



Understanding the pharmacokinetics of Tikta and Kashaya Rasa in the management of Dadru

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ABSTRACT: Dadru is classified in ancient text under the disease Kushtha. Due to repeated infections and tendency to becoming chronic, it is very difficult to treat with modern medicines, which are very costly and often causes hazardous side effects. As dadru is produced at the skin, due to the derangement of Kapha and Pitta dosha and Rakta dhatu, the combination of Katu, Tikta, Kashaya and Madhura rasa along with Katu and Madhura Vipaka plays a specific role in controlling the physio-pathology of dadru. In this work, Hemecaire, a combination of Kushthghna plants, in powder and syrup base and external application of Shodhan tail, (Group II and III) have significantly reduced the dadru in comparison to kushthghna dravya (Group I) alone. While understanding the pharmacokinetics, we concluded that extreme manifestation of Vayu, Akash and Prithvi mahabhuta from the panchabhautik constitution of Hemecaire, resulted in formation of Tikta and Kashaya Rasa, which are responsible for the control of deranged Pitta and Kapha dosha. As these two doshas have a conspicuous role in the pathology of dadru, it becomes quite clear, how the symptoms in the patients treated with Hemecaire, have been diminished prominently within 15 days.

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Keywords: Dadru, Hemecaire, Shodhantail, Kshudrakushtha

1. Introduction

Though dadru is an illustrious disease in Aanupa Pradesh, it is found all over India, which is labelled as dermatophytosis or ringworm. The infection of ringworm is estimated in more than 20% of the population [1]. However more than 40 types of fungi are responsible for this dermatophytosis, Trichophyton, Microsporum and Epidermophyton are very common [2]. In Aanupa Pradesh, Kapha Pradhan Kushtha is a common thing, especially percentage of patients suffering from dadru is relatively high than other Kshudra Kushtha.

Dadru was known to Indians since Vedic period. In a verse of Rigveda, the frustration of a woman, who is suffering from Kushtha is described. In Atharvaveda, different herbal medicines are described for the treatment of Kushtha at many occasions [3]. The herbal medicines useful in Kushtha are also described in Agnipurana [4]. Nidan, Samprapti and types of Kushtha are mentioned in Garudpurana [5]. Description of Kushtha is also available in

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many different ancient texts [6]. Sushruta and Vagbhata have described dadru as Maha kushtha and remaining all have classified it as Kshudra kushtha.

The skin is a very extensively spread vital organ with abundant multifaceted roles obligatory for health and existence of the individual. One of the main responsibility of the intact and healthy skin is to make available the shield in contrast to physical and chemical trauma. It is responsible for the regulation of body temperature and also is in possession of vital excretory activities. According to Ayurved, the skin is formed from the rakta dhatu in fetus. There are 7 layers from superficial to deep and each layer works for a particular function. They are Avabhasini, Lohita, Shweta, Vedini, Rohini, Tamra and Mansadhara. An enormous figure of skin diseases reveals the impracticality of assigning pathological conditions to any single disorder. In dadru, reactions to physical and chemical traumas, bacterial or fungal infections are also important for the local disturbances. In other words, we can say that these causes are responsible for srotovaignunya or derangement of srotasa. Modern science treat dadru with anti-fungal agents. Many types of ointments, lotions and oral medications are available in the market, and steroids are also used to build the proper immunity. But this type of treatment alone is not sufficient to clear the pathology. Temporary relief is not useful as the recurrence rate is very high. The line of treatment described in ayurvedic texts, not only controls the external picture of the disease, but also cures the base of the disease, in this case the skin. Furthermore, the formation of the toxic material and their presence from the blood is eliminated, resulting in the minimum recurrence rate. In this paper, we have discussed some herbal kushthghna combinations for the treatment of dadru.

2. Material and Methods

- a) Preparation of special case paper
- b) Examination, treatment and periodical assessment and collection of data
- c) Arrangement of pathological investigations
- d) Drug substance –i) Cap Hemecaire, ii) Syrup Hemecaire (both from Ayurlab herbalpvt.ltd, Vadodara), iii) Shodhan taila from Ayurveda Arkashala, Satara

Statement of Problem – Treatment of dadru with different combinations of herbal drugs as described below.

Group I – Patients admitted in this group were treated by Cap Hemecaire only. Dosage 2 capsules in a day by oral route for 15 days.

Group II - Patients admitted in this group were treated by Cap Hemecaire and Syrup Hemecaire. Dosage 2 capsules in a day with 2 teaspoonful syrup each time by oral route for 15 days.

