WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 11, Issue 5, 206-215. Review Article ISSN 2277– 7105

A REVIEW ON THERAPEUTIC EFFECTIVENESS OF PARANGIPATTAI CHOORANAM -A SIDDHA POLY HERBAL FORMULATION

Deepa R.[1]*, Mahalakshmi V.[2], Muthukumar N. J.[3] and Meenakumari R.[4]

[1]PG Scholar (Author), Department of Pura Maruthuvam, National Institute of Siddha, Chennai, Tamilnadu, India.

[2]Associate Professor, Department of Sirappu Maruthuvam, National Institute of Siddha, Chennai, Tamilnadu, India.

[3]Head of the Department, Department of Sirappu Maruthuvam, National Institute of Siddha, Chennai, Tamilnadu, India.

[4]Director, National Institute of Siddha, Chennai, Tamilnadu, India.

Article Received on
21 February 2022,

Revised on 13 March 2022,
Accepted on 03 April 2022

DOI: 10.20959/wjpr20225-23651

***Corresponding Author**
Dr. Deepa R.
PG Scholar (Author), Department of Pura Maruthuvam, National Institute of Siddha, Chennai, Tamilnadu, India.

ABSTRACT

Siddha system of medicine is the one among the ancient traditional medical system of India that has been practiced for 2000 years and above. '*Parangipattai Chooranam* is Siddha poly herbal formulation which is mentioned in Siddha sastric text, *Agasthiyar paripooranam-400*, indicated for wound, pricking pain. *Parangipattai Chooranam* is poly herbal formulation contains 6 ingredients. The drug review of '*Parangipattai Chooranam'*, a poly herbal formulation gives evidence for its therapeutic action mentioned in literature. This review describes the phytochemicals, and medicinal uses of the part of each ingredient used in this formulation. Ingredients of the formulation and their pharmacological action in various research studies are discussed in this review.

KEYWORDS: Parangipattai chooranam, Polyherbal formulation, Wound, Siddha medicine.

INTRODUCTION

The siddha system of medicine is the one of the ancient system contemporaneous with those of the submerged lands, Egyptian Mesopotamian, Chinese and Grecian medicine. The unique nature of the system is its continuous service to humanity for more than the five thousand

years in combating disease and in maintaining its physical, mental and moral health. Siddha system as it exists has much in common with those ancient medicines, the enormous pharmacopeia containing vegetables, animal and mineral products.[1]

Siddha medicines are divided into internal medicines and external medicines. 32 forms of internal medicine were described in Siddha text. Chooranam (Powder) is the one form of internal medicine in which powdered plants or parts of plants. All the ingredients were collected, dried and powdered separately, passed through sieve and then mixed together in specified proportions in geometrical manner to get uniform mixture.[2] Parangipattaai chooranam is one among the poly herbal formulation contains 6 ingredients which is mentioned in siddha text book *Agasthiyar paripooran- 400.*

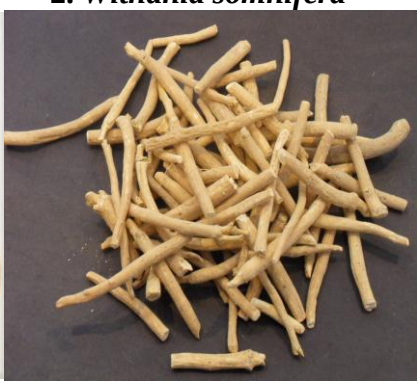
This Parangipattai chooranam is used for ulcer, pain even though most of the Parangipattai chooranam are given in siddha text.[3]

The drug review of 'Parangipattai Chooranam' is a poly herbal formulation gives evidence for its therapeutic action mentioned in literatures. The major ingredients of this drug are *Parangipattai* (Smilax china.Linn), *Amukkara (Withania somnifera*) *Senganththaari pattai* (*Capparis sepiaria*) *Thippili* (*Piper longum) Vembadampattai* (*Ventiligo madaraspattana*) *Chitramoolam* (*Plumbago zeylencia*). This review describes the phytochemicals, anti inflmatttory,antidiabetic , anti-microbial action and medicinal uses of the part of each ingredient used in this formulation. Ingredients of the formulation and their pharmacological action in various research studies are discussed in this review.

