"COMPARATIVE CLINICAL STUDY ON KUMARI PULP AND ERANDA KARKATI PULP IN DUSHTA VRANA"

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Abstract:

Background: Ayurveda, an ancient life science, has gradually lost portions of its knowledge over time. However, certain principles and practices, including managing infected wounds (DushtaVrana), have remained consistent since ancient times. Wound management by surgeons involves cleansing the wound, removing dead tissue, and creating a moist environment using dressings. Natural healing is slow and susceptible to infection, leading to the formation of new ulcers. Some wounds cannot heal naturally due to limitations in cell migration. Surgeons aim to achieve better wound healing with minimal scarring and adequate pain control. Acharya Sushruta considered the Father of Indian surgery, detailed the concepts and management of wounds in his work. The body undergoes wound healing processes, but bacterial infections can hinder healing and cause life-threatening complications. Therefore, new therapies are needed. Acharya Sushruta described sixty wound treatment procedures divided into three significant groups: wound cleansing, wound healing, and correction of abnormalities. Debridement (Shodhana) is crucial for managing infected wounds (dushtavrana), followed by wound healing (Ropana). ErandaKarkati (Carica papaya) and kumari pulp are claimed to have anti-inflammatory, antibacterial, and wound-healing properties. They promote the healing of infected wounds by reducing symptoms such as discharge, pain, and foul smell. These drugs meet the requirements of being cost-effective, locally practical, antibacterial, debriding agents, and accelerators of the healing process. This study aims to evaluate the effects of Eranda Karkati pulp on DushtaVrana and compare its Efficacy with kumari pulp.

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INTRODUCTION

Ayurveda is the science of life and was having a golden time some centuries ago. According to the history of Ayurveda, it was well developed before because as time spent, we lost some portion of many Samhitas like suhsruta,kashyap etc. Ayurvedic acharyas have described many theories in their classical text, including dushtavrana.

A wound (Vrana) that refuses to heal or heals very slowly, inspite of best efforts by ChikitsaChatushpada viz., Bhishaka, Dravya, Upsthata and Rogi, is known as DushtaVrana (Infected wound). The knowledge of dushtavranahas been known since antiquity. The concepts of Vrana (wound) principles, such as causes, classification, stages, examination, treatment, bandaging, complication, etc., told by AacharyaSushruta, remain unchanged even in this 21st century.

Wound management by surgeons assists nature by cleansing and removing dead tissue from the wound and applying appropriate local dressings onto the wound to create a moist environment. This natural method is slow and explains why wound infection by germs or parasites is common. Even though natural healing is often gratefully accepted, the skin cover is fragile, thin and liable to break down and form another ulcer. Unfortunately, there is also a limit on how far cells can migrate; some wounds cannot heal naturally.

Achieving better wound healing with minimal scars and controlling the pain effectively are the prime motto of every surgeon. Wounds are ordinary from childhood to old age and necessary for surgical entry. Dusthavrana is a long-standing ulcer with profuse discharge and slough, where removing the debris and enabling the drug to reach the healthy tissue is more important. Many times, non-healing Vrana poses a problem in surgical practice. Healing of Vrana is a natural process, but due to the interference of vitiated Doshas, Vrana becomes Dushta, and the normal healing process gets delayed.

Sushruta- Father of Indian surgery in Sushruta Samhita, has explained vrana, its complication and management in detail. In vranitopaasaneeyaadhyaya, he has said that "if the rakshaa karma of vrana is proper, then the nishachaaras leave the patient, in the same way as mrugaas (deer) run away from the jungle terrified by a lion.

The body undertakes a series of actions collectively known as 'wound healing processes to heal a wound. Most clean, open wounds do not require antibiotics unless the wound is contaminated or the bacterial cultures are positive. Bacterial infection of wounds can impede healing and lead to life-threatening complications. Hence, we feel the need for a new therapy to overcome this.

Acharya Sushruta has described sixty procedures, i.e., ShashthiUpakramas, in treating Vranas.

These Shashti Upakramas are divided broadly into 3 significant groups.

