



EFFECT OF VAJARAKA GHRITA AFTER SODHANA IN THE MANAGEMENT OF EK-KUSTHA W.S.R. TO PSORIASIS

Dr. Avanish Shukla*¹, Payal Sharma² and Santosh kumar Bhatted³

¹Assistant Professor, Dept. of *Panchakarma*, Shekhawati Ayurvedic College, Pilani(Jhunjhnu).

²Assistant Professor, Dept. of *Shalaky Tantra*, Shekhawati Ayurvedic College, Pilani (Jhunjhnu).

³Associate Prof, Dept. of *Panchakarma*, A.I.I.A. Delhi.

Article Received on 13/01/2017

Article Revised on 04/02/2017

Article Accepted on 26/02/2017

*Corresponding Author

Dr. Avanish Shukla

Assistant Professor, Dept. of
Panchakarma, Shekhawati
Ayurvedic College, Pilani
(Jhunjhnu).

ABSTRACT

Skin is a link between internal and external environment and is also the seat of complexion, which maintains beauty and personality as the interface with the surroundings, skin plays the most important role in protecting against pathogens. Its other main functions are insulation and temperature regulation, sensation and vitamin D and B synthesis.

Skin is considered one of the most important parts of the body. Patients of skin disease always experience physical, emotional & socio-economic embarrassment in the society. Psoriasis is one of the commonest skin diseases affecting the patient's life. The available medication like topical and oral steroids and PUVA therapy etc are associated with several adverse effect and does not provide relief. The relapses and remission are very common. Hence a diagnosed case of psoriasis was treated with classical *Panchakarma* treatment to find out the Effect of Vajarak Ghruta after Sodhana in the management of Ek-Kustha.

KEYWORDS: *Panchakarma* treatment, Vajarak Ghruta, Ek-Kustha.

INTRODUCTION

Psoriasis is one the most dreadful dermatological condition affecting up to 3.5% of the world's^[1] & approximately 0.44% to 2.8% in Indian population^[2]. It is a common, chronic and non- infectious skin disease characterized by well defined slightly raised, dry erythematous macules with silvery scales and typical extensor distribution affecting any sex & having incidence at any time throughout the life since incidence from childhood to aged one has been reported. Unlike other dermatological conditions psoriasis has systemic

manifestation like arthritis. Peak incidence period is 3rd & 4th decade of life due to which patients find themselves helpless to do daily routine work. Social embarrassment is a key factor to these patients due to which they get frustrated and suicidal tendency developed to large extent. So to increase awareness in people an independent, nonprofit NGO named National Psoriasis Foundation (USA) is established aiming curing psoriatic patients & educating people about this condition. People awareness program in the Month of August has been declared as “National Psoriasis Month” & “29th Oct has been officially declared as World Psoriasis Day.”

The exact etiology of the disease is still a mystery. Many believe it's of autoimmune nature. Role of T cell & TNF α has been widely accepted but still exact nature of etiology is still not realized. Modern medicine treats psoriasis with PUVA, Topical & Systemic corticosteroids & Anti mitotic drugs. But serious side effects like bone marrow depletion; Liver toxicity etc are again area for reconsideration of the therapy for longer duration.

In *Ayurveda*, all dermatological conditions are grouped under broad term *Kustha* which again have two divisions *Mahakustha* & *Kshudrakustha* on the basis of their symptoms, severity & involvement of deeper *Dhatus*. *Kustha* is described since time of *Vedas*. The psoriasis has a wide range of presentation from just a single spot to involvement of whole body. Careful analysis of the nature of disease shows a close resemblance of symptoms between Psoriasis & *Ek-Kustha*. *Ayurveda* has its own systemic approach plan to treat diseases.

Specific *Vamaka* and *Virechaka* drugs mentioned for *Kushtha* are used. In *Kushtha*, *Snehana* is indicated after *Sodhana*, hence *Shamana Sneha* with *Vajaraka Ghrita* is given in both the groups after *Vamana/Virechana* respectively.

