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SHORT COMMUNICATION

Pharmaco- Analytical Study of Shoolaprashamana Choorna -An Ayurveda Formulation

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ABSTRACT
Analgesia or pain is the major cause for emergency medical care needed in modern as well as in Ayurveda. In Ayurveda there are many Aushadi dravyas described in the context of shoola having Shoolagna property. Acharya charaka discussed 50 Mahakashayas in the 4th chapter of Sutrasthana which contains 10 ingredients each which is the specialty of Charaka Samhita. The property of Shoolaghna in Shoolaprashamana choorna is to be used to see its effect in Amavata patients. This article aims to evaluate the anti-inflammatory and analgesic effect of Aushadha dravyas of Shoolaprashamana choorna to pave way for further studies and research to develop an ayurvedic analgesic drug.
Keywords*: Shoola, Shoolprashaman Mahakashaya, Pain, Ayurveda, Analgesia*

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INTRODUCTION

Pain is an ill-defined unpleasant bodily sensation may be an external or internal cause. Causes mainly included are non-traumatic, inflammatory, colicky etc, colloquial terminology of pain is known as Shoola [1]. Generally, the type of perception of Shoola is given different names in different parts of the body such as Sirahshoola, Karnashoola, Bastishoola etc [2, 3]. Several terms such as Ruk [4], Ruja, Vedana & Shoola are usually used for pain. Vata is the main causative factor responsible for the painful conditions of the body. Vitiation of Vata seen in two conditions mainly Dhatu kshaya janya Vata prakopa and Margavarodh janya Vataprakopa.Ayurveda [5], the ancient science of life, amalgamates to philosophy in all aspects [5]. The Ayurvedic principles will be more understood on the basis of Philosophical ideas. Ayurveda describes an applied philosophy which confines to the medical science. Ayurveda being a life science, it mentions about the health and disease of the body, any imbalance of doshas leads to ill-health are explained as Ruk,Vedana, Daha etc. Concept of Agni has its unique identity such as Kayasya Anthahragneh Chikitsa Kayachikitsa [2] described by Chakrapani as Agni is the vital cause responsible for the physiological and pathological states of health. According to the International Association for the study of Pain (IASP), Pain can be described based on the different regions of the body such as Head, Ear, and duration of pain as acute and chronic, with system as Nervous, GIT. Other types of pain as Psychogenic, Inflammatory pain, Referred pain etc. There are some components of pain sensation such as mild pain and severe pain. Analgesic drugs like opioids relieve pain by acting through this system. Pharmacological Management of these groups is categorized under non-steroidal anti-inflammatory drugs (NSAIDs), Opioid Analgesics, Adjuvant drugs like muscle relaxants, etc. According to Ayurveda, Shoola (Pain) occurs due to vitiation of Vata dosha. There are many formulations and single drugs mentioned in Ayurveda which can be used in pain such as Shoolavajarini vati, and single drugs including Rasna, Devadaru, Guggulu etc [6-14]. Whereas here Shoolprashaman choorna is taken for the present study in the context of pain reliever in Amavata patients.

MATERIAL AND METHODS

Materials collected from sources of Ayurveda , others like google scholar, research gate, pubmed and online available articles . Work is done on shoolaprashaman mahakashaya drugs in the field of analgesic is very less. Review of present study fThis review mainly focuses on various modern published researches on the anti-inflammatory and analgesic action of Aushadh Dravyas of Shoolprashman Mahakashaya. The Ayurvedic pharmacology dealt with Rasa (Taste),Guna (Properties), Virya (Active Principle), Vipak(Bio-Transformation), Prabhav (Specific Action), And Karma (Action), which are the counterpart of modern pharmacology and these attributes are the deciding factors for pharmacological action of any drug .

Collection of Sample

The ingredients of shoolaprashamana mahakashaya taken for the preparation of choorna collected from Pavamana pharmacy and Drug authentication was done.

The crude drugs used in Choorna preparation are given in Table 1.according to them.

