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Experimental Evaluation of *DashamoolaTaila* to its Anti Inflammatory Activity

Avinash Pastore^{1*} and Snehlata Jain²

^{1,2}CSIR - Traditional Knowledge Digital Library Unit, Vigyan Suchna Bhawan 14, Satsang Vihar Marg, New Delhi, India

ABSTRACT

Shotha is a condition which gets manifested due to accumulation of vitiated doshas in between “*Twak and Mamsa*”. According to Ayurvedic perspective, *Shotha* is considered as an individual disease as well as complication of several other diseases. According to the concept of modern medicine, inflammation is not disease by itself but it is one of the symptoms of many other diseases and injuries. It is seen that references are available in our classical literature about “*DashamoolaTaila*” as a medicine to treat *Shotha*. *Dashamooladravyas* are referred to as *ShothaharaMahakashayaGana* by Charaka. The reference of “*DashamoolaTaila*”¹ is found in “*BhaishajyaRatnavali*” 65th chapter. Here an attempt is made to prepare “*DashamoolaTaila*” from both *MurchitaTilaTaila* and *MurchitaSarshapaTaila*. Their efficacy was compared with “*ChitrakaGhruta*” (BR 41/214-127) which was taken as the **standard drug**.

KEYWORDS

Shotha, *Inflammation*, *DashamoolaTaila*, *TilaTaila*, *Murchita*, *Sarshapa Talia*, *Inflammation*, *Chitrakaghrita*



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INTRODUCTION

Ayurveda, the *upaveda* of “*Atharva Veda*”, has emphasized on the principle of protecting the health in a healthy individual and eradicating disease in the diseased. Living in good health has been the concern of human beings right from day one of his existence on earth. At the same time, diseases have become the part of life causing disturbance to his concern. To conquer the same, man has developed the science of healing^{2, 3}.

“The body and the mind, both are considered to be the abodes of disease, likewise of well being. The cause of well being is their harmonious and concordant interaction. The cause of disease, psychic or somatic is either erroneous, absent or excessive interaction”. The objective of Ayurveda is establishing the equilibrium of the body elements.

In Ayurvedic literature, the words *Shotha*, *Shopha* and *Shwayathu* are used in order to describe a diseased state which can be co-related to inflammatory and non-inflammatory conditions⁴.

Inflammation is a defence mechanism. Normally the damaged/inflamed tissue initiates a series of biochemical, immunological and cellular events that happen in apparently well regulated steps

in tissue repair and restoration of function⁵.

According to the concept of modern medicine, inflammation is not disease by itself but it is one of the symptoms of many other diseases and injuries. But, according to Ayurvedic perspective, *Shotha* is considered as a disease and also as complication of many other diseases.

There are many formulations in the classics and in contemporary texts having *Shothaghna* property. “*DashamoolaTaila*” is one of such formulations. Acharya Charaka has grouped *Dashamoola* dravyas under the title “*Shothahara MahaKashaya Gana*”. “*DashamoolaTaila*” has a lot of promise in treating the disease condition, *Shotha*. So, in order to establish the efficacy of this formulation by using modern methods, the present study has been undertaken.

AIMS & OBJECTIVES

- To prepare “*Dashamoola Taila*”¹ with *MurchitaSarshapaTaila*, and *MurchitaTilaTaila* separately.
- To evaluate Anti Inflammatory action of the above mentioned Two Samples of “*DashamoolaTaila*” by experimental procedures.
- To compare the efficacy of the trial drugs with the standard drug,

“ChitrakaGhrita”

(*BhaishajyaRatnavali*41/214-217).

➤ To pharmaceutical standardize both the samples of “*DashamoolaTaila*”.

1. Null Hypothesis – Two samples of “*DashamoolaTaila*” do not have anti inflammatory activity, upon internal administration.