1. Vranashodhana
2. VranaRopana
3. Vaikritapaham

Out of these three types first Upakrama, that is, Shodhana, is a must for the management of dushtavrana, and after that, Ropana is essential for vrana; many scientists all over the world are working on several preparations which may help in achieving complete VranaShodhana (debridement of the wound) and ultimately VranaRopana (wound healing).

For the follower of Shalyatantra, Ayurvedic effective management for wound healing is needed. Sushruta has used various techniques to achieve wound healing. For the shodhana and ropana of vrana, both local and oral treatment are explained by Sushruta. Planning cost-effective, reliable & technical simple management is the need of the day. The current problem, the Efficacy of erandakarkati pulp and kumari pulp in dushtavrana management, is an effort in that direction.

AacharyaCharaka, *Sushruta, Vagbhata, Bhavprakasha, Yogratnakar*and *Sharangdhara*explained the properties of *Shadarasa,* which shows that without consideration of *Rasas,* we are unable to do any treatment and even in our daily routine life, we must take proper quantity and sequence of *Rasas* to live a healthy life. While studying the properties of *Rasas,* it is observed that *Katu*and *Tikta Rasa* play an essential and surprising role in *VranaShodhana*and *VranaRopana.* In our study, we have such a drug.

ErandaKarkati(Carica papaya) and kumari pulp as an external application are claimed to have anti-inflammatory,antibacterial and wound healing properties and also to be beneficial in fissures in bhavprakash, Nadkarni's Indian Materia Medica and DravyagunaVigyana by P.V.Sharma. These drugs possess the properties of cleansing and disinfecting the infected wounds, thereby promoting their fast healing by reducing symptoms like Srava (discharge), Vedana (pain), Durgandhi (foul smell) etc. which indicate the state of infection in Vrana. Other research papers also claim it to be effective in reducing edema and slough in ulcers.

Thus, an attempt was made to find a drug to meet both these requirements in healing the ulcer. Further, a drug used for this purpose is ideal if the following requirements are fulfilled.

- It should be cheap and readily available.
- It should be locally effective as anti-inflammatory
- It should be antibacterial
- It should be an excellent debriding agent
- It should accelerate the healing process and
- It should not cause any allergic reactions

Since the *Erandkarkati*and kumari pulp has antimicrobial activity, and some research papers claimed to be effective in inflammation, oedema, as a debriding agent with anti-inflammatory properties, can effectively manage*DushtaVrana*. The aim is to study the

effect of *ErandaKarkati(Carica papaya)* pulp on *DushtaVrana* and if it is adequate to compare its Efficacy with kumari pulp.

AIM AND OBJECTIVES

The project has been undertaken with the following Aim and Objectives.

❖ **AIM :**

"To Study the Effect of *ErandaKarkati (Carica Papaya)* Pulp on *DushtaVrana* and if it is Effective to Compare its Efficacy with *Kumari Pulp".*

❖ **OBJECTIVE:**

1. To assess the local action of *ErandaKarkati* on *DushtaVrana*, in general, irrespective of *Dosha* involvement.
2. To identify bacterial infection in the ulcers and evaluate whether *ErandaKarkati* effectively treats the local infection.
3. To ascertain the debridement efficacy of this drug in cases where slough has formed.
   If it is practical, its relative Efficacy in comparison with the routinely used dressing agent *Kumari* Pulp.

MATERIAL AND METHOD

♦ **Materials :**

A. Drug:

1. Group A- ErandaKarkati pulp (Carica Papaya)
2. Group B-Kumari pulp

1. **Eranda Karkati**:

ErandaKarkati, which was fully grown and on the verge of ripening but had not changed colour (fully mature fruit), was collected, and pulp was made a fresh daily.

2. **Kumari pulp**:

Kumari pulp which was fully grown and on the verge of ripening but had not changed the colour (fully mature), was collected, and pulp was made a fresh daily

- **Ethical clearance –**

  Before starting clinical trials on patients with DushtaVrana, the ethical committee approved this dissertation and permission was granted from the committee.

Then clinical trials were conducted for the study in 2 groups.

B. Patient &Groups :

Sample Size:60 these patients were randomly allotted between two groups, Group A and B, respectively.