MATERIALS AND METHODS

Aim of the study

To evaluate the therapeutic effect of *Vajaraka Ghrita* After *Sodhana* In The Management of *Ek-Kustha*.

❖ Source of the data

The study was conducted on 30 clinically diagnosed & confirmed cases of Psoriasis from OPD & IPD section of National institute of *Ayurveda* Jaipur. This study has been done with Registration no. RAU/Aca/732/13-14 Dr. Sarvapalli Radhakrishnan, Rajasthan *Ayurveda* University, Jodhpur.

❖ Criteria of diagnosis

The main criteria of diagnosis of patients were based on the cardinal and associated signs and symptoms of the disease based on the *Ayurvedic* and modern texts. These have been depicted in detail in the criteria of inclusion.

❖ **Criteria of inclusion**

1. Patients who are willing for trial.
2. Patients in the age group of 20 – 60 years.
3. Patients of *Ek-kushtha* diagnosed by *Ayurvedic* classics and psoriasis diagnosed by Modern classics.
4. Patients who are fit for *Vamana & Virechana Karma*.

❖ **Exclusion criteria**

1. Patients with age below 20 & above 60 yrs.
2. Pregnant women's & lactating mothers.
3. Patients suffering from serious systemic disorders like Diabetes Mellitus, Cardiac & Renal Disorders, Malignant disease, Major liver disorders, tuberculosis, hypertension etc. Patients Contraindicated for *Vamana & Virechana* as per classical *Ayurvedic* Texts.

Work Plan

Grouping

- After the complete examination and investigation all the 30 Patients will be divided into two groups (15 Patients in each group) details as below.

Group A- In this group *Vamana Karma* will be done followed by oral administration of *Vajaraka Ghrita* as *Shamana Sneha*.

Group B- In this group *Virechana Karma* will be done followed by oral administration of *Vajaraka Ghrita* as *Shamana Sneha*.

Vamana Karma - The below mentioned drugs are used for *Vamana Karma* in different steps.

Drugs used in *Purvakarma* in *vamana karma/virechana karma*

1. *Deepana Paachana- Panchakola Choorna Snehapana –Shudha Go- Ghrita*.
2. *Sarvanga Abhyanga- Dashamoola Taila*.
3. *Svedana- Dashamoola Kvatha Bashpa Sveda*.

Drugs used in *Pradhanakarma*

4. *Vamana Yoga*; The combination of drugs used mentioned below *Kutajbeeja, Madanphla, Mdhuka, Patola, Nimba*
5. *Virechana Yoga*: The combination of below mentioned drugs used. *Triphala Kvatha, Trivrith Choorna, Danti choorna*^[3]

Drugs used in *samana sneha*-(*vajaraka ghrita*)

▪ **Selection of the trial drug**

Drug selected for current clinical trial was *Vajraka Ghrita* (*Astang Hridya Chikitsa Sthana-19*).

Preparation of Trial drug

▪ **Method of preparation**

The ingredients of the decoction i.e *Vasa, Patola, Guduchi, Karanja, Haritaki, Nimba, Amalaki, Usira, Bibhitak, Kantkari* were taken into equal amount and *Ghrita paka* was made per instructions in *Sharangdhar Samhita*.

- **Dose:** 20 ml once a day.
- **Duration of Trial:** 1 months

Study design

- Open Label
- Randomized
- Interventional type

Method of evaluation

a) **Clinical screening**

A detailed case history Performa was specially prepared for this purpose. All the following mentioned points were recorded in this Performa before initiating the trial. The same protocol was adopted after the completion of therapy.

b) **Pretrial screening**

This was done before the commencement of the clinical trial.