INGREDIENTS OF PARANGIPATTAI CHOORANAM

1. *Smilax china linn*[4]

2. *Withania somnifera*[5]



3. *Ventiligo madarasapatna*[6]

4. *Capparis separia*[7]

5 *Piper longum linn*[8]

6 *Plumbago zylancia linn*[9]

Information about ingredients of Parangipattai chooranam:

S. no	Botanical name	Tamil name/ English name	Parts used	Phytochemistry	Action	Medicinal uses
1	*Smilax china*	*Parangipattai*/China root	Root	Flavonoids, Saponins, Sterols, Tannins, Proteins and Carbohydrates[10]	Alterative, Antisyphilitic, Depurative, Aphrodisac, Antinflammatory	Skin diseases, Inflammations, Diabetis
2	*Withania somnifera*	*Amukkara/* Winter cherry	Root	Withanine, pseudowithanine, withanole, 3-tropyl tigolate[11]	Febrifuge, Diuretic, Alterati, Aphrodisac, Deobstrunt, Diuretic, Tonic, Soporifilic, Sedative.	Lecoderma, Insomnia, Tissue Building, Skin Disease, Carbuncle, Ulcers
3	*Capparis sepiaria*	*Sengaththari pattai/* Wild caper bush	Bark	Betulin, β-sitosterol, Terpenoid[11]	Antipyretic, antiseptic	Skin disease, scabies, eczema.
4	*Ventilago madarasa patana*	*Vembaadam pattai/*Red creeper.	Bark	Anthroquinones, Napthaquinones[11]	Stomachic, Tonic, Stimulant. Carminative	Skin Diseases, Atomic Dyspepsia, Debility, Fever
5	*Piper longum*	*Thippili/* Long pepper	Unripped fruit	VolatileOil, Resin, Piperine, Piplartine[11]	Stimulant, Carminative, General tonic	BronchialAsthma, Insomnia, MuscularPain, Inflammation, Dysentery, Leprosy
6	*Plumbago zeylancia*	*Chittramoolam*/Ceylon lead-wort	Root	Plumbagin, α&β amyrins[11]	Antiperiodic, diaporetic, antimicrobial, antifungal, stimulant, anticancer,	Paralytic Affections, Ulcers, Chronic Skin Diseases, Leprosy,

Pharmacological activity of herbs in Parangipattai Chooranam

The efficacy of all ingredients of Parangipattai Chooranam was proved through the following research studies.

Smilax china

Anti-inflammatory activity

Xiao-Shun Shu evaluated the aqueous extract for the inhibition of prostaglandin production (for COX-2 inhibitions) in lipopolysaccharide (LPS)-induced mouse macrophage cells. The result showed that both COX-2 activity and COX expression were inhibited by the extract. The anti-inflammatory effects are similar to acetylsalicylic acid (200 mg/kg, i.g.).[13]

Antidiabetic activity

B.G. Solomon Raju et al a revels that the aqueous and alcoholic extracts from Smilax china leaves (200 mg/kg) orally administered for 7 days produced a significant decrease in the blood glucose level in the model of alloxan-induced diabetes in rats. Petroleum extract exhibits very weak anti-diabetic activity.[14]

Withania somnifera Dunal

Antibiotic activity

Antibiotic activity of Withaferin A is due to the presence of the unsaturated lactone-ring. The lactone showed strong therapeutic activity in experimentally induced abscesses in rabbits, the being somewhat stronger than that of Penicillin. It substantiates the reputation of the leaves as a cure for ulcers and carbuncles.[15]

Anti-inflammatory activity

Mahmood Ahmad Khan et.al reported Arthritic rats showed a greater increase in the levels of pro inflammatory cyto-kines such as TNF-α, IL-1β, IL-6, transcription factor NF-κB and a decrease in IL-10 con-centration than controls rats. The oral administration of WSAq at a dose of 300mg/kg.wt. (WSAq300) appreciably attenuated the production of these pro inflammatory cytokines. This anti-inflammatory activity of WSAq300 might be partly mediated through an in-crease in the secretion of IL-10 and inhibition of NF-κB activity. Further, arthritic rats also show increased oxidative stress as compared to control rats. This increased oxidative stress in the arthritic rats appears to be the outcome of both an activated pro-oxidant and a poor antioxidant defence system.[16]

Anti-oxidant Activity

Bhattacharya S.K., et.al reported Administration of active principles of *Withania somnifera*, consisting of equimolar concentrations of sitoindosides VII-X and Withaferin A, was found

to increase superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPX) activity in rat brain frontal cortex and striatum.[17]