- **Methodology**

a. Place of Work :

At our college OPD of Shalyatantra department.

Plan of Work

1. A minimum of 60 patients of either sex were included in the study.
2. Prior, informed written consent from the patient has been taken.
3. History and localized examination of all the patients have been taken thoroughly with the help of a particular case paper format.
4. Patients diagnosed as 'DushtaVrana' were selected for study from Shalya Tantra O.P. Dept.
5. Group A was treated with the pulp of fully grown ErandaKarkati (Carica papaya) fruit and labelled as Group A.
6. While group B was treated with kumari pulp and labelled as Group B.
7. Both groups were treated for a maximum period of 21 days.
8. Those who improved were continued for a maximum period of three weeks if there were a progressive improvement. Those who did not come for follow-up were treated as dropouts.

Inclusion criteria

1. The patients of the age group 20-50 years.
2. The patients with lakshanas of dushtavrana are irrespective of its dosha, e.g. srava, gandh etc.
3. Patients of either sex were selected.

Exclusion criteria

1. The patients of age group below 20 years and above 50 years.
2. Patients suffering from systemic diseases such as AIDS, T.B., Diabetes Mellitus, Malignancy, Varicose Ulcers, leprosy, and pregnancy may affect the treatment outcome.
3. Ulcers with gangrenous changes

4. Ulcers with regional lymph node involvement

Observations and Result

A total of 60 patients were studied in two different groups as follows:

- Group A: 30 patients were treated with ErandKarkati pulp.
- Group B: 30 patients were treated with Kumari pulp.

The study began by closely observing and obtaining detailed medical histories of the patients selected for both groups. Before the study, all necessary investigations were conducted, and the patient's status regarding signs and symptoms of DushtaVrana was recorded. Throughout the study, no adverse drug effects were observed in any of the patients. A total of over 60 patients were treated, observed, and assessed. The collected data from all the patients were then summarized and statistically analyzed regarding vital statistics, observations and results, and statistical Analysis.

1. Age:

The patients were subdivided into 3 groups in the age group of 20-30, 31-40, and 41-50. The age distribution in the experimental Group has kept the same as the control group.

Table-1: Showing the age group

Age (Years)	Group (A)		Group (B)	
	No. of patients	Percentage	No. of patients	Percentage
20-30	07	23.33%	12	40.33%
31-40	13	43.33%	07	23.33%
41-50	10	33.33%	11	36.66%
Total	30	100%	30	100%

2. Sex

The female patients in trial group (A) and control group (B) were 13(43.33%) and 11(36.66%), respectively, and male patients were 17(56.66%) and 19(63.33%), respectively.

3. Occupation:

The occupation of patients in Group (A) and Group (B) were 05(16.66%) and 04(13.33%) as house workers, 02(6.66%) and 03(10%) as businessman, 12(40%) and 09(30%) as labour and 08(26.66%) and 11(36.66%) as sweeper and 03(10%) and 03(10%) in others respectively.

4. Diet

The patients having mix diet in Group (A) and Group (B) were 18(60%) and 20(66.66%), respectively, while those having a vegetarian diet were 12(40%) and 10(33.33%), respectively.

5. Site:

The site of Dushtavrana of patients in Group (A) and Group (B) were 17(56.66%) and 18 (60%) respectively at Lower Extremity (L.E.), 06(20%) and 05 (16.66%) at upper extremity, 01 (3.33%) and 01 (3.33%) at abdomen and 03 (10%) and 02(06.66%) at back, 03(10%) and 4(13.33%) at buttock.

6. Religion:

The Hindu patients in Group (A) and Group (B) were 24(80%) and 26(86.66%), respectively, and Muslim patients were 06(20%) and 04(13.33%), respectively.

OBSERVATION AND RESULT: -

Overall Result of Treatment:

After treatment of 21 days, among group A,6 patients were cured completely, 8 patients markedly improved, 8 moderately improved, and 3 were marginally improved.

Among group B, 9 patients were cured completely,8 markedly improved, 12 moderately improved, and 6 were marginally improved.

Overall cured:

Among 30 Group A patients, 6 (20%) were cured completely.

