

PHARMACEUTICO-ANALYTICAL AND EXPERIMENTAL STUDY OF DUGDHA VATI (DVITIYA) W.S.R. TO ITS ANTI-INFLAMMATORY ACTIVITY ON ALBINO RATS

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ABSTRACT

Ayurveda, the traditional medicine of India is catering to the health needs of the people of this region since the early day of human civilization, its importance and significance for the well-being of the society is recognized globally and influencing the science of medicine of other nations considerably due to its unique beneficial features. Inflammation can be correlated to *Shotha* on the basis of equivalent symptoms mentioned in the concerned literature. Inflammation is a symptom according to modern system while Ayurveda signifies it as a disease in accordance to *Shotha*. Many herbo-mineral formulations are mentioned in rasa texts to treat *shotha*. *Dugdhavati (dvitiya)* is one among them, mentioned in *Bhaishajya Ratnavali Shothachikitsa*. Here an attempt has been made to evaluate its anti-inflammatory effect on albino rats. *Dugdhavati (dvitiya)* showed marked anti-inflammatory action.

Keywords: *Dugdhavati (dvitiya)*, *Shotha*, Anti-inflammatory effect, Plethysmograph, carrageenan.

INTRODUCTION

Ayurveda, the traditional medicine of India is catering to the health needs of the people of this region since the early day of human civilization. Its importance and significance for the well-being of the society is recognized globally and influencing the science of medicine of other nations considerably due to its unique beneficial features.

Inflammation can be correlated to *Shotha* on the basis of equivalent symptoms mentioned in the concerned literature. Inflammation is a symptom¹ according to modern system

while Ayurveda signifies it as a disease in accordance to *Shotha*². Here *Dugdhavati (dvitiya)*³ has been taken for the present experimental study, an attempt has been made to evaluate its anti-inflammatory activity.

AIMS AND OBJECTIVES

1. Preparation of *Dugdha Vati (dvitiya)* as per the classical reference
2. Physico-chemical analysis of *Dugdha Vati (dvitiya)*
3. Evaluation of anti-inflammatory effect of *Dugdha Vati (dvitiya)*

METHODOLOGY

Pharmaceutical study: This section includes,

1. Identification and Collection of raw materials.
2. Purification and Processing of raw materials.
3. Preparation of Dugdha Vati(dvitiya)

Hingula Shodhana⁴: Hingula was purified by subjecting seven bhavana of ardraka swarasa.

Dhattura beeja shodhana⁵: Dhatura beeja was purified by conducting swedana in dolayantra containing godugdha for 3 hour, then dried and powdered.

Vatsanabha Shodhana⁶: Vatsanabha was purified by immersing in gomutra for 3 days, then dried and powdered.

Preparation of Dugdha Vati (Dvitiya)³

Sl.No.	Ingredients	Botanical/English name	Part used	Quantity
01	Hingula	Cinnabar	---	100 g
02	Dhattura	<i>Datura metel</i>	Seed	100 g
03	Vatsanabha	<i>Aconitum ferox</i>	Root	100 g
04	Dhattura	<i>Datura metel</i>	Leaf	80ml

1. Shodhita Hingula, Shodita Dhatura beeja churna, Shodhita Vatsanaba churna were taken in khalwa yantra, triturated well to become homogenous mixture

2. Required quantity of Dhatura patra swarsa was added and triturated until the

required consistency observed, and then roll the pills. Vati of size Mudgha pramana were prepared, dried and preserved.

3. 290gms of Dugdha Vati (Dvitiya) was obtained.

Observation:

Sl No	Dravya	Wt. Before shodhana	Wt. After shodhana	Wt gain	Wt loss
1	Hingula	130gms	135gms	5gms	-
2	Dattur Beeja	200gms	182gms	-	18gms
3	Dattur Beeja churnikarana	182gms	150gms	-	32gms
4	Vastanabha	200gms	160gms	-	40gms
5	Vastanabha churnikaran	160gms	135gms	-	25gms
6	Dattur patra swarasa	200gms	110gms	-	90gms

Analytical Study⁷

Prepared Dugdha vati (dvitiya) was subjected to analytical parameters as per API protocol.

Sl No.	Parameters	Results
1	Appearance	Brick red coloured small round pills
2	Loss on drying, w/w	4.37%
3	Hardness	1 Kg/cm ²
4	Friability	1.23%
5	Disintegration Time	48 minutes
6	Total ash, w/w	5.89%
7	Acid-insoluble ash, w/w	1.35%
8	Total Sulphur Content, w/w	5.18%
9	Assay for Mercury as w/w	11.5%
Microbiological Test		
10	Escherichia coli/10g	Absent

Experimental Study^{8,9}:

Animals: Albino Rats (150-200gms)

Drug and chemicals: Distilled water, Ibuprofen, Dugdhavati (dvitiya)

Equipments: Animal feeding tube (1ml), I.V. Cannula tube, weighing balance Rat cage.

Albino Rats of either sex weighing between 150-200 gms breeds in animal house were selected for the study. The animals were obtained from the animal house, J.T. College of Pharmacy, Gadag. The Rats were kept under observation for seven days with standard laboratory diet. After which they were examined for their normal health and then subjected to experimental study. 18 animals were selected, which have been separated into 3 groups. Each group with six animals was kept in separate cages after proper labelling.

Experimental Design: Albino Rats of either sex weighing between 150-200 gms were kept in separate cages and labeled as,

- Group I – Control group - Administered with distilled water
- Group II – Standard group - Treated with Ibuprofen.
- Group III – Trial group - Treated with Dugdhavati (dvitiya).

