"Evaluate the efficacy of *Kareeradi Kwatha* versus *Panchvalkal Kwath* (as *Yoni Prakshalan*) in the management of *Shweta Pradara* (leucorrhoea)"A randomized controlled trial

Pooja Basnal¹, Preeti Borkar², Bhushan Mhaiskar³, Dnyanesh Joshi⁴

- 1.Pg Scholar of Dept of Samhita and Siddhant Department, Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra. Orchid Id: http://orcid.org/0000-0002-1179-1050
- 2.Professor and HOD of department of Samhita and Siddhant Department Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra. Orchid Id:- http://orchid.org/0000-0001-7862-4401
- 3. Associate Professor of department of Samhita and Siddhant Department Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra. Orchid Id:- http://orchid.org/0000-0002-1404-7438
- 4.Associate Professor of department of Samhita and Siddhant Department Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra. Orchid Id:- http://orchid.org/0000-002-4314-4640

Abstract

Background:-One of the most prevalent and serious issues that face women worldwide is Shweta Pradara. There is no woman who is immune to this sickness. Shweta pradara is a common gynaecological illness that, if left untreated, can cause ascending infections that can affect overall health and cause other problems. All gynaecological problems are frequently alluded to as yonivyapada in Ayurveda. Astaangsangraha and Astaanghridaya utilised Shweta Srav rather than Shweta Pradara to describe white vaginal discharge in Brihatrayee i.e. Charak Samhita, Shushrut Samhita, Astaangsangraha, and Astaanghridaya. However, Bhavaprakash Samhita and Yogaratnakar Shweta Pradara have since been described in Sharangdhara Samhita. Many medications have been reported in Ayurveda for the treatment of Shweta Pradara. Therefore, it is crucial to choose a treatment that is appropriate without interfering with other systems. The goal of the current study is to support the Nidana and Samprapti, Samprapti Vighantana of Shweta Pradara and provide alternative method of therapy those who have Shweta Pradara. Considering the side effects of untreated Shweta Pradara, such as infertility, etc. Therefore, it is essential that this ailment receive active treatment and that the quality of life be improved.Drugs in Kareeradi kwath is having sothahar (anti-inflammatory),

jantughan(antibacterial) ,kandughana (helpul in itching), varana sodhana property which is helpful in Shweta pradara .Paired 't' test will be proved statistically significant in kandu, srav, and also in excoriation of skin of vulval regions and signs of discharge. As the outcome of this study will be positive i.e, the drug has vital action in remission of the symptom like yonisray, katishoola and kandu . Thus the study will give the best curative effect of Kareeradi kwath Yoni prakshalan in Shweta Pradara. Aim And Objectives: -Comparison of the efficacy of Kareeradi Kwatha versus Panchvalkaldi Kwath (Yoni Prakshalana) in the management of Shweta Pradara (Leucorrhoea) and To compare of the efficacy of Kareeradi Kwath vs Panchvalkal as Yoni-Prakshalana in in the Kwath management Pradara. Methodology: In the planned study, 60 participants will be randomised into two groups at random, with 30 patients in each group. Group A (Panchvalkal kwath) will receive a daily dose of 500 ml administered yoni prakshalan for 7 days. Group B (kareeradi kwath) will receive a daily dose of 500 ml administered yoni prakshalan for 7 days. At day zero, eighth day, and after day sixteenth day for follow-up, an assessment record will be taken. Results: Improvement in results will be recorded according to the Objectives. Changes in objective results will be seen. Conclusion:-It may be predicted that the study's parameters will improved in Shweta Sray, kati shoola, and yoni kandu.

Key Words: - Shweta Pradara, Yoni Vyapad,

INTRODUCTION

According to Ayurveda

The famous trios Charaka, Susruta, and Vagbhata Samhita do not contain the word Shweta Pradara. Raktpradara and Asrgdara have been used for bleeding from the vaginum, and Shwetasarav or Yonisarav have been used for white discharge. The term "Shweta Pradara" for white vaginal secretions is used by commentator Chakrapani as well as the works Sarngadhara Samhita, Bhawaprakasha, and Yogaratnakara². Acharya Chakrapani has provided the following explanation: || (30/116)

Aastang sangrah ³ claims.