Table no 1. Organoleptic Parameters Of Shoolaprashamana Choorna

S. no	Sanskrit name	Scientific name	Parts used
1	Pippali	*Piper Longum*	Fruit
2	Pippali moola	*Piper longum*	Root
3	Chavya	*Piper retrofractrum*	Root
4	Chitraka	*Plumbago zeylanica*	Root
5	Nagara	*Zingiber officinalia*	Rhizome
6	Maricha	*Piper nigrum*	Fruit
7	Ajamoda	*Carum carvi*	Fruit
8	Ajaji	*Cymium cumini*	Fruit
9	Ajagandha	*Cleome viscosa*	Whole plant
10	Gandeer	*Coleus forskohili*	Root

CHEMICALS AND INSTRUMENTS

Compound microscope, glass slide, cover slip, watch glass, other common glass ware were the basic apparatus and instruments used for the study. The solvents used for extraction includes Ethanol, Ethyl acetate, Glycerine, HCL and Sodium hydroxide were of analytical grade.

HPTLC methodology

HPTLC

One gram of powdered sample of **Shoolaprashamana choorna** was suspended in 10 ml ethanol (Finar) and kept for cold percolation for 24h and filtered. 4, 8 and 12µl of the above samples were applied on a pre-coated silica gel F_{254} on aluminum plates to a band width of 7 mm using Linomat 5 TLC applicator. The plate was developed in Toluene: Ethyl acetate (9.0: 1.0). The developed plates were visualized in short UV, long UV and then derivatised with Vanillin sulphuric acid reagent and scanned under UV 254nm, 366nm and 620nm (following derivatisation). Rf, colour of the spots and densitometric scan were recorded.