1. Complete medical history.
2. Routine hematological tests.
3. Skin biopsy if required.
4. X-Ray and ECG if required.

a) **Follow up Screening**

Once the trial was started the IPD patients were evaluated daily but the OPD patients called for follow up on every 15th day to evaluate their clinical status and to observe the effects or adverse effect of the treatment. The routine investigations and gradation of signs and symptoms were recorded. A follow up study was done after 2 months of trial to observe the relapse rate.

Criteria of Assessment

All the patients were assessed for relief in signs and symptoms after the completion of trial. To give subjective signs and symptoms grading/scoring system was adopted which is as follows.

Subjective parameters

1. PASI Score (Psoriasis area & Severity Index)

- PASI Score was considered as both subjective & objective criteria as it covers both subjective as scaling, indurations and objective parameters as coverage area. For the calculation of score we used Online PASI Calculator Software.

Elements

- A. Body regions as percent of body surface area
- B. Extent of body region affected
- C. Extent of psoriatic changes

A. Body regions as percent of body surface area.

Body Regions	Code	% Body surface area
Head	H	10
Trunk	T	20
Upper extremities	U	30
Lower extremities	L	40

B. Extent of body region affected.

Different Body regions & their extend indicator were tabulated as follows.

Percentage of body region affected	Extend indicator
0 – 5%	0
5 – 25%	1
25 – 45%	2
45 – 55%	3
55 – 75%	4
75 – 95%	5
95-100%	6

C. Extent of psoriatic changes.

This was graded as follows given in the table.

Symptoms	Code	Extend
Erythema	E	0 – 4
Infiltration	I	0 – 4
Desquamation	D	0 – 4

PASI = SUM (percent BSA in body region)* (extent Erythema in region) + (extent infiltration in region) + (extent desquamation in region)* (extent of body region affected) = [0.1* (Erythema head) + (infiltration head) + (desquamation head)* (extent of head affected)] + [0.2*(Erythema trunk) + (infiltration trunk) + (desquamation trunk)* (extent of trunk affected)] + [0.3*(Erythema upper extremities) + (infiltration upper extremities) + (desquamation upper extremities)* (extent of upper extremities affected)] + [0.4* (Erythema lower extremities) + (infiltration lower extremities) + (desquamation lower extremities)* (extent of lower extremities affected)]

INTERPRETATION

★ **Minimum score – 0**

★ **Maximum score – 72**

Below given gradation was taken from developing guidelines for clinical research methodology in *Ayurveda*” by principal investigator Prof. M. S. Baghel, institute for postgraduate teaching & research in *Ayurveda* gujarat ayurved university jamnagar – 361 008 india 2011.

2. *Aswedanam* (Anhydrosis).

1	Normal	0
2	Improvement	1
3	Present in few lesions	2
4	Present in all lesions	3
5	Aswedanam in lesion and uninvolved skin	4

3. *Mahavastu* (Extent of lesion).

1	No lesions on Mahasthanam	0
2	Lesion on partial part of hand, leg, neck, scalp, hand, back.	1
3	Lesions on most part of hand, leg, neck, scalp, trunk, back.	2
4	Lesions on whole part of Mahasthanam (Vast area)	3
5	Lesions on whole body	4

4. *Matsyashaklopamam* (Scaling).

1	No scaling	0
2	Mild scaling by rubbing/by itching (scaling from some lesionis)	1
3	Moderate scaling by rubbing/by itching (from all lesions)	2
4	Severe scaling by rubbing / by itching (from all lesions)	3
5	Scaling without rubbing / by itching (from all lesions)	4

Kandu (Itching index): Symptom rating scale was as follows.

- 0 - No itching
- 1 - Mild itching not disturbing normal activity
- 2 - Occasional itching disturbs normal activity
- 3 - Itching present continuously & even disturbing sleep

Overall Effect of Therapy

Each patient was assessed on the basis of signs & Symptoms of the disease on the basis of grading pattern as well as percentage relief, patients were classified as follows.

Showing criteria of overall effect.