2. Alternate Hypothesis - Two samples of “*DashamoolaTaila*” when used internally have anti inflammatory activity.

Review of the Literature:

This Section is separated into three segments:

1. Drug Review:

All the individual drugs used for the manufacturing of “*DashamoolaTaila*” are dealt along with the drugs used for *MurchanaSamskara* with *TilaTaila*. Ingredients of “*DashamoolaTaila*” (B.R. 65/84-85) are–Bilva (*Aegle marmelos Correa ex Roxb.*), Agnimatha (*Premna mucronata Roxb.*), Shyonaka (*Oroxylum indicum (Linn.) Venten.*), Patala (*Stereospermum chelonoides (Linn. F.) DC. Syn.: S. suaveolens (Roxb.) DC.*), Gambhari (*Gmelina arborea Roxb.*), Shalaparni (*Desmodium gangeticum (Linn.)DC.*), Prishnaparni (*Uraria picta (Jacq.) Desv.ex DC.*), Kantakari (*Solanum surattense Burm. F. Syn.: S. xanthocarpum Schrad. &Wendl.*), Brihati (*Solanum indicum Linn.*) and Gokshura (*Tribulus*

terrestris Linn.) with the help of *Murchana* dravyas Manjishta (*Rubia cordifolia Linn.*), Haridra (*Curcuma longa*), Lodhra (*Symplocos racemosa Roxb.*), Nagaramusta (*Cyperus rotundus Linn. / Cyprus scariosus R. Br. / Cyperus arundinaceum Baker*), Nalika (*Cinnamomum tamala Nees & Eberm.*), Amalaki (*Phyllanthus emblica Linn. Syn.: Emblica officinalis Gaertn.*), Haritaki (*Terminalia chebula Retz.*), KetakiPushpa (*Pandanus tectorius Soland. ex Park.*), Vatankura (*Ficus benghalensis Linn.*), Hribera (*Coleus vettiveroides K.C. Jacob / Valeriana jatamansii Jones Syn.: V. wallichii DC.*) and Kumari (*Aloebarbadensis Mill.*).

All the individual drugs used for the manufacturing of “*DashamoolaTaila*” are dealt along with the drugs used for *MurchanaSamskara* with *SarshapaTaila*. Ingredients of “*DashamoolaTaila*” (B.R. 65/84-85) is - Bilva, Agnimatha, Shyonaka, Patala, Gambhari, Shalaparni, Prishnaparni, Kantakari, Brihati and Gokshura with the help of *Murchana* dravyas Manjishta, Amalaki, Haridra, Musta, BilvaTwak, DadimaTwak (*Punica granatum Linn.*), Nagakeshara (*Mesua ferrea Linn.*), Krishna Jiraka (*Carum carvi Linn.*), Usira (*Vetiveria zizanioides (Linn.) Nash*), Nalika and Vibhitaka (*Terminalia bellirica (Gaertn.) Roxb.*).

All the individual drugs used for the manufacturing of “*ChitrakaGhrita*” are dealt along with the Drugs used for *Murchana Samskara*. Ingredients of “*ChitrakaGhrita (BhaishajyaRatnavali 41/214-217)*” is *murchita* with Go-Ghrita, Haridra, Amalaki, Vibhitaki, Haritaki, Musta and Matulungaswarasa (*Citrus medica Linn.*).

2. Analytical study:

Physicochemical analysis of *MurchitaSarshapaTaila*, *MurchitaTilaTaila*, *MurchitaGhrita*, “*DashamoolaTaila*” prepared by *MurchitaSarshapa* and *MurchitaTilaTaila* and “*ChitrakaGhrita*” has been carried out.

3. Experimental study:

The Institutional Animal Ethical Committee Registration No-191/CPCSEA

➤ Healthy Wister strain Albino Rats, 24 in number, weighing in between 150-200 g were selected, irrespective of sex and were divided into four groups, each containing six rats and were kept in separate cages.

➤ The first group served as Control Group. Distilled water was used as Placebo.

➤ The second group was considered as standard group. “*ChitrakaGhrita*”

(BR 41/214-217) was given as medicine to this group.

➤ The third group was treated as trial group no.1. *MurchitaSarshapaTailaNirmita “DashamoolaTaila”* was given as medicine to this group.

➤ *MurchitaTilaTailaNirmita “DashamoolaTaila”* was given as medicine for the fourth group, which was titled as trial group no.2.

➤ Inflammation was induced by injection of **0.1ml of 1% of Carrageenan** to left plantar region of all Wister strain Albino Rats.

➤ The device “**Plethysmograph**” was used to measure the hind paw volume at a regular **interval of 30 minutes for three hours**.

➤ The Readings were subjected to **statistical analysis**.