RESULTS

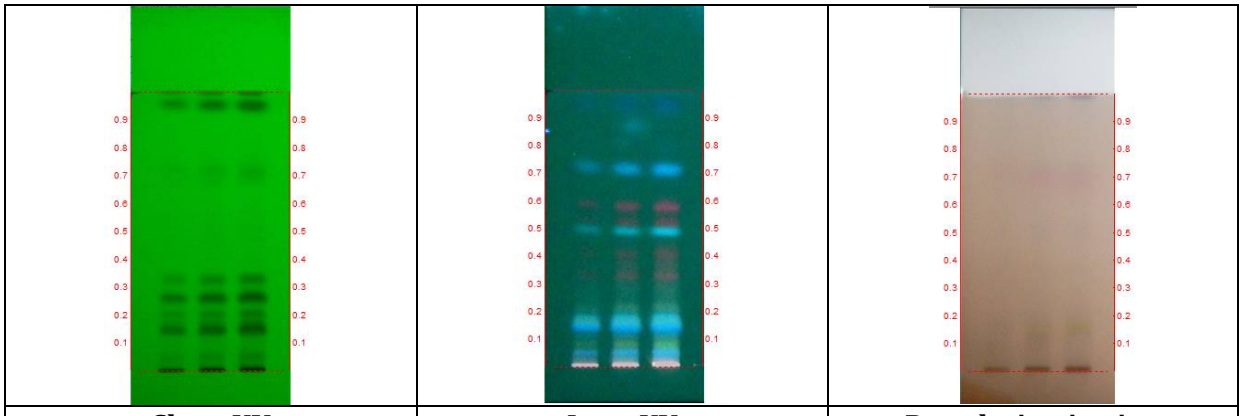


Figure 1. HPTLC photo documentation of Ethanol extract of Shoolaprashamana curna

Track 1 - Ethanol extract of Shoolaprashamana choorna – 4µl

Track 2 - **Ethanol extract of Shoolaprashamana choorna** – 8µl

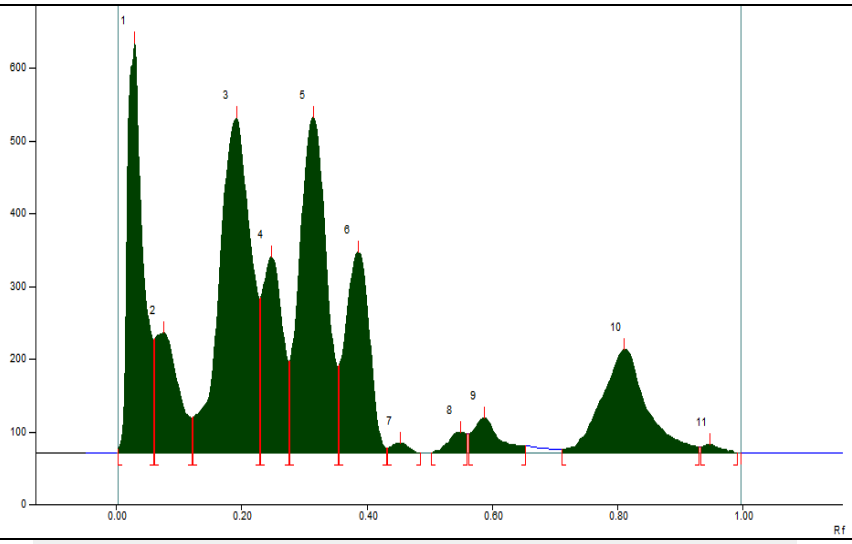
Track 3 - **Ethanol extract of Shoolaprashamana choorrna** – 12µl

Solvent system – Toluene: Ethyl acetate (9.0: 1.0)

Table 1: R_f values of sample of Shoolaprashamana choorna

Short UV	Long UV	Post derivatisatio
0.06 (Green)	0.05 (F. blue)	-
-	0.08 (F. green)	-
0.16 (Green)	0.16 (F. blue)	0.16 (Purple)
0.21 (Green)	0.22 (F. green)	-
0.26 (Green)	-	-
0.34 (Green)	0.34 (F. pink)	-
-	0.41 (F. pink)	-
-	0.49 (F. blue)	-
-	0.53 (F. pink)	-
-	0.58 (F. pink)	-
0.72 (Green)	0.72 (F. blue)	0.71 (Pink)
-	-	0.74 (Purple)

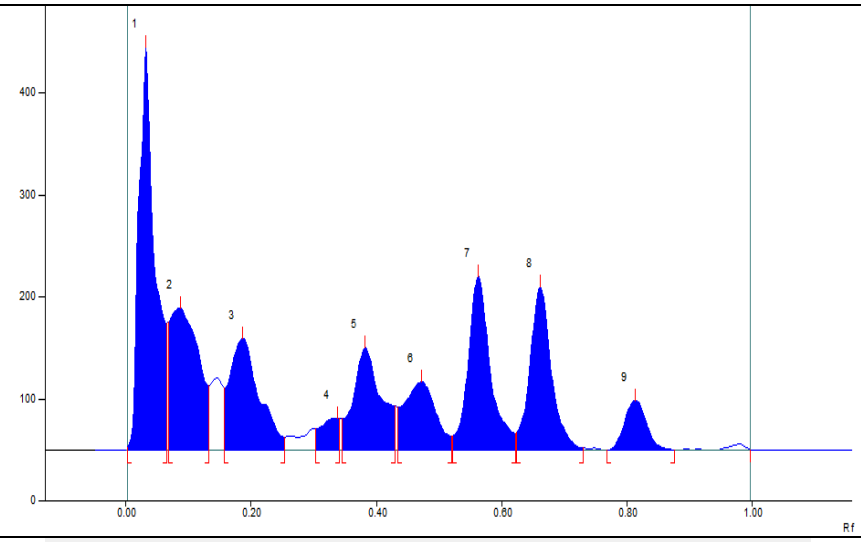
***F – Fluorescent; L –Light; D – Dark**