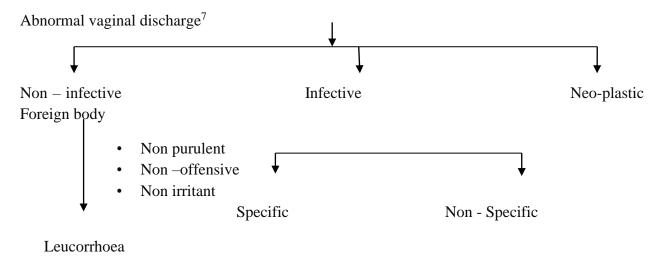
In accordance with As.Sa.Ut. 39/51.

Since Shweta Pradara is a symptom rather than a disease, its etiopathogenesis would likewise be that of the main disease⁴

However, based on its clinical characteristics, it appears to be a disease of kapha viability, hence its etiopathogenesis may be thought of in the following manner:

The aggravated kapha, which is brought on by its own vitiating factors, influences or vitiates the rasa dhatu of the reproductive system, which was previously influenced by excessive coitus, abortions, a bad way of living, and poor dietetics, because of the dominance of its liquid propertybefore Ritukala. White, painless vaginal discharge is the consequence.⁵

Leucorrhoea is currently understood to be an excessive amount of typical vaginal discharge. The excessive symptom is a subjective one with individual variance, and it requires clinical and laboratory tests to determine whether it is normal and not infectious.⁶



The physiologic basis involved in normal vaginal secretion is dependent on the endogenous estrogen level, there is abundant secretory activity of the endocervical glands and the superficial vaginal epithelium becomes rich in glycogen.⁸

The cervical glands typically secrete only a tiny amount of mucoid. The glycoprotein mucin's carbohydrate radicle is separated and fermented into lactic acid. However, if too much mucus is secreted, it spills out at the vulva.⁹

Concept of Trividh Chikitsa¹⁰

Antah Parimarjana - Antah is the Arabic word for inside, and parimarjana is the verb to cleanse or purify, therefore Anath Parimarjan literally translates as to cleanse, purify, or heal from

within. In this, oral medications operate on the pathophysiology of the disease and restore health by entering the body.

Bahih Parimarjana - means to cleanse, purify, or heal from the outside. Bahih signifies outside. In this, the medications are used externally; after getting into contact with the body, they begin to work internally. For instance, abhyanga (massage with herbal oil), swedana (application of heat), dhara (steam pouring of liquid medications), and lepa (application of medicinal pastes).

Shatra Shastra - It is an instrument, and pranidhana is an application, hence pranidhana refers to the use of instruments to combat sickness. This covers all surgical intervention techniques.

Eliminating predisposing conditions and using palliative treatments are the only treatments for Shweta Pradara now available in modern medicine. In ancient books, Ayurvedic Acharyas describe a variety of therapies for Shweta Pradara. In Shweta Pradara, the role of external application is as significant to that of inside treatment. Yoni prakshalan was described by Kareeradi kwath in Charak chikitsa sathan 30 chap of Yonivyaapad by Acharya Charak. ¹¹

This Kwath's entire content is primarily made up of Kashaya rasaatmak and has Shtambhak characteristics, which serve to prevent the development of Shweta Saarav and are mentioned in the Charak Samhita's Kaphaj Yoni Vyapad Chikitsa.¹²

Shweta Pradara is a symptom of little gynecological disorder developing due to vitiation of Kapha and Vata-Kapha. Achraya Charaka mention the use of Kareeradi kwath as Yoni Prakshalana (Cha.Chi.30/82-83, Yonivyaapad). 13

करीरधवनिम्बार्कवेणुकोशाम्रजाम्बवैः॥ Cha.Chi.30/82 जिङ्गिःनीवृषमूलानांकाथैर्माद्वींकसीधुभिः॥C.Ch30/83

Kareeradi Kwath's results will be superior than Panchvalkal Kwath's in eradicating the indications and symptoms of Shweta Pradara. A combination of five extremely powerful and advantageous herbs called panchvalkal helps speed up the healing process and avoids infections. These five components are as follows: 15

Nyagrodha, (Ficus bengaenesis Linn.)

Udumbara (Ficus glomerata Roxb.)

Ashvatha (Ficus religiosa Linn)

Parisha (Thespesia populanea Soland ex correa)

Plaksha (Ficus lacor Buch-Ham.)

When combined in equal proportions, they create "Panchvalkal kwath," which possesses astringent and cleansing properties.

Panchvalkal Kwath advantage

The uterus can be thoroughly cleaned with panchvalkal kwath.

purifies the blood and body

Anti-bacterial

Anti-fungal

treats fallopian tube blockage

carefully treats wounds and infections.