Antidiabetic Activity

Navinder, Khatak M et.al conduct the study is extract possess hypoglycaemic and hypolipidaemic properties and hence useful in diabetes mellitus. Another study show significant positive anti-diabetic activity of *Withania somnifera* on diabetic rats when compared with Glibenclamide standard drug. Anti-diabetic activity may be due to increase in hepatic metabolism, increased insulin release from pancreatic β-cells or insulin sparing effect.[18]

Capparis sepiria*,*linn

Antidiabetic activity

P. Selvamani reported the ethanol extract was investigated for possible hypoglycemic effect produced by single oral administration at various dose levels 100, 200 and 300 mg/kg in the streptozotocin induced diabetic rats and compared against normal saline control and the standard glibenclamide. A maximum fall of plasma glucose level 9.40%; 13.57%; 15.25% and 18.80% was observed after 12 h of treatment when administered with ethanol extract of Capparis sepiaria at 100, 200 and 300 mg/kg, and glibenclamide 10 mg/kg dose, respectively.[19]

Ventilago maderaspatana Gaertn

Antidiabetic activity

V. Vats reported diabetic animals characterized by severe loss of body weight; this may be due to enhanced muscle wasting and loss of tissue proteins.[43] In VMAE and VMHAE treated rats body weight decrease was less; probably act by releasing insulin from pancreatic β-cells indicating its protective action in controlling muscle wasting. High blood glucose levels increased stress on kidneys leading to kidney disease characterized by elevated creatinine and urea levels. *Ventilago maderaspatana* extract lowered creatinine and urea levels indicating its protective role on kidney function. Treatment with the *Ventilago maderaspatana* increased serum insulin levels, due to regeneration of β-cells or increased secretion of insulin from β-cells. Decrease in glycogen content of diabetic rats was due to β-cell destruction resulting in insulin deficiency which in turn increases glycogen breakdown and decreases glycogen content.[20]

Methanolic extract of root bark of *Ventilago maderaspatana* had 56.25% of inhibitory activity against enzyme albha glycosidase.[21]

Antioxidant Activity

Ethanolic and hydroethanolic root extracts of *Ventilago maderaspatana* exhibited a significant antioxidant effect eliciting and increased catalase level and decreased levels of LPO and glutathione. Alcoholic extract at the dose of 500 mg\kg elicited slightly greater antioxidant activity than the hydroalcoholic extract at the dose of 500 mg\kg.[22]

Antimicrobial and antibacterial activity

Different extracts of *Ventilago maderaspatana* such as petroleum ether, benzene, ethyl acetate, methanol and ethanol extract were used to test against Bacillus thuringiensis, Streptococcus faecalis, Staphylococcus aureus, Salmonella paratyphi, Proteus vulgaris and Serratia marcescensby agar disc diffusion method. Methanolic extract showed the maximum activity against Serratia marcescens.[23]

Piper longum linn

Antidiabetic activity

Dhar ML et al reported the antihyperglycemic and antilipidperoxidative effects of ethanolic extract of *Piper longum* dried fruits in alloxan induced diabetic rats were studied.[24]

Manoharan S et al. reported the blood glucose level, carbohydrate metabolizing enzymes and the status of lipid peroxidation and antioxidants were assayed using specific colorimetric methods. Oral administration of dried fruits has shown significant anti-hyperglycemic, antilipidperoxidative and antioxidant effects in diabetic rats comparable to that of the standard reference drug glibenclamide.[25]

Antioxidant activity

KS Natarajan et al reported *Piper longum* exhibits promising antioxidant potential against free radical-induced oxidative damage. Petroleum ether extract of the root and piperine from roots of *Piper longum* decrease lipid peroxide levels and maintain glutathione content, demonstrating antioxidant activity.[26]

Anti-inflammatory activity

Stohr JR et al reported the fruit extract of *Piper longum* were reported to possess anti-inflammatory activity in carrageenan rat paw edema and the piper extract and piperine

possess inhibitory activities on prostaglandin and leukotriene Cox-1 inhibitory effect and thus exhibit anti-inflammatory activity.[27]

Plumbago zeylancea linn

Wound healing activity

Jyothi VA et al, reported the wound healing activity of ethanolic root extract of *Plumbago zeylanica* in wistar rats and found that the activity is due to the presence of phytochemicals such as terpenoids, alkaloids, flavonoids, saponins etc. and these compounds are responsible for the wound healing activity of the plant.[28]