Among 30 Group B patients, 9 (30%) were cured completely.

Among 60 Group A and Group B patients, 15 (25%) patients were cured completely.

Statistical Analysis

Statistical Analysis as per Reduction of Pain in Group B

Table Showing Statistical Analysis as per Reduction of Pain in Group B -

	Mean	**S.D.**	**S. E**	**M.D.**	**t-value**	**D.F**	**P value**	**Result**
B.T	2.4	0.9322	0.1702	1.8	8.353	58	<0.0001	extremely significant
A.T	0.60	0.7240	0.1322					

The reduction % of pain in Group A was 64.33%, and in Group B, 75%.

the t-Test between Group-A and Group-B

Table showing t-Test between Group-A and Group-B after treatment

	Mean	S.D.	S.E.	M.D.	t-Value	D.F	Two-tailed P-Value	Result
Group-B	0.6000	0.7240	0.1322	0.2667	1.336	58	0.1868	not significant
Group-A	0.8667	0.8193	0.1496					

2. Discharge -

Statistical Analysis as per Reduction of Discharge in Group A

Table Showing Statistical Analysis as per reduction of Discharge in Group A -

	Mean	**S.D.**	**S.E**	**M.D.**	**t-value**	**D.F**	**P value**	**Result**
B.T	1.967	0.5561	0.1015	1.5	9.788	58	<0.0001	extremely significant
A.T	0.4667	0.6288	0.1148					

t-Test within the sample

Statistical Analysis as per reduction of Discharge in Group B

Table Showing Statistical Analysis as per reduction of Discharge in Group B -

	Mean	**S.D.**	**S.E**	**M.D.**	**t-value**	**D.F**	**P Value**	**Result**
B.T	1.8	0.5509	0.1006	1.467	11.00	58	<0.0001	extremely significant
A.T	0.3333	0.4795	0.0875					

The reduction % of discharge in Group A was 76.27% and in Group B, 81.48 %.

the t-Test between Group-A and Group-B

Table Showing t-Test between Group-A and Group-B after treatment -

	Mean	S.D.	S.E.	M. D.	t-Value	D.F	Two-tailed P-Value	Result
Group-B	0.3333	0.4795	0.08754	0.1333	0.9235	58	0.3595	not significant
Group-A	0.4667	0.6288	0.1148					

3. Tenderness: t-Test within the sample

Statistical Analysis as per Reduction of Tenderness in Group A -

Table Showing Statistical Analysis as per Reduction of Tenderness in Group A

	Mean	S.D.	S.E	M.D.	t-value	D.F	P value	Result
B.T	2.100	0.3790	0.1300	1.667	9.279	58	<0.0001	extremely significant
A.T	0.4333	0.6789	0.1240					

Statistical Analysis as per Reduction of Tenderness in Group B -

Table Showing Statistical Analysis as per Reduction of Tenderness in Group B

	Mean	S.D.	S.E	M.D.	t-value	D.F	P value	Result
B.T	2.033	0.7184	0.1312	1.867	12.587	58	<0.0001	extremely significant
A.T	0.1667	0.3790	0.0692					

The reduction % of tenderness in Group A was 79.36% and in Group B, 91.80 %

the t-Test between Group-A and Group-B

Table showing t-Test between Group-A and Group-B after treatment

	Mean	S.D.	S.E.	M. D.	t-Value	D.F	Two-tailed P-Value	Result
Group-B	0.1667	0.3790	0.06920	0.2667	1.878	58	0.0654	not significant
Group-A	0.4333	0.6789	0.1240					

4. Itching

t-Test within the sample

Statistical Analysis as per reduction of Itching in Group A

Table Showing Statistical Analysis as per reduction of Itching in Group A -

	Mean	S.D.	S.E	M.D.	t-value	D.F	P value	Result
B.T	1.033	0.7184	0.1312	0.8667	5.844	58	<0.0001	extremely significant
A.T	0.1667	0.3790	0.0692					

Statistical Analysis as per reduction of Itching in Group B

Table Showing Statistical Analysis as per reduction of Itching in Group B -

	Mean	S.D.	S.E	M.D.	t-value	D.F	P value	Result
B.T	0.8	0.6644	0.1213	0.7333	5.648	58	<0.0001	extremely significant
A.T	0.06667	0.2537	0.0463					

