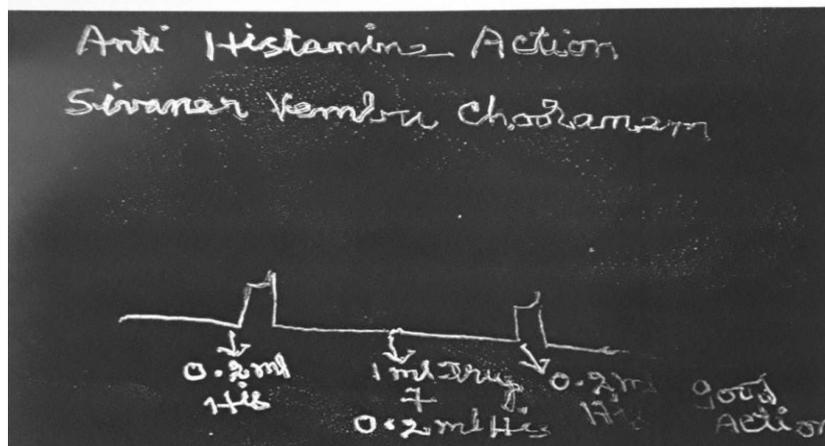
Chronic anti-inflammatory effect

S. No.	Group	Dose/100mg body weight	Pellet weight	Pellet weight of granuloma of drugs	Percentage of Inflammation	Percentage of inhibition
1.	Control (Distilled water)	1ml	10 mg	250 mg	100	0
2.	Standard (Ibuprofen)	20mg	10 mg	55 mg	22	78
3.	sivanar vembu chooranam	100mg	10 mg	98 mg	40	60

Acute anti-inflammatory effect

S. No.	Group	Dose/100gm body weight	Initial Reading average	Final reading average	Mean Difference	Percentage of Inflammation	Percentage of Inhibition
1	Control (Water)	1ml	1.1	1.85	0.75	100	0
2	Standard (Ibu brufen)	20mg	1.3	1.35	0.05	6.6	93.4
3	sivanarvembu chooranam	100mg	0.85	1.15	0.3	3.3.3	66.7

ANTI-HISTAMINE ACTION OF
SIVANAR VEMBU CHOORANAM



Bio - chemical analysis of *Sivanar vembu chooranam*

The qualitative biochemical analysis of water extract revealed that formulation contains starch, ferrous iron, tannin, amino acids, proteins and trace amount of alkaloids. It also has potassium and sodium.

DISCUSSION

Psoriasis is a highly symptomatic disease which involves burning, stinging, inflammation, redness, itching, pain, scaling and cracking of skin.^[8] Besides, recent studies also reveal that the pathogenesis of psoriasis is also linked with neuro-immune association which in turn cause the release of inflammatory mediators and histamine.^[9] Therefore the objective of the study was aimed at evaluating the qualitative biochemical and pharmacological activities such as analgesic, acute and chronic anti-inflammatory and antihistaminic action of *Sivanar vembu chooranam* which is being used for centuries towards the treatment of Psoriasis besides other skin ailments. The analgesic property of *Sivanar Chooranam* was evaluated by tail-flick method which is a very effective methods which acts centrally.^[10] Though the standard drug paracetamol showed a significant increase in the reaction time (6.5 sec), *Sivanar vembu Chooranam* extract showed an increase in the reaction time significantly (5.5 sec) when compared with the control group (2.5 sec). Carrageenan-induced inflammation for detecting orally active anti-inflammatory agents is one of the most feasible methods to screen anti inflammatory agents. The formation of edema in the rat paw is a biphasic response mediated through the release of histamine, serotonin and kinins in the first phase, whereas the second phase is due to the release of prostaglandins.^[5]

In the present study showed that the test drug had moderate acute and chronic anti-inflammatory properties. Upon observing the inhibitory effect of histamine induced contractions in bio assay method, the drug *Sivanar vembu Chooranam* showed significant anti-Histaminic action. The pharmacological action of the test drug owes to the presence of phyto constituents with anti-inflammatory, analgesic and antihistaminic action. Previous studies show that the anti-inflammatory property of *Indigofera aspalathoides* is due to the presence of phyto constituents indigo-carpen and mucronulatol which were evaluated for cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2) inhibitory activities. Also, naturally occurring polyphenols such as flavonoids, coumarins and tannin might be expected to interfere with the process of synthesis of prostaglandins to produce anti-inflammatory effects.^[11]

CONCLUSION

The preliminary study showed that the Siddha formulation *Sivanar vembu Chooranam* is a pharmacologically effective drug with anti-inflammatory, analgesic and antihistaminic action. Since Psoriasis is an autoimmune disorder which manifests as deposition of immature and non-functioning hyperproliferated keratinocytes, further invitro studies on growth inhibition of keratinocytes and cytotoxicity assays for drug safety are recommended to be carried out along with clinical trials on humans.

ACKNOWLEDGEMENT

The author expresses his thanks to his guide Dr.D.Rajsekar M.D(s), professor Dept of Sirappu maruthuvam Govt Siddha Medical College, Palayamkottai Tirunelveli.

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