Dose determination:

The Aqueous suspension of trial drug:

- By the given human dose, rat dose is calculated based on the conversion formula.
- Rat dose per 200gms body weight = $0.018 \times \text{human dose}$.
- Human dose of Dugdhavati (dvitiya) is 1/2 ratti i.e.62.5mg
- The rat dose per 200 gms body weight = $0.018 \times 62.5 \text{ mg} = 1.125\text{mg}$

Adult dose of Ibuprofen is 200-400 mg

Mode of administration of trial drug:

The trial drug was given orally in the form of aqueous suspension. 27mg of Vati was added to 24 ml of distilled water

(suspending agent) and mixed well. Each 2 ml contains 1.125 mg of Vati.

Procedure:

- Total 18 albino rats were taken for the experimental study and subjected them in three groups of six rats in each group.
- Then inflammation is induced by injecting 0.1 ml carrageenan into the subplantar region of the left hind paw of all the groups.

- One hour after inducing inflammation the prepared medicines were administered orally to the respective groups of rats.
- Paw volume of all the rats were measured after. 1/2 hr, 1 hr, 2 hr, & 3hrs by using plethysmograph.
- Then compare the anti-inflammatory effect of Dugdhavati (dvitiya) and standard drug treated groups.

Effect of test drugs on carrageenan induced paw edema in rats

Groups	% Increase in paw volume at different time interval after Carrageenan injection							
	After 1/2h	% change	After 1h	% change	After 2h	% change	After 3h	% change
Control	8.000 ± 0.097	-	8.333 ± 0.042	-	8.633 ± 0.056	-	8.767 ± 0.042	-
Standard group	7.533 ± 0.021	5.838↓	7.767 ± 0.021	6.792↓	7.567 ± 0.021	12.348↓	7.400 ± 0.037	15.593↓
Trial group	7.900 ± 0.073	1.250↓	8.200 ± 0.073	1.596↓	8.233 ± 0.056	4.633↓	8.000 ± 0.073	8.749↓

Data: Mean ± SEM; ↓= Decrease

*P<0.05 when compared with control (Dunnett 't' test)

STATISTICAL ANALYSIS

The data obtained through the experimental study was being analyzed statistically based on the student t-test values as follows

In the control group the result was not significant with p value > 10

In standard group the result was highly significant with p value < 0.001

In the trial group (Dugdha Vati (Dvitiya)) the result was statistically significant with p value 0.0294

Comparison between Group I & Group II Ibuprofen was highly significant than the control group.

Comparison between Group I & Group III. Dugdha Vati (Dvitiya) is better than the control group.

Comparison between group II & III, standard drug is highly significant than the Trial drug which is moderately significant.

DISCUSSION AND CONCLUSION

Dugdhavati(dvitiya) is mentioned in bhaishajya ratnawali as a formulation (herbo-mineral compound) which is best indicated in Shotha. In this formulation Hingula acts as Agni deepaka, Vatsnabha acts as shothahara, Dhaturabeeja acts as vedanasthapka, as it does the Samprapti vighatana of shotha.

As per the classical literatures the trial drug Dugdha Vati (Dvitiya) is having much significance and importance being used for all types of Inflammation. In present study trial drug showed an effective Anti-inflammatory activity. This has been proved here experimentally on albino rats.

Most of the ingredients of Dugdha Vati (Dvitiya) had already been proved as anti-inflammatory activity through various experimental studie. The formulation Dugdha Vati (Dvitiya) has a balance of drugs acting on the samprapti of Shotha to bring about samprapti vighatana.

REFERENCES

1. Davidson's Principles and practices of medicine, Edited by Haslett C, Edwin R Chilvers, John A. Hunter and Nicholas A. Boon, 18th Edition, Philadelphia: Harcourt publishers; 2001, page 22
2. Agnivesha, Charaka Samhita, vol-2 chikitsasthan Chap-12, Brhammananda Tripathi editor, Varanasi: Choukhambha Surabharati Prakashan, 2001, p-436
3. Bhaisajyaratnavali, edited by Shri. Ambikadattshastri, chapter-42 shotha chikitsaparakarna shloka no.-75-77, Varanasi: Choukambha Sanskrit sansthan, 16th edition, page-562.
4. Sharma Sadanand 'Rasa Tarangini' – Motilal Banarasidas 1994, Reprint, Chapter 9, Shloka 12 page 201
5. Sharma Sadanand 'Rasa Tarangini' Motilal Banarasidas 1994 Reprint, 24\346-347
6. Sharma Sadanand 'Rasa Tarangini' Motilal Banarasidas 1994 Reprint, 24 / 19-25, Page. 651
7. Ayurvedic Pharamacopoeia of India, Pub: Contorller of Publications, Delhi. 3rd Edn: 1985
8. Ghosh M N "Fundamentals of Experimental Pharmacology" 3rd Edition, Kolkatta; Hilton and Co. Page 192.
9. Turners R A, "Screening Methods in Pharmacology" New York and London Academic Press Inc; 1965, Page 323

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Source of support: Nil,
Conflict of interest: None Declared

Cite this article as

Rudresh: Pharmaceutico-Analytical and
Experimental Study of Dugdha Vati
(Dvitiya) w.s.r. to its Anti-Inflammatory
Activity on Albino Rats.
ayurpub 2016;I(1): 15-19