Reduction% of itching in Group A was 83.86% and in Group B 91.67%.

the t-Test between Group-A and Group-B

Table Showing t-Test between Group-A and Group-B after treatment -

	Mean	S.D.	S.E.	M. D.	t-Value	D.F	Two-tailed P-Value	Result
Group-B	0.06667	0.2537	0.04632	0.1	1.201	58	0.2347	not significant
Group-A	0.1667	0.3790	0.06920					

5. GANDHA

Gandh	Group	Mean Score	Sd	Mann WhitneyZ	P
D-0	A	1.00	.000	0.0	1.0 NS
	B	1.00	.000		
D-3	A	.90	.305	0.463	0.643 NS
	B	.93	.254		
D-7	A	.77	.430	0.311	0.756 NS
	B	.80	.407		
D-10	A	.43	.504	0.769	0.442 NS
	B	.53	.507		
D-15	A	.10	.305	0.399	0.690 NS
	B	.13	.346		
D-21	A	.07	.254	0.463	0.643 NS
	B	.10	.305		

Discussion

Despite brilliant progress in surgical wound management remains a subject of speculation, and the early manifestation of unsatisfactory healing pose serious complication leading to prolonged healing and even death in surgical practice

It was already said that non-healing and chronic wound are mostly concerned with poor hygine and doshaprakopa Without treatment in proper time, curable (Sadhya) ulcer may convert into Yaapya, Yaapya to Asaadhya, and Asaadhya may become fatal. According to Ayurveda if proper care is not taken for the simple wound then it may turn to DushtaVrana which is characterized by profuse discharge, foul smell and having irregular floor and unhealthy granulation tissue. DushtaVrana means without sign of healing.

Even though healing is a natural process, it is inhibited by various factors. Alleviating these inhibitory factors is the goal of ShodhanaChikitsa. At the end of Shodhana Chikitsa, Vrana becomes Shuddha Vrana and Ropana Chikitsa has to be followed further *Maharshi Sushruta*, the Father of Surgery, has described the management of wounds in his treatise. It is the best description ever, in the history of medical sciences in case of wound management. We don't find such a detailed and complete management in any stream of medicine. The work has been summarized in *Shashti Upakramas* i.e. Sixty measures (sixty different aspects) for wound management.

Among sixty measures some of the most important upkramas which is central focus of shalyatantra are shodhanachikitsa ,vranaropana , for the management of dushtavrana. As described previously Ayurvedic preparations can prove their efficacy for Shodhana karma in DushtaVrana. They can prove to be good and effective alternatives to modern dressings and antibiotics. This thesis is aimed to compare the effect of Papaya pulp and kumara pulp in the management of DushtaVrana.

Discussion on Topic selected-

Debridement of wound is necessary process for wound healing without getting the wound derided it is not possible to get granulation tissue developed. So such a drug is selected which has following property -

1. It should be locally effective as anti-inflammatory
2. Easily available.
3. It should be anti-bacterial
4. It should be a good debriding agent
5. It should accelerate the healing process and
6. Increase granulation thus enhance wound healing
7. It should be cheap.
8. It should not cause any allergic reactions.

Discussion on Observation Parameters:

1. **Effect on pain**:

The analysis shows that in case of Pain reduction percentage in Group A after 21 days of treatment was 64.33 %. In group B it was 75 %. The mean score in Group A was 2.433 before treatment and it was reduced to 0.8667 after treatment. The mean score in Group B was 2.4 before treatment and it was reduced to 0.60 after treatment. was relived as per the property of *Kumari Pulp* it having *Vatahara, Vedanasthapana*(Analgesic). In Group A, the pain was relieved but less compared to Group B.

Though in both Group A and B reduction of pain was significant but comparing these two groups, there is no much difference in both the groups.