Kumar P et al reported the evidence of oxidative stress in pathogenesis of non-healing ulcers. As the wound healing mainly depends on low level of oxidant so the antioxidant nature of the plant extract obtained from *Plumbago zeylanica* helps in controlling the wound oxidative stress thus accelerating wound healing.[29]

Antidiabetic activity

Zarmouh MM et al reported the effect of *Plumbago zeylanica* extract on diabetic rats. Extract reported to decrease the activity of glucose-6-phosphate and meanwhile increasing the activity of hexokinase when the ethanolic extract at a concentration of 100mg. 200mg/kg along with tolbutamide was administered orally to the streptozotocin treated diabetic rats.[30]
Sunil C et al reported Plumbagin isolated from the *Plumbago zeylanica* enhance the protein and GLUT4 mRNA expression in diabetic rats and thus indicates the enhanced GLUT4 translocation and contribution to the glucose homeostasis.[31]

Anti- inflammatory activity

Arunachalam KD et al revealed the anti-inflammatory effect of *Plumbago zeylanica* in carrageenin induced raw paw oedema in rats. In the investigation four groups were taken where two groups were treated with 300mg/kg and 500mg/kg which confirm the 31.03 and 60.30% acute inflammation inhibition.[32]

CONCLUSION

Herbal powder is most popular form of traditional medicine. The ingredients present in this formulation "*Parangipattai chooranam*" have effective in the treatment of ulcers. Based on above evidence of Siddha literature and the modern scientific research studies also provide

keyhole which result are Anti diabetic, Anti-microbial, Anti-Inflammatory,Anti-oxident activities most presents of ingredients.

REFERENCE

1. Dr.N.Kandaswamy pillai, History of siddha medicine -3rd Edition, Dept. of Indian medicine and homeopathy, Chennai, 2012.
2. Uththamarayan KS: Siddha Maruththuvanga churukkam; Published by Directorate of Indian Medicine and Homeopathy, Chennai, 3rd Edition, 2003.
3. S.P. Ramachandran, Agasthiyar paripooranam-400, First edition-1998, Thamarai noolagam, Chennai -28.
4. http://www.jkiherbs.com/images/import/Herbs/china-root.jpg.
5. https://www.worldseedsupply.com/wpcontent/uploads/2014/03/Withania_Somnifera_Root.jpg
6. https://img1.exportersindia.com/product_images/bc-full/2018/8/5815031/vembala-pattai-1533646796-4173567.jpeg
7. http://tropical.theferns.info/plantimages/sized/f/7/f7931f1eeefdbc56094b92dc7abe18b6b0189165_480px.jpg
8. https://www.exotic-seeds.store/7492-large_default/indian-long-pepper-spice-whole-piper-longum.jpg
9. https://4.imimg.com/data4/DA/CG/MY-2579096/chitrak-mool-plumbago-zeylanica-root-500x500.jpg
10. Vijayalakshmi.A et al Anti-Psoriatic Activity of Smilax China Linn. Rhizome Indian Journal of pharmaceutical Education and Research, Jan –Mar 2013; 47.
11. Pullaiah.T Encyclopedia of world medicinal plants Volume-3,Regency Publications, New Delhi-110 008.
12. Dr. Patil M. V. & Prof. Patil. D. A. Herbal materia medica of Maharashtra Daya Puplishing house, New Delhi-110 002.
13. Xiao-ShunShu,Zhong-HongGao,Xiang-LiangYang, Anti-inflammatory and anti-nociceptive activities of *Smilax china* L. aqueous extract, Journal of Ethnopharmacology, 20 February 2006; 103(3): 327-332.
14. B.G. Solomon Raju, B.Ganga Rao,Y.B. Manju Latha / Pharma Tech, Antidiabetic activity of Smilax china roots in alloxan-induced diabetic rats, Jan-Mar 2012; 4(1): 369-374.
15. The Wealth of IndiaVol. X (Sp-W), Publications and Information Directorate, Council of Scientific and Industrial Research (CSIR), New Delhi, 1982; 580- 585.