Group III -Patients admitted in this group were treated by Cap Hemecaire and Syrup Hemecaire orally and Shodhan taila application externally at the site of the dadru. Dosage 2 capsules in a day with 2 teaspoonful syrup each time by oral route for 15 days and application of 10 ml shodhan tail externally thrice in a day.

Parameters - To evaluate the efficacy of the combination of Cap Hemecaire, Syrup Hemecaire and Shodhan taila in dadru, the improvement in clinical findings like relief from kandu, vanishing of pidikas, and return of the normal skin at the site of the affected skin, was the main criteria.

Results

The results are displayed in different tables as follows: -

Group	Male	Female	Age(years)	Male	Female
I	13	09	Up to 30	10	08
II	20	12	31 to 40	17	12
III	15	15	41 to 50	13	10
			51 to above	08	06
Table No. 1- Group and Sex wise distribution			Table No. 2 - Age and Sex wise distribution		

Type of Prakruti		Male	Female
Vataj Prakruti		09	07
Group	I.	04	02
	II.	03	03
	III.	02	02
Kaphaj Prakruti		28	21
Group	I.	04	05
	II.	13	07
	III.	11	09
Vata Kaphaj prakruti		11	08
Group	I.	05	02
	II.	04	02
	III.	02	04
Table No. 3 – Showing the group, Prakruti and sex wise distribution			

Type Of Varna (Color)		Male	Female
Rakta Varna		12	11
Group	I.	03	02
	II.	05	04
	III.	04	05
Tamra Varna		22	14
Group	I.	07	04
	II.	09	03
	III.	06	07
Krishna Varna		06	05
Group	I.	01	01
	II.	03	03
	III.	02	01
Pita- rakta varna		08	06
Group	I.	02	02
	II.	03	02
	III.	03	02
Table No.4 – Showing the types of Varna of dadru			

Swarup		Male	Female
Unnata Swarup		39	11
Group	I.	12	02
	II.	16	04
	III.	11	05
Avanata Swarup		09	11
Group	I.	02	03
	II.	04	04
	III.	03	04

Table No.5 – Showing the Swarup of dadru in number of patients – sex wise

Condition of the Skin	Male	Female
Twaka- Vidaran present	11	09
Twaka- Vidaran absent	37	27

Table No.6 – Showing the condition of the skin in dadru patients

Secretions		Male	Female
Lasikastrava		32	23
Group	I.	07	04
	II.	14	08
	III.	11	11
Raktastrava		14	10
Group	I.	05	04
	II.	05	03
	III.	04	03
Puyastrava		02	03
Group	I.	01	01
	II.	01	01
	III.	00	01

Table No.7 – Showing the types of secretions in dadru

Pidika	Male	Female
Present	30	24
Absent	18	12

Table No.8 – Showing the number of patients with Pidika

Sparsha	Male	Female
Ruksha	20	15
Snigdha	28	21
Shlakshna	39	29
Khara	09	07
Sheeta	41	32

Ushna	07	04
Pichchila	32	23
Table No. 9 – Showing the results of Sparshana pariksha in Dadru		

Pidika Swarup	Male	Female
Dravayukta	20	10
Ghana	10	14
Sthira	10	14
Laghu	17	10
Bruhata	11	14
Table No. 10 – Showing the Swarup of pidikas in Dadru patients		

Type of Varna	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Rakta Varna	3	2	3	2	2	2	2	2	1	1
Tamra Varna	7	4	5	4	4	3	2	2	1	1
Krishna Varna	1	1	1	1	1	1	1	1	1	1
Pita-rakta Varna	2	2	2	2	2	1	1	1	1	1
Table No. 11 – Showing the effects of Cap Hemecaire (Group I) + Syrup Hemecaire on the color of dadru										

Type of Varna	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Rakta Varna	5	4	2	2	1	1	0	0	0	0
Tamra Varna	9	3	5	1	3	1	1	1	0	0
Krishna Varna	3	3	1	1	0	0	0	0	0	0
Pita-rakta Varna	3	2	1	1	0	1	0	0	0	0
Table No. 12 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally (Group II) on the color of dadru										

Type of Varna	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Rakta Varna	4	5	2	3	1	1	0	0	0	0
Tamra Varna	6	7	4	5	2	3	1	1	0	0
Krishna Varna	2	1	1	0	0	1	0	0	0	0
Pita-rakta Varna	3	2	1	0	0	1	0	0	0	0
Table No. 13 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally + Shodhan tail as external application (Group III) on the color of dadru										

Dadru Swarup	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Unnata	12	6	10	5	7	2	3	1	0	0
Avanata	01	03	1	1	1	1	0	0	0	0
Table No. 14 – Showing the effects of Cap Hemecaire orally (Group II) on Swarup of dadru										