Complete improvement	100% relief
Marked improvement	More than 75% relief
Moderate improvement	50 to 75 % relief
Mild Improvement	25 to 50 % relief
No Improvement	Below 25 % or no relief

Thus in this way the clinical study was carried out & the obtain observations were analyze for statistical significance.

CLINICAL OBSERVATIONS AND RESULT

Observations

The observations made of 30 patients with Psoriasis (*Ek-kustha*) were as follows.

Observation on Demographic data: Maximum 40% of patients were from the age group of 21-30 years, 86.67% were male, 50% married, 90% were of Hindu religion, 73.34% were graduates*, 50% were unemployed(students), 66.67% were from middle class, 76.67% were of vegetarian, 63.34% were having *Vishmangni*, 70% were having *Kroora Koshtha*, 56.67% belonged to *Vata Kapha Prakriti*, 46.67% were having *Avara Satva* and 80% were having *Madhyama Samhanana*. *Vyayama Shakti* was *Madhyama* in 56.67%, 100% patients were having addiction to tea alone.

Data related to disease

20% Patients were having the positive family history, 66.67% each patients were having chronicity history of in between 0 to 5 year, 86.67% were gradual onset, 73.33% patients were giving history of day sleep, 23.33% of patient were having history of anxiety and tension, 100% of patient were taking Allopathic treatment regularly.

Data related to treatment

maximum 33.33% of each patient was administered *Snehapana* for 4 and 5 days, 6-8 *Vamana Vega* were found in 80% patient, *Pittanta Vamana* was found in 60% of patient, Maximum patients had proper *Laingiki Shuddhi* which indicates towards the proper application of *Snehana*, *Swedana* and effectiveness of the drugs and formulation selected for *Vamana*.

Maximum 53.33% of patients had between 11 to 20 *Virechana Vega*, *Kaphanta Shuddhi* was observed in 60 % of the patients. *Lainghiki Shuddhi* like *Shareera Laghuta* was observed in 86.66% of patient, *Indriya Prasadana* were observed in 80%, *Agni Deepti* in 73.33% of patient maximum 83.33% followed *Samsarjana Krama* for 5 days, *Virechana Vyapad* like vomiting was observed in 13.33% of patients and 6.66% each complained headache and pain abdomen.

RESULTS

A). Subjective parameter

Percentage of improvement in each parameter of each scale in both the treated groups is calculated in the following subjective parameters.

1. *Aswedanam* 2. *Mahavastu* 3. *Matsyasaklopama* 4. *Kandu*

B). Overall assessment of treatment

Assessment of overall effect of the treatment was done based on improvement in Subjective parameters i.e., PASI score.

Statistical Methods

- All the Results were calculated by using software In Stat graph pad 3.
- Wilcoxon Matched Pairs Signed Ranks Test has been used for subjective parameters.

Effect of therapy on subjective parameters

- a) Comparison of effect on *Kandu*(itching index) in two groups after complete treatment.

<i>Kandu</i>	N	Mean		Dif.	% of Change	SD	SE	W	P
		BT	AT2						
Group A	15	2.67	0.87	1.80	67.5	0.68	0.17	120	< .0001ES
Group B	15	2.73	0.73	2.00	73.17	0.76	0.19	120	<.0001ES

- b) Comparison of effect on *Aswedana*(Anhydrosis) in two groups after complete treatment.

<i>Aswedana</i>	N	Mean		Dif.	% of Change	SD	SE	W	P
		BT	AT2						
Group A	15	3.20	2.33	0.87	27.08	0.83	0.21	45	0.0039HS
Group B	15	2.73	1.80	0.93	29.26	0.59	0.15	78	.0005ES

- c) Comparison of effect on *Mahavastu* (Extent of lesion)in two groups after complete treatment.