16. Mahmood Ahmad Khan,[1,*] Rafat Sultana Ahmed,[1] Nilesh Chandra,[2] Vinod Kumar Arora,[3] and Athar Ali[4] In *vivo*, Extract from Withania somnifera Root Ameliorates Arthritis via Regulation of Key Immune Mediators of Inflammation in Experimental Model of Arthritis Antiinflammatory, Antiallergy Agents Med Chem, 2019 Apr; 18(1): 55–70. PMCID: PMC6446523.
17. Bhattacharya S.K., Satyan K.S., Ghosal S. Antioxidant activity of glycowithanolides from Withania somnifera. Indian J Exp Biol, 1997; 35(3): 236-239.
18. Navinder, Khatak M, Sehrawat R, Khatak S. A Comparative Study: Homoepathic medicine and a medicinal plant Withania somnifera for antidiabetic activity. J Pharma & Phytochem, 2013; 2(3): 109-112.
19. P. Selvamani, S. Latha, K. Elayaraja, P. Suresh Babu, J. K. Gupta, T. K. Pal1, I. K. Ghosh and D. J. Sen Anti-diabetic activity of the ethanol extract of Capparis sepiaria L leavesIndian J Pharm Sci, 2008; 70(3): 378-380.
20. V. Vats, SP. Yadav and JK. Grover, Ethanolic extract of Ocimum sanctum leaves partially attenuates streptozotocin induced alterations in glycogen content and carbohydrate metabolism in rats, Br J Ethanopharmacol, 2004; 90: 155-60.
21. Aparna Y, Gagandeep K, Zehra Ali, Yagnambhatla R, Sunitha G, Tiwary A, et al. Antidiabetic effect of potential medicinal plants: a target specificity in–vitro study. IOSR J Pharm Biol Sci, 2014; 9: 36-49.
22. Damayanthi D, Satyavati D. Antidiabetic, antihyperlipidemic and antioxidant properties of roots of Ventilago maderaspatana Gaertn on Streptozotocin-induced diabetic rats. IOSR J Pharm Biol Sci, 2015; 10: 50-9.
23. Packialincy M, Daffodil ED, Pon Esakki D, Mohan VR.Pharmacochemical characterization and antibacterial activity of Ventilago maderaspatana Gaertn. Int J Adv Pharm Sci, 2013; 4: 578-86.
24. Dhar ML, Dhar MM, Dhavan BN, Malhotra BN, Ray C, Screening of Indian Plants for biological activity1, Indian J Exp Bio, 1968; 6: 232-235.
25. Manoharan S, Silvan S, Vasudevan K and Balakrishnan S, Antihyperglycemic and antilipidperoxidative effects of Piper longum., Dried Fruits in Alloxan Induced Diabetic Rat, J Biol Sci, 2007; 7(1): 161-168. 67.
26. KS Natarajan, M Narasimhan, KR Shanmugasundaram, ER ShanmugasundaramAntioxid ant activity of a salt/spice/herbal mixture against free radical inductionJ Ethnopharmacol, 2006; 105: 76-83

27. Stohr JR, Xiaso PG, Bauer R (2001). Constituents of Chinese piper species and their inhibitory activity on prostaglandin and leukotriene biosynthesis in vitro. Journal of Ethanopharmacology, 75: 133–139.
28. Jyothi VA, Fathima. Phytochemical evaluation & pharmaceutical screening of wound healing & antioxidant activity of Plumbago zeylanica. International Journal of Pharmacy & Technology. 2013; 5: 5879-5891.
29. Kumar P, Udupa EGP, Sharan A, Singh R, Prasad Hk, Rao P. Effects of Limited Access Dressing In Chronic Wounds: A Biochemical and Histological Study. Indian Journal of Plastic Surgery, 2015; 22-28.
30. Zarmouh MM, Subramaniyam K, Viswanathan S, Kumar PG. Cause and effect of Plumbago zeylanica root extract on blood glucose and hepatic enzymes in experimental diabetic rats. African Journal of Microbiology Research, 2010; 4(24): 2674-2677.
31. Sunil C, Duraipandiyan V, Agastian P, Ignacimuthu S. Antidiabetic effect of plumbagin isolated from Plumbago zeylanica L. root and its effect on GLUT4 translocation in streptozotocin-induced diabetic rats. Food and Chemical Toxicology, 2012; 50(12): 4356-63.
32. Arunachalam KD, Velmurugan P, Raja RB. Anti-inflammatory and cytotoxic effects of extract from Plumbago zeylanica. African Journal of Microbiology Research, 2010; 4(12): 1239-1245.