Dadru Swarup	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Unnata	16	08	09	05	03	2	1	1	0	0
Avanata	04	04	02	02	1	1	0	0	0	0
Table No. 15 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally (Group II) on dadru										

Dadru Swarup	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Unnata	11	09	07	03	04	01	1	1	0	0
Avanata	04	06	02	03	01	01	01	0	0	0
Table No. 16 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally + Shodhan tail as external application (Group III) on the Swarup of dadru										

Secretions	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Lasikasrava	7	4	4	1	2	0	0	0	0	0
Raktasrava	5	4	3	2	2	1	1	1	0	0
Puyasrava	1	1	1	1	0	0	0	0	0	0
Table No. 17 – Showing the effects of Cap Hemecaire (Group I) on the secretions in dadru										

Secretions	Before treatment		After treatment (in days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Lasikasrava	14	08	10	4	4	1	1	0	0	0
Raktasrava	5	3	2	2	1	1	0	0	0	0
Puyasrava	1	1	1	1	0	0	0	0	0	0

Table No. 18 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally (Group II) on the secretions in dadru

Secretions	Before treatment		After treatment (days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Lasikasrava	11	11	09	06	04	02	02	01	0	0
Raktasrava	04	03	02	01	01	00	0	0	0	0
Puyasrava	00	01	00	01	0	0	0	0	0	0

Table No.19 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally + Shodhan taila as external application (Group III) on the secretions in dadru

Symptoms	Before treatment		After treatment (days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Kandu	13	06	10	03	07	01	04	01	02	01
Daaha	04	06	03	04	02	02	01	01	01	01
Chimchimayan	06	05	03	03	01	01	01	01	00	00
Gaurav	08	06	06	03	02	01	02	01	01	01
Vedana	04	02	03	02	02	01	01	01	00	00

Table No.20 – Showing the effects of Cap Hemecaire (Group I) on the symptoms present in dadru

Symptoms	Before treatment		After treatment (days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Kandu	16	07	10	04	05	01	00	0	0	0
Daaha	04	04	03	03	01	02	0	01	0	0
Chimchimayan	06	07	04	03	01	02	01	01	0	0
Gaurav	12	04	08	02	05	02	03	01	01	0
Vedana	02	03	02	02	01	02	00	01	0	0

Table No.21 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally (Group II) on the symptoms present in dadru

Symptoms	Before treatment		After treatment (days)							
			4 th		8 th		12 th		15 th	
	Male	Female	M.	F.	M.	F.	M.	F.	M.	F.
Kandu	15	15	09	08	04	03	01	0	0	0
Daaha	04	04	02	01	0	0	0	0	0	0
Chimchimayan	08	03	04	01	02	0	0	0	0	0
Gaurav	10	12	08	09	05	04	02	02	0	0
Vedana	03	02	01	01	0	0	0	0	0	0

Table No.22 – Showing the effects of Cap Hemecaire + Syrup Hemecaire orally + Shodhan taila as external application (Group III) on the symptoms present in dadru

Types of Investigation	Before treatment		After treatment	
	Male ±S.D.	Female ±S.D.	Male ±S.D.	Female ± S.D.
Hb (gm)	12.7 ± 0.2	11.2 ±0.632	13.4 ±0.218	12.4 ±0.180
E.S.R.	17 ±4.300	21 ±3.600	15 ±3.750	18 ±2.340
Total W.B.C.	8300 ±325	7480 ±190	7900 ±280	7200 ±230
Neutrophils	68 ±6.2	62 ±4.8	59 ±2.3	57 ±2.7
Lymphocytes	41 ±7.4	43 ±3.5	45 ±4.3	44 ±2.1
Eosinophils	9 ±1.830	11 ±2.3	7 ±1.7	8 ±2.2

Table No.23 – Showing the status of pooled results of blood investigations from these patients treated with Cap Hemecaire (Group I)

Types of Investigation	Before treatment		After treatment	
	Male ±S.D.	Female ±S.D.	Male ±S.D.	Female ± S.D.
Hb (gm)	12.4 ± 0.2	11.7 ± 0.4	14 ±0.6	13.2 ±0.3
E.S.R.	19 ±3.2	20 ±2.8	14 ±2.9	16 ±3.0
Total W.B.C.	8400 ±180	7860 ±220	7650 ±225	7100 ±135
Neutrophils	63 ±5.8	65 ±3.37	54 ±3.2	56 ±4.0
Lymphocytes	40 ±1.3	43 ±1.8	41 ±1.2	39 ± 2.1
Eosinophils	11 ±2.7	10 ±1.8	06 ±1.3	06 ±2.1