<i>Mahavastu</i>	N	Mean		Dif.	% of Change	SD	SE	W	P
		BT	AT2						
Group A	15	2.40	1.13	1.27	52.78	0.59	0.15	105	.0001 ES
Group B	15	2.33	1.40	0.93	40	0.46	0.12	91	.0002 ES

- d) Comparison of effect on *Matshyasklopama*(scaling) in two groups after complete treatment.

<i>Matshyasklopama</i>	N	Mean		Dif.	% of Change	SD	SE	W	P
		BT	AT2						
Group A	15	3.87	1.93	1.94	50	1.16	0.30	105	.0001ES
Group B	15	3.27	2.00	1.27	38.77	0.80	0.21	91	.0002 ES

- e) Comparison of effect on PASI score in two groups after complete treatment.

PASI score	N	Mean		Dif.	% of Change	SD	SE	W	P
		BT	AT2						
Group A	15	23.59	8.14	15.45	65.50	8.90	2.30	120	<.0001ES
Group B	15	19.00	8.61	10.39	54.70	5.04	1.30	120	<.0001ES

NOTE: ES: Extremely Significant, **VS:** Very Significant, **S-** Significant, **NS-** Non Significant Showing *Vamana Karma* was statistically extremely significant in *Kandu* (P 0.0001), *mahavastu*, *Matshyasklopama* and in PASI score and highly significant in *Aswedana*.

In Group-A mean value of *Kandu* score was 1.8 after complete treatment (*Vamana Karma+Samana Sneha*) and In Group-B mean value of *Kandu* score was 2.0 after complete treatment (*Virechana Karma+Samana Sneha*) and comparison was done between these two group having not significant .(p value=0.4639)

In Group-A mean value of *Aswedana* score was 0.8667 after complete treatment (*Vamana Karma+Samana Sneha*) and In Group-B mean value of *Aswedana* score was 0.9333 after complete treatment (*Virechana Karma+Samana Sneha*) and comparison was done between these two group having not significant .(p value=0.7515)

In Group-A mean value of *Mahavastu* score was 1.267 after complete treatment (*Vamana Karma+Samana Sneha*) and In Group-B mean value of *Mahavastu* score was 0.9333 after complete treatment (*Virechana Karma+Samana Sneha*) and comparison was done between these two group having not significant .(p value=0.0943)

In Group-A mean value of *Matshyasklopama* score was 1.933 after complete treatment (*Vamana Karma+Samana Sneha*) and In Group-B mean value of *Matshyasklopama* score was 1.267 after complete treatment (*Virechana Karma+Samana Sneha*) and comparison was done between these two group having not significant.(p value=0.1039).

In Group-A mean value of PASI score was 15.453 after complete treatment (*Vamana Karma+Samana Sneha*) and In Group-B mean value of PASI score was 10.393 after complete treatment (*Virechana Karma+Samana Sneha*) and comparison was done between these two group having not significant.(p value=0.1301).

DISCUSSION

Psoriasis is a papulosquamous disorder of the skin, characterized by sharply defined erythematous lesions. They vary in size from pinpoint to large plaques. At times, it may manifest as localized or generalized pustular eruption.

According to modern medical science drugs like anti malarials, metabolic Disorders, infection (Streptococcal) stress and winter season etc. are triggering factors of the disease. Role of T-cells in the pathophysiology of psoriasis is well established. Recent research studies have shown stress is major cause for exacerbation and suppression of psoriasis. Hence

psychological aspect have played major role in aetiopathogenesis and management of psoriasis.

Looking at the impact of psoriasis in society, it is necessary to find out effective, safe and cheap medication in *Ayurveda*. According to *Ayurveda* all the skin disease come under broad “*KUSTHA*”. Psoriasis is considered as one of the type of *Kustha* i.e. *Kshudra Kushtha* under the heading of *Eka- Kustha*.

Effect of Shamana Drug

Vajraka Ghrita

After analyzing the *Rasadi- Panchaka* of *Vajraka Ghrita* it was found that this *Sidhha Ghrita* has dominant *Tikta, Katu, Kashaya Rasa, Laghu* and *Rooksha Guna, Ushna Virya, Katu Vipaka*. It acts mainly for *Kapha* and *Vata Dosha*.