Experimental Study:⁷

Anti-inflammatory effect of the two samples of *DashamoolaTaila* was evaluated experimentally by –

Edema assay: Edema produced by the local injection of Carrageenan in Wister strain albino rats, because **Carrageenan induced paw oedema** is standard and the most commonly used technique to **screen the anti-inflammatory activity**. The instrument used for this purpose was **Plethysmograph**. The rats which were meeting the inclusion and exclusion

criteria were selected randomly, kept in separate cages, and maintained under standard conditions in the animal house

attached to ALN Rao Memorial Ayurvedic Medical College & PG Centre, Koppa.

Table 1 Experimental design⁶

1	Sample	24 Albino rats of either sex are selected randomly.		
2	Inclusion Criteria	Healthy Albino rats of both sex weighing between 150 to 200 grams.		
3	Exclusion Criteria	Diseased / infected rats, pregnant rats, rats below 150 grams and above 200 grams. Rats under the trial of other experiments.		
4	Grouping	Each group having six rats is kept in separate cages.		
		Group No.	Name of the Group	Dosage/200 g Body Weight
		01	Control	Distilled water
		02	Standard	<i>ChitrakaGhrita</i>
		03	Trial No.1	<i>MurchitaSarshapaTailaNirmitaDashamoolaTaila</i>
		04	Trial No.2	<i>MurchitaTilaTailaNirmitaDashamoolaTaila</i>
5	Procedure	Inflammation is produced in the left plantar region of all the rats with 0.1 ml of 1% Carrageenan. The paw volume of each rat is taken with the help of plethysmograph at every 30 minutes interval after the induction of inflammation.		
6	Observations	Each rat's paw volume is recorded at 30 minutes interval.		
7	Result	By using Unpaired student's't' test.		

Table 2 Results of experimental Study:

Groups	t-value	p-value
Control & standard	4.7699	<0.001
Control & Trial I	6.3830	<0.001
Control & Trial II	4.9469	<0.001
Standard & Trial I	1.7516	<0.20
Standard & Trial II	0.2256	>0.20
Trial I & Trial II	1.5168	<0.20

Control Group – Distilled water was used as medicine -

Trial Group No.1 – *DashamoolaTaila* prepared by *MurchitaSarshapaTaila* was used as medicine.

Trial Group No.2 - *DashamoolaTaila* prepared by *MurchitaTilaTaila* was used as medicine.

Standard Group – *ChitrakaGhrita* was used as medicine.

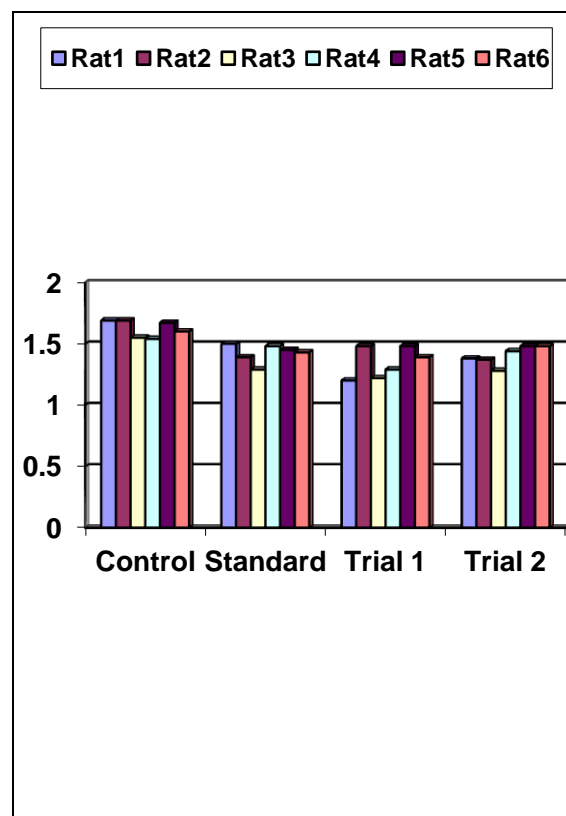


Fig 1 Mean paw volume of each Wister strain Albino rats of all groups

Table 3 Statistical data of experimental groups⁸

Group	Mean	SD	SE
Control	1.62	0.0692	0.0282
Standard	1.42	0.07589	0.0310
Trial I	1.34	0.0822	0.0336
Trial II	1.41	0.0776	0.3170