Track 3, ID: Shoolaprashamana curna

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	4.2 AU	0.03 Rf	563.1 AU	23.07 %	0.06 Rf	55.7 AU	9918.1 AU	14.43 %
2	0.06 Rf	156.2 AU	0.08 Rf	165.1 AU	6.76 %	0.12 Rf	48.4 AU	4370.1 AU	6.36 %
3	0.12 Rf	48.9 AU	0.19 Rf	460.5 AU	18.87 %	0.23 Rf	12.1 AU	16666.0 AU	24.25 %
4	0.23 Rf	213.0 AU	0.25 Rf	269.6 AU	11.04 %	0.28 Rf	25.2 AU	6253.3 AU	9.10 %
5	0.28 Rf	126.4 AU	0.31 Rf	460.7 AU	18.87 %	0.35 Rf	18.7 AU	14188.2 AU	20.64 %
6	0.36 Rf	120.7 AU	0.39 Rf	276.5 AU	11.33 %	0.43 Rf	6.1 AU	7520.5 AU	10.94 %
7	0.43 Rf	6.2 AU	0.45 Rf	13.6 AU	0.56 %	0.49 Rf	0.2 AU	269.1 AU	0.39 %
8	0.50 Rf	0.7 AU	0.55 Rf	28.3 AU	1.16 %	0.56 Rf	27.0 AU	576.5 AU	0.84 %
9	0.56 Rf	26.3 AU	0.59 Rf	48.5 AU	1.99 %	0.65 Rf	9.2 AU	1437.8 AU	2.09 %
10	0.71 Rf	4.3 AU	0.81 Rf	142.7 AU	5.85 %	0.93 Rf	8.6 AU	7279.7 AU	10.59 %
11	0.93 Rf	8.7 AU	0.95 Rf	12.3 AU	0.51 %	0.99 Rf	0.0 AU	248.0 AU	0.36 %

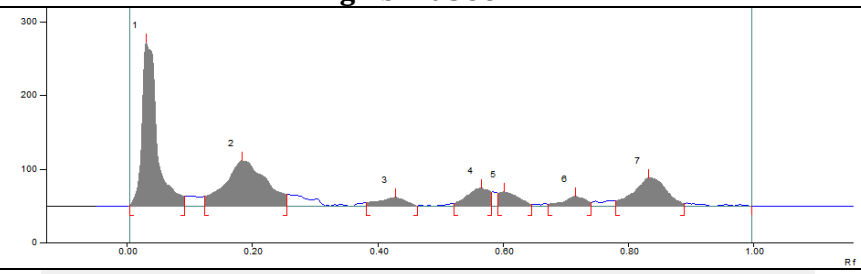
Fig 2a. At 254nm



Track 3, ID: Shoolaprashamana curna

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	2.5 AU	0.03 Rf	393.8 AU	32.30 %	0.07 Rf	24.1 AU	7280.5 AU	23.15 %
2	0.07 Rf	124.7 AU	0.09 Rf	138.9 AU	11.39 %	0.13 Rf	63.4 AU	4653.7 AU	14.80 %
3	0.16 Rf	60.8 AU	0.19 Rf	109.6 AU	8.99 %	0.25 Rf	12.9 AU	3709.5 AU	11.79 %
4	0.30 Rf	20.5 AU	0.34 Rf	31.1 AU	2.55 %	0.34 Rf	30.8 AU	679.6 AU	2.16 %
5	0.35 Rf	30.4 AU	0.38 Rf	100.3 AU	8.22 %	0.43 Rf	42.9 AU	3218.8 AU	10.23 %
6	0.44 Rf	42.5 AU	0.47 Rf	67.0 AU	5.50 %	0.52 Rf	13.6 AU	2412.4 AU	7.67 %
7	0.52 Rf	13.7 AU	0.56 Rf	169.9 AU	13.93 %	0.62 Rf	16.5 AU	4335.3 AU	13.78 %
8	0.62 Rf	17.0 AU	0.66 Rf	159.7 AU	13.10 %	0.73 Rf	2.3 AU	3933.9 AU	12.51 %
9	0.77 Rf	0.0 AU	0.81 Rf	49.0 AU	4.02 %	0.88 Rf	0.2 AU	1229.6 AU	3.91 %

Fig 2b. At 366nm



Track 3, ID: Shoolaprashamana curna

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	1.8 AU	0.03 Rf	221.9 AU	56.73 %	0.09 Rf	13.5 AU	3892.9 AU	38.95 %
2	0.12 Rf	13.1 AU	0.18 Rf	61.4 AU	15.71 %	0.25 Rf	16.1 AU	2880.5 AU	28.82 %
3	0.38 Rf	4.6 AU	0.43 Rf	12.2 AU	3.13 %	0.46 Rf	0.4 AU	376.1 AU	3.76 %
4	0.52 Rf	4.0 AU	0.57 Rf	24.7 AU	6.30 %	0.58 Rf	19.2 AU	630.6 AU	6.31 %
5	0.59 Rf	17.7 AU	0.60 Rf	19.3 AU	4.94 %	0.65 Rf	2.7 AU	448.4 AU	4.49 %
6	0.67 Rf	2.7 AU	0.72 Rf	13.4 AU	3.42 %	0.74 Rf	5.0 AU	340.5 AU	3.41 %
7	0.78 Rf	7.4 AU	0.83 Rf	38.2 AU	9.77 %	0.89 Rf	3.2 AU	1425.1 AU	14.26 %