1. Dosh- In this combination 40% drugs are *Tridosh-har*. As *Kushtha* is *Tridoshaja Vyadhi* it helps in *Samprapti Vighatana*. In case of *Eka-kushtha* it is *Vata-Kapha Pradhana Vyadhi*. Here 100% drugs are *Kaphaghna* and 50% *Vataghna*.

2. Dushya- *Vajraka ghrita* has 100% *Laghu*, 60% *Rooksha Gunayukta Dravyas*. In *Ekakushtha* all 4 *Dushyas* i.e. *Tvak, Rakta, Mansa, Ambu* get vitiated. With these *Gunas Kledaharan* takes place.

3. Agni-Ama- As most of the drugs have *Deepana-Pachana* properties i.e. 50%, it is helpful to enhance *Agni* and for the digestion of *Aama*. As *Jatharagni* enhances, it ultimately increase power of dependant *Dhatvagnis*. In *Eka-kushtha* both ***Rasdhavagni*** and ***Mansadhavagni*** get disturbed. They should be proper as they are responsible for the *Tvacha-Utpatti*.

4. Srotas- As maximum drugs are *Laghu, Rooksha* and have *Tikta-Kashaya Rasa* which has *Sroto-Vishodhaka* property. It decreases *Sanga* in the *Srotas*. As all path is cleared these *Srotas* start nourishment of the body in proper manner.

5. Lakshana- As all drugs are medicated in *Go-ghrita* which has property of *Samskarasyaanuvartanam*. That it carries properties of other *Dravya* associated with it but maintain itself too. With *Snigdha, Mridu* properties it decrease *Tvaka Rookshata* and other

Lakshanas as *Vedana, Daha, Kandu* in *Eka-kushtha*. As 100% *Kaphaghna*, 50% *Vataghna* it helps to decrease all associated signs and symptoms.

- ❖ *Guduchi, Amalaki, Haritaki, Bibhitaki* has potent Anti inflammatory, Analgesic, Antibacterial, Immunomodulatory, Antioxidant property. It plays key role in reducing inflammation & early prematuration of cells.
- ❖ Drugs like *Amruta, Amalaki, Haritaki; Bibhitaki* has potent *Rasayan* property which helps in preventing the multiple relapse of the disease by strengthening body's own immune system.
- ❖ *Guduchi* is the drug known for its *V-P Shamaka* and *Rasayana* property. Recent research work on *Guduchi* had proved, that it repairs the damaged cells and rejuvenates the whole body. It is best, immunomodulator and memory enhancing herb. Aqueous extract of the stem showed anti-inflammatory, analgesic and anti pyretic activity. It also showed anti-oxidant activity and amelioration of cyclophosphamide induced toxicity. The stem part is mainly used for immunomodulatory activity.^[4]

Vasa- *Raktapitta, Kshaya, Shwas, Kasa, Prameha, Kushtha, Jwarhara*^[5]. **Guduchi-Kamala,** *Kushtha, Krimi, Jwar, Chhardi, Raktapittanaska*.^[6] **Nimba-Kas,** *Jwar, Kushtha, Gulma, Arsha, Krimighna*^[7] **Ushira-Kushtha,** *Visarpa, Shwitra, Prameha, Krimi*^[8] **Karanja-Kushtha,** *Prameha, Shiro-roga, Udavarta, Gulma*^[9] **Haritaki-Kushtha,** *Gulma, Udavarta, Shosha, Pandu, Arsha, Grahani*^[10] **Patola-** *Rakta Sodhana, Sothahara, Kaphaghana, Balya, Vranasodhana-Ropana Pittasaraka, Anulomana, Krimighana*^[11]