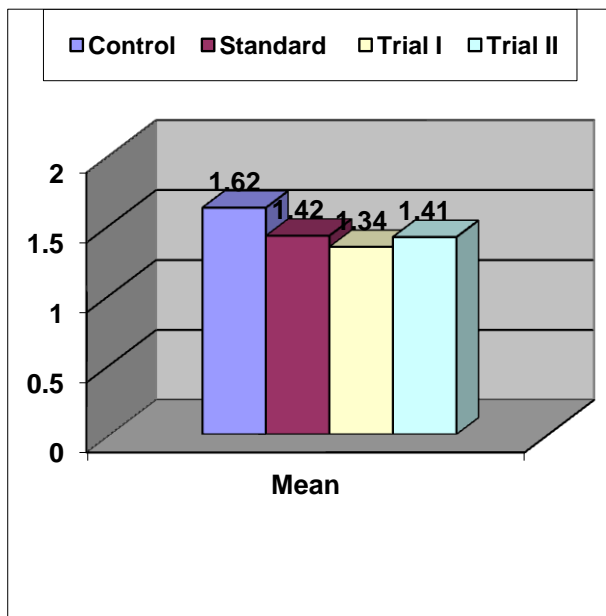


Fig 2 Mean paw volume of the four groups⁸

The mean paw volume of control group is highest where as in trial group no.1, it is lowest.

- Anti-inflammatory activity of both Samples of “*DashamoolaTaila*” according to the reference of “*BhaishajyaRatnavali*” showed significant relief when compared with control group.
- Both the samples showed better results when compared with the standard drug. I.e. *ChitrakaGhrita*.
- “*DashamoolaTaila*” prepared by *MurchitaSarshapaTaila* showed better result when compared to

“*DashamoolaTaila*” prepared by *MurchitaTilaTaila*.

- “*DashamoolaTaila*” prepared by *MurchitaSarshapa Taila* showed significant result in relieving *Shotha*, upon conducting experimental study.

DISCUSSION

The drug taken for the present study was *DashamoolaTaila*. (*BhaishajyaRatnavali* 65/84-85). It was used for **internal administration** in the animal experimental study. Therefore, before the actual *snehapaka*, *TailaMurchana* was done. As *SarshapaTaila* and *TilaTaila* were used to prepare the *DashamoolaTaila*, *Murchana* of both *Sarshapa* and *TilaTaila* were undertaken. The main aim of *Murchana* is to remove *amadosha* and *dourgandha*. By *MurchanaSamskara*, *Taila* gets the capacity to extract the fat and water-soluble active principles of the ingredients added to it. The *Sarshapa* and *TilaTailaMurchana* were done according to the reference of *BhaishajyaRatnavali* 5/1286-89. The hindi commentary for *DashamoolaTaila* in *BhaishajyaRatnavali* suggests using *MurchitaSarshapaTaila* for the purpose of preparation of *DashamoolaTaila*. But in this study, along with preparing *DashamoolaTaila* in the

above said way, it was also prepared with *MurchitaTilaTaila*. The efficacy of these two samples over *Shotha* was compared in the experimental study.

CONCLUSION

The statistical analysis of the results obtained after experimental study showed that the two samples of *DashamoolaTaila* and *ChitrakaGhrita* had significantly better result when compared to the Control group. But mutually upon comparing the two samples of *DashamoolaTaila* and *ChitrakaGhrita*, insignificant result was observed. This shows that the efficacy of these three is almost the same. However, the 't' value of *DashamoolaTaila* prepared by *SarshapaTaila* was more when compared to that of *TilaTaila*. Because of this reason, *DashamoolaTaila* prepared by *MurchitaSarshapaTaila* was selected for further study. If analgesic and diuretic action of *DashamoolaTaila* are experimentally proved, then it will be very helpful in defining the pharmacological action of *DashamoolaTaila*. The gross meaning of *Shotha* can be considered as Inflammation, which is a common phenomenon in many of the pathologic conditions like **Hepatitis, Bronchitis, Carditis, Nephritis, Neuritis** etc. A study undertaken to know the efficacy of *DashamoolaTaila* in these disorders will

be very much helpful. Hence, further studies of *DashamoolaTaila* will certainly be helpful to know its efficacy in various therapeutic fields.

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