Fig 2c. At 620nm

Figure 2: Densitometric scan of Shoolaprashamana Choorna

REMARKS

The given sample of **Shoolaprashamana choorna** has been standardized as per standard testing protocol. Results of HPTLC photo documentation, densitometric scan, R_f values are presented in respective tables and figures.

One gram of powdered sample of Shoolaprashamana choorna was suspended in 10 ml ethanol (Finar) and kept for cold percolation for 24h and filtered. 4, 8 and 12µl of the above samples were applied on a pre-coated silica gel F 254 on aluminum plates to a band width of 7 mm using Linomat 5 TLC applicator. The plate was developed in Toluene: Ethyl acetate (9.0: 1.0). The developed plates were visualized in

short UV, long UV and then derivatized with Vanillin sulphuric acid reagent and scanned under UV 254nm, 366nm and 620nm (following derivatisation). Rf, colour of the spots and densitometric scan were recorded.

ANALYTICAL PARAMETERS

Table no 1. Organoleptic Parameters of Shoolaprashamana Choorna

S.No	Sanskrit name	Scientific name	Parts used
1	Pippali [7]	*Piper Longum*	Fruit
2	Pippali moola [8]	*Ppiper longum*	Root
3	Chavya [9]	*Piper retrofractrum*	Root
4	Chitraka [10]	*Plumbago zeylanica*	Root
5	Nagara [11]	*Zingiber officinalia*	Rhizome
6	Maricha [11]	*Piper nigrum*	Fruit
7	Ajamoda [13]	*Carum carvi*	Fruit
8	Ajaji [14]	*Cymium cumini*	Fruit
9	Ajagandha [15]	*Cleome viscosa*	Whole plant
10	Gandeer [16]	*Coleus forskohili*	Root

GENERAL METHOD OF PREPARATION

Drugs mentioned in the Yoga are cleaned and dried properly. They are finely powdered and sieved. Where there are a number of drugs in yoga, the drugs are separately powdered and sieved. Each one of them (powder) is weighed separately, and well mixed together. As some of the drugs contain more fibrous matter than other, this method of powdering and weighing them separately them, according to the Yoga, and then mixing them together, is preferred. In industry, however, all the drugs are cleaned, dried and powdered together by disintegrators. Mechanical sifters are also used. Salt, sugar, camphor etc., when mentioned are separately powdered and mixed with the rest at the end. Asafoetida (Hingu) and salt may also be roasted, powdered and then added.

DISCUSSION

The detailed Pharmacognostical study of plant help us to differentiate between closely related species of the same genus or related genera of the same family. It is also the first step to standardize a drug which is the need of the hour. If the plant drugs are adulterated, then the quality of preparation cannot give the desirable result. Any plant which is used medicinally requires detailed study prior to it's because the therapeutic efficacy absolutely depends on the quality of the plant drug used. The pH conventionally represents the acidity & alkalinity, phytochemical tests are used to detect the presence of functional groups, which plays very important role in the expression of biological activity. As the ingredients of Shoolaprashamana choorna are katu,tikta,laghu,teekshna,ruksha and snigdha guna,ushna veerya ,katu vipaka shothaghna especially vata & kapha due to which it can act on pain actively similarly all the ingredients of Shoolaprashaman mahakashaya & their chemical constituents such as that & root of *P. laghu* linn [10-13].

CONCLUSION

The above discussion reveals that the characters of the drugs used in Shoolaprashamana choorna are similar as per the references of API. The phytochemical parameters of the drug and the HPTLC profile generated in this particular study can be considered as a preliminary tool ascertaining the authenticity of Shoolaprashamana choorna .

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