***Triphala* as an immunomodulator;**^[12]

Triphala has an immunomodulatory activity when tested using carbon clearance test and Delayed Type Hypersensitivity (DTH) [Foot Pad Swelling] response. *Triphala* Mega extract when administered at 500 mg/Kg and 1000 mg/Kg orally showed an increase in carbon clearance index which reflects enhancement of phagocytic function of mononuclear macrophage and nonspecific immunity. There was an increase in DTH response or cell mediated immunity. *Triphala* mega extract had a stimulatory effect on T cells. The good immunomodulatory property of *Triphala* could be attributed to flavonoids, alkaloids, tannins, saponin glycosides and phenolic compounds⁴⁰. *Triphala* inhibited the stress induced by noise (4hour /day for 15 days). *Triphala* at a dose of 1g/Kg/day for 48 days, enhanced Avidity Index (AI), but neutrophil function like adherence, phagocytosis were not altered. Neutrophil function was enhanced in *Triphala* immunized group with a decrease in corticosterone level.

Neutrophil function was significantly suppressed followed by increase in corticosterone levels both in noise-stress and noise–stress immunized groups. The noise stress induced changes were significantly prevented in *Triphala* administered group. Oral administration of *Triphala* stimulates neutrophil functions in immunized rats and stress induced suppression in neutrophil function were prevented by *Triphala*.

CONCLUSION

- Due to very wide range of clinical manifestations we have to conclude that no single disease in *Ayurveda* can be exactly co-related as Psoriasis. According to Symptoms of disease & Concepts of *Ayurveda* to some extent we can consider *Ek- Kustha* as Psoriasis. As maximum Patients registered in trial also shows symptoms of *Ek- Kustha* so we can finally conclude that ***Ek-Kustha can be taken as Psoriasis***.
- *Vajaraka Ghrita* is very effective in psoriasis(*Ek-kustha*) due to its *Shamana propertie sand Tridoshhara Guna*. These drugs also having anti-inflammatory, immune-modulator, analgesic and antioxidant effect.

REFERENCES

1. Kurd SK, Gelfand JM. The prevalence of previously diagnosed and undiagnosed psoriasis in US adults: results from NHANES 2003-2004. *J AM Acad Dermatol*, 2009; 60(2): 218-24.
2. Dogra S, Yadav S. Psoriasis in India: prevalence and pattern. *Indian j Dermatol Venereol Leprol*, 2013; 76(6): 595-601.
3. *Agnivesha, Charaka Samhita with Ayurveda Deepika* Commentary of Chakrapani, *Chikitsa sthana ,Kustha chikitsa Adhyaya,7/44* , edited by Yadavaji Trikamaji Acharya, Varanasi ,Chaukambha Sanskrit Samsthana, 2004.
4. www.ijpsdr.com International Journal of Pharmaceutical Sciences and DrugResearch Research Article ISSN 0975-248X by Shah V. K. Zalavadiya V. I. Sheth N.R. Raval M. K. Dudhrejiya A.V. Golwala D.K. APMC College of Pharmaceutical Education and Research, Himatnagar, Gujarat, India, 2010.
5. Bhavaprakasha nighantu,Guducyadi varga 89-90.
6. Bhavaprakasha nighantu,Guducyadi varga 9-10.
7. Bhavaprakasha nighantu,Guducyadi varga 93-94.
8. Bhavaprakasha nighantu,Karpuradi varga 87-88.
9. susurta sutra 45.

10. Bhavaprakasha nighantu, Haritakyadi varga 29-32.
11. Dravyaguna Vijnana Dr. Gyanendra Pandey Vol. III Chaukhambha Krishnadas Academy, Varanasi; print 2005 page no. 93-94.
12. D.V. Gowda¹, Ganesh Muguli^{1,2}, Rangesh P.R², Rohan D. Deshpande*¹
Phytochemical and pharmacological actions of triphala Int. J. Pharm. Sci. Rev. Res., 2012; 15(2): 12, 61-65.