Table No.24 – Showing the status of pooled results of blood investigations in dadru patients treated with Cap Hemecaire + Syrup Hemecaire orally (Group II)

Types of Investigation	Before treatment		After treatment	
	Male ±S.D.	Female ±S.D.	Male ±S.D.	Female ± S.D.
Hb (gm)	13.0 ± 1.7	12.4 ±1.2	13.8 ±2.0	13.2 ±1.4
E.S.R.	21.0	18.0	14.0	13.0

	± 2.7	± 1.36	± 1.2	± 2.3
Total W.B.C.	8700 ± 220	8150 ± 320	7450 ± 180	7300 ± 270
Neutrophils	65 ± 2.4	63 ± 1.7	56 ± 3.1	54 ± 2.45
Lymphocytes	42 ± 1.4	43 ± 2.4	40 ± 1.3	39 ± 3.7
Eosinophils	12 ± 1.7	10 ± 2.4	07 ± 2.3	06 ± 2.7

Table No.25 – Showing the status of pooled results of blood investigations in dadru patients treated with Cap Hemecaire + Syrup Hemecaire orally + Shodhan taila as external application (Group III)

Symptom	Carak	Sushruta	Ashtanga Hrudaya	Ashtanga Sangraha	Bhava Prakash	Kashyapa	Madhav	Bhel
Kandu (7)	+++	----	+++	+++	+++	+++	+++	+++
Pidaka (3)	+++	----			+++		+++	
Unnata Pidaka Mandal (6)	+++	----	+++	+++	+++		+++	+++
Tamra Varna (1)	----	+++	----	----	----	----	----	----
AtasipushpaVarna3	----	+++	+++	+++	----	----	----	
Visarpana (2)	----	+++	----	----	----	----	----	+++
Raukshya(2)	----	----	----	----	----	+++	----	+++
Daha (1)	----	----	----	----	----	+++	----	----
Sraava (2)	----	----	----	----	----	+++	+++	----
Vrudhi (1)	----	----	----	----	----	+++	----	
Ghana (1)	----	----	----	----	----	----	----	+++
Parishushka (1)	----	----	----	----	----	----	----	+++
Unnatagra (1)	----	----	----	----	----	----	----	+++

Table No.26 – Showing the symptoms in dadru as described in different ancient texts

Dravya	Rasa						Panchabhautiktva				
	Madhur	Amla	Lavan	Katu	Tikta	Kashaya	Prithvi	Aap	Tej	Vayu	Akash
Gandhak	---	---	---	+++	+++	+++	1	---	1	3	2
Dalchini	+++	---	---	---	+++	---	1	1	---	1	1
Ela	---	---	---	+++	---	---	---	---	1	1	---
Tamalpatra	+++	---	---	---	---	---	1	1	---	---	---
Guduchi	---	---	---	+++	+++	+++	---	---	1	3	2
Triphala	+++	+++	---	+++	+++	+++	6	3	3	9	6

Shunthi	---	---	---	+++	---	---	---	---	1	1	---
Bhrungaraj	---	---	---	+++	---	---	---	---	1	1	---
Neem	---	---	---	---	+++	---	---	---	---	1	1
Manjishtha	+++	---	---	---	+++	+++	2	1	---	2	1
Khadir	---	---	---	---	+++	+++	1	---	---	2	1
Anantmool	+++	---	---	---	+++	---	2	1	---	1	1
Bakuchi	+++	---	---	---	+++	---	2	1	---	1	1
Haridra	---	---	---	+++	+++	---	---	---	1	2	1
Jatamansi	+++	---	---	---	+++	---	2	1	---	1	1
Katuka	---	---	---	+++	+++	---	---	---	1	2	1
Total	08	01	00	08	12	05	18	09	10	31	19
Table No.27 – Showing the Panchabhautiktva of drugs used in dadru											