2. **Effect on Discharge-**

The analysis shows that in case of discharge reduction percentage in Group A after 21 days of treatment was 76.27%. In group B it was 81.48 %. The mean score in Group A 1.967 before treatment and it was reduced to 0.4667 after treatment. The mean score in Group B was 1.8 before treatment and it was reduced to 0.3333 after treatment. The tikthakashay rasa of of papaya pulp and tikhtakumari pulp looks to be the causes in rectifying this feature of discharge in all the 30 cases of Group A

Though in both Group A and B reduction of discharge was significant but comparing these two groups statistically, there is no much difference.

3. **Effect on Tenderness**:

The analysis shows that in case of tenderness reduction Epercentage in Group A after 21 days of treatment was 79.36%. In group B it was 91.80 %. The mean score in Group A 2.1 before treatment and it was reduced to 0.4333 after treatment. The mean score in Group B was 2.033 before treatment and it was reduced to 0.1667 after treatment. As kumari pulp is ushnaveerya andKaphavataghna action it is sothagana, that might have improved the tenderness, while papaya pulp is vataghna hence reduces tenderness but less than compare to kumaripulp .

Though in both Group A and B tenderness reduction was significant, but comparing these two groups statistically there is no much difference in both the groups.

4. **Effect on Itching**:

Most patient have physiological itching during Rhuyamanawastha i.e. during healing and scar formation but that was considered as physiological itching.The analysis shows that in case of Itching reduction percentage in Group A after 21 days of treatment was 86.79% In group B it was 91.67%. The mean score in Group A 1.033 before treatment and it was reduced to 0.1667 after treatment. The mean score in Group B 0.8 was before treatment and it was reduced to 0.0666 after treatment. As kumari is Tikta rasa and also Krimighna and Kandughna, that might have reduced the itching.

Though in both Group A and B it reduction it ching was significant, but comparing these two groups statistically there is no much difference in both the groups.

5. **Effect on Gandh -**

On day 0, 3rd, 7th, 10th, 15th, 21st Mann Whitney Z test P- values are1.0, 0.643, 0.756, 0.442, 0.690, and 0.643 which are statistically non-significant. i.e.; on day 0, 3rd, 7th, 10th, 15th, 21st the change in Group A and Group B nearly the same.It observed that there was nearly same improvement in sign & symptoms in bot groups. Over all percentage of relief was almost equal in both groups. Comparison between two groups with respect to symptoms score was statistically evaluated by Mann – Whitney Z test. There was no significant difference found between two groups, i.e. both drugs is equally effective**.**

Overall effect of the ERANDA KARKATI PULP and

KUMARI PULP:

Considering the overall response of the patients to erandakarkati pulp and kumari pulp shows that

26.66% patients were cured completely, 30% patient markedly improved , 30% moderately improved , 13.33% were marginally improved.

On the basis of the above results it can be concluded that erandakarkati pulp and kumari pulp application helps to healing of Dusthavrana and provides significant relief in all its symptoms.

Thorough observation of the above results reveals that *kumari pulp* is better than erandakarkatipulp but there is no much difference in both the groups.

Statistical analysis of these findings indicate that response to treatment was markdly significant after comparing means of two groups.

Summary

The present clinical study entitled as "Comparative Clinical study on kumari pulp and *erandakarkati pulp* in *DushtaVrana."*

The work done with due references and description about *DushtaVrana* has been noted in this dissertation work from theoretical, practical and clinical point of view along with conceptual study in systemic way with both ancient and modern life.

The essential points of the study can be enumerated as follows.