Discussion

Total 84 patients suffering from dadru were admitted in this clinical trial. Out of 84 patients (48 males and 36 females) were in the age group of 31-40 years, 13 males and 10 females were in 41-50 years' age group and 8 males and 6 females were above 51 years' age group [Table 2]. As shown in the Table 3, total 16 patients (male-9 and female-7) of vataj prakruti, 49 patients (male-28 and female-21) of Kaphaj prakruti and 19 patients (male-11 and female-8) of Vat-Kaphaj prakruti were studied. Table 4, 5, 6, and 8 show the complete picture of dadru in the studied dadru patients. Majority of the patients were having Tamra (36) and Rakta (23) color of dadru. 64 patients were in possession of Unnata-Swarup dadru and 20 had Avanata-Swarup of dadru. Twak-vidaran was present in only 20 patients. Lasikasrava was present in 55 patients, raktasrava in 24 patients and puyasrava in only 5 patients was present. Table 9 shows the result of Sparshana pariksha, in which Sheeta (male-41 and female-32), Shlakshna (male-39 and female-29), and Pichchila (male-32 and female-23) sparsha reveal the excessive percentage of Kapha. Table 10 describes the features of the pidikas. In the studied population, 39 males and 25 females were in possession of Unnata-Swarup pidakamandal. Some pidikas were dravayukta (30), some Ghanswarupi (24), some Sthira (24), some of small size (27), and some of large size (25).

The patients were treated in 3 different ways – 22 patients were included in Group I, 32 Patients were in the group II and in the Group III, 30 patients were included. Changes in the color of the affected skin was one of the parameter for assessment of the improvement. In Group I, 14 out of 22 patients reported normal color of the skin within 15 days. In Group II and III, all the 32 and 30 patients respectively regained the normal skin color within 10 days [Table 11, 12 and 13]. As far as the Unnata and Avanata skin was concerned, all the patients from Group I, Group II, and Group III reported 100% improvement within 15 days [Table 14, 15 and 16]. Secretions associated with Pidikas were controlled effectively in majority patients within the first week. Out of the total 84 patients, 55 patients had reported the presence of Lasikasrava, from which 40 patients were relieved from Lasikasrava within 7 days. All the patients were free from Lasikasrava at the end of the second week. Raktasrava in 24 patients and Puyasrava in 05 patients (05) were effectively controlled within 12 days [Table 17, 18 and 19]. Also symptoms like Kandu (72), Daha (26), Chimchimayan (35), Gaurav (52), and Vedana (16) were observed. In the first group, 16 out of 22 patients were relieved of Kandu, while in Group II and III, all the patients were relieved from Kandu at the end of 15 days. Daha was still observed in 2 out of 10 patients at the end of 15 days in the Group I, while in Group II and III, all the patients were free of Daha by the end of 15 days. Chimchimayan was completely absent in all the patients at the end of 15 days. In Group I, 13 patients were relieved of Gaurav within 15 days, while in group II and III, 15 out of 16 and 20 out of 22 patients respectively were relieved from Gaurav [Table 20, 21 and 22]. Blood

investigation before and after the treatment were done in all the patients included in the trial. But the figures obtained [Table 23, 24 and 25] do not reveal any remarkable variations from the normal counts. So no concrete conclusions could be drawn about the role of blood in the pathology of dadru.

Table No. 26 shows the list of symptoms mentioned in different ancient texts. Kandu and Unnata Pidika Mandal have been mentioned in 7 and 6 granthas respectively. Pidaka and Atasipushpa Varna have been described in 3 texts. Table No. 27 reveals the Panchabhautiktva of the ingredients of the drug tested. The composition states that Vayu is the main constituent of this combination. Akash and Prithvi are the next two main components of this combination. This excessive presence of Vayu, akash and Prithvi mahabhuta in the Panchabhautiktva constitution of the drug tested in dadru, result in the formation of Tikta and Kashay Rasa in the combination. Tikta and Kashay Rasa are responsible for the control of Pitta and Kapha dosha. As these two doshas have a conspicuous role in the pathology of dadru, it is quiet easy to understand, how the symptoms in the treated patients with these herbal combinations, have been diminished prominently.

Conclusion

From this clinical trial, we have concluded that Cap Hemecaire alone have a definite role in the management of dadru, but in combination with Syrup Hemecaire as an anupan, cap Hemecaire will be the drug of choice for dadru. Shodhan taila as an external application along with cap Hemecaire and Syrup Hemecaire is definitely effective in the treatment of dadru. While understanding the pharmacokinetics, we concluded that extreme manifestation of Vayu, Akash and Prithvi mahabhuta from the panchabhautik constitution of Hemecaire, resulted in formation of Tikta and Kashay Rasa, which are responsible for the control of deranged Pitta and Kapha dosha. As these two doshas have a conspicuous role in the pathology of dadru, it becomes quite clear, how the symptoms in the patients treated with Hemecaire, have been diminished prominently within 15 days.

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6. *Carak Nidan 5, BheI Samhita 5-16, Harit Samhita Chikitsa 1-6, Ashtangasangraha Chikitsa-19, Ashtanghridaya-14, Sharangdhara 1-85-88, Madhavnidan-49, Yogaratnakar 1-11.*