I. Historical analysis demonstrates prevalence of*Dushtavrana* and its medical management can be traced to Vedic period.
II. Aetiopathological, clinical symptom, logical prognosis and management of *DushtaVrana* have been reviewed.
III. Drug review that the local application of on kumari pulp and *erandakarkati pulp* which has explaned in classical text i.e. *vranashodhak and vranaropak*in *Dushtavrana.*
IV. Clinical study was conducted on sixty patients. The patients were divided in two groups i.e. Group A and Group B. Patients with classical signs and symptoms of *DushtaVrana* were selected after considering inclusion and exclusion criteria. They were treated in OPD and IPD of Postgraduate Department of *ShalyaTantra*, in our college hospital.
V. *Vrana* was cleaned and, followed by application of *Erandakarkati pulp* in group A and *kumara pulp* in group B. In both Group*Vrana* was covered with sterile gauze piece and bandaged.
VI. The patients were selected strictly according to the selection criteria. The assessment criteria were finalized using standard methods. Follow up was taken up to the healing of the wound or maximum 21 days study, whichever is earlier. Observations were noted in the CRF of the patient at each follow up.
VII. The data collected after completion of the study and were analyzed using appropriate statistical methods.
VIII. Some patients who were not regular with their follow up or those who left the trial during the study were excluded from the study in both Groups. No any other antibiotics (oral, parenteral or local) or any other type of supplementary treatment was given to any patient during the study. No adverse effects were observed in any patient in both Groups.
IX. We have selected both the subjective parameter & objective parameters. Pain,Itching,tenderness,discharge, and gandha
X. It was found that from observation the *kumari pulp* in management of *DushtaVrana* is also good in comparison with *Erandakarkati pulp.* And there is no major statistical difference between these two drugs, but marginally kumari pulp is more effective on the basis of subjective and objective criteria. So the above described detailed study revealed that the application of *Erandakarkati pulp* and *Kumari pulp* has definite role in the management of *DushtaVrana.*

Conclusion

In this study total 60 cases of DushtaVrana were treated with kumari pulp and erandakarkati pulp. On the basis of observation and results of the study following conclusions can be drawn.

- Age group between 20-30 & 31-40 is more prone to DushtaVrana.
- Males are more prone to dushtavrana in both the groups.

- Labours and Sweepers i.e lower cominutyis more prone to dusthaVrana.
- Maximum patients belongs to mixed diet.
- Maximum patients are suffering from wound in lower limb.
- Maximum patients are from hindu community.
- Smokers are more prone to DusthaVrana in both the group.
- The condition described as Dushtavrana in Ayurvedic literature can be regarded as Infective wounds, Arterial wounds, Varicose ulcers, etc. in contemporary science.
- Wound healing process is a normal phenomenon starts right after an injury and continues in sequential manner till the formation of healing scar. But certain general conditions like nutritional deficiency, hormonal imbalance and various systemic diseases retard the normal process of healing. Some local factors like slough, infection, foreign body and deficient blood supply, etc also retard the process of healing.
- It shows that in this series the 25% patients had completely cured, 26.66% of patients got marked improvement, 33.33% patients showed moderate improvement and 15% of patients got mild improvement. None of the patients of this series remained unchanged.
- After treatment of 21 days ; among group A ,6 patients were cured completely, 8 patient markedly improved , 8 moderately improved , 3 were marginally improved.
- Among group B; 9 patients were cured completely, 8 patient markedly improved , 12 moderately improved, 6 were marginally improved.
- Both kumari pulp and erandakarkati pulp has shown vranashodhaka, vranalekhana, putihara, vedanasthapaka, vranaropaka and jantughna properties in management of dushtavrana.
- Kumari pulp and erandakarkati pulp both are almost effective in dushtavrana.
- But marginally on the basis of subjective criteria and on the basis of wound healing Kumari pulp is markedly more effective in the management of dushtavrana in all aspect.
- This study shows that kumari pulp and erandakarkati pulp is easily available in tribal areas, abundant supply round the year and is economical. It is easy to prepare the dressing since it does not require any special skill, use as home remedy and cost effective. Kumari pulp and erandakarkati pulp is a good option available with properties close to an ideal *Dushtavrana dressing.*
- From modern point of view the ErandaKarkati pulp and kumari pulp acts as anti-microbial agent.
- Even after wound healing and post treatment follow up no adverse reaction found in the present study. Also complication like keloid formation and hypertrophic scar formation are not found in any case.
- In *Sushrutsamhita,* various plant leaves are mentioned as per vitiation of *doshas.*So for better result, prediminance of *dosha* should be considered before doing chikitsa of dushtavrana.

Scope for Further Study:

The study, which carried out, contained only 30 subjects in particular groups, which is small in number. The patients selected were of different types of dushtavrana, etc. Here we suggest further study to be conducted in large number of patients of particular type of dushtavrana in multi-centers, which may confirm the observations made through the study.

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