Even though Panchvalkal powder is widely accessible in drug stores, if you don't take it frequently as directed by your doctor, you won't get any benefits from it. You won't be able to reap all of its advantages unless you have been consuming it consistently for a while.

Need of Study:

- In India, 61% of women from low socioeconomic backgrounds and 39% from high socioeconomic backgrounds reported having vaginal discharge due to leucorrhoea.
- Shweta Pradara (Lecurrohea) may arise and affects the female genital health.
- The outcome of *Kareeradi Kwath* will be more effective than *Panchvalkal kwath* in combating the signs and symptoms of *Shweta Pradara*(*Lecurrohea*).
- It will be cost effective than the *Panchvalkal kwath for Yoni Prakshalan*.
- It will generate new clinical evidences.

Research Question: -

Whether Yoni – Prakshalan of Kareeradi Kwath is more efficacious than Yoni – Prakshalan of Panchvalkal kwath in the management of Shweta Pradara?

Hypothesis:-

Alternative Hypothesis (H1)

• There is significance difference in the effect of *Kareeradi Kwatha (Yoni-Prakshalana)* and *Panchvalkal Kwatha (Yoni-prakshalan)* in the management of *Shweta-Pradara*.

Null Hypothesis (H0)

• There is no significant difference in the effect of *Kareeradi Kwatha (Yoni-Prakshalana)* and *Panchvalkal Kwatha (Yoni-prakshalan)* in the management of *Shweta-Pradara*.

P opulation	• Participants suffering from Shweta Pradara.
Intervention	Kareeradi Kwatha in Yoni - prakshalan
Comparison	Panchvalkal Kwatha in Yoni - prakshalan
Outcome	Reduction of symptoms of Shweta Pradara.

AIM AND OBJECTIVES

Aim: -

Comparison of the efficacy of Kareeradi Kwatha versus Panchvalkaldi Kwath (Yoni Prakshalana) in the management of Shweta Pradara (Leucorrhoea).

Objectives:

- To evaluate the efficacy of *Kareeradi Kwath* as *Yoni-Prakshalana* in the management of *Shweta Pradara*.
- To evaluate the efficacy of *Panchvalkal Kwath* as *Yoni-Prakshalana* in the management of *Shweta Pradara*.
- To compare of the efficacy of Kareeradi Kwath vs Panchvalkal Kwath as Yoni-Prakshalana in the management of Shweta Pradara.

Research Gap Analysis

Sr. No.	Name Of Research	Name Of Researcher		onclusion f Author		Time (In Year)	REMARK OF SCHOLAR
1.	Madhumeha Roga Par Kareeradi Choorna Evam Panchatikta Nirooha Basti ki Karmukata Ka Chikitsatmaka Adhyayana.	Jain A.K National Institute Of Ayurveda, Jaipur.	for ch on of paka ch ka yu din in	asti is used r vata ikitsa.and e of the ty vatajh rmeha and riradi urna is shaya gun kta so it weetly used vata ikitsa.	is pe d	2001	Used in madhumeha roga as kareeradi churna but kwath is not used yet
2.	Pharmaceutical And Clinical Evaluation Of Vanga Bhasma And Ashwagandhadi Yog in the Management Of ShwetaPradar.	Ahuti Rai Rajiv Gandhi Govt. Post – Graduate Ayurvedic College, Paprola		-		2010	For Prakshalana Kareeradi Kwath not used yet
3.	A clinical study on prakshalan with par in the management yonivapada w.s.r. to	icha valkal kwath of kaphaja		2013	Pro this less	akshalana s article, the s , so the ch	ath is used as Yoni but comparative In e sample size is very ances of error will in not done.
4.	Grishma Solanki, R yoni prakschalan or Pradaraa(Leucohor	ı Shweta		2019			ormulation not done weta Pradaraa.

5.	Sheela Mallikarjun , ,Management of Sweta Pradara with sthanik chikitsa – A case study. WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH	2021	Shweta Pradaraa can be put parallel to Leucorrhoea in modern medicine on the basis of different symptom Treatment of Sweta pradara is mainly based on the use of drugs which are having predominance of Kashaya rasa and Kapha-shamak property.	No drug is used and not compare with Kareeradi kwath.
6.	Akanksha Sharma, Managementof Sweta pradara (Leeucorrhea) Through Ayurveda – a case series International Journal of Ayurveda and Pharma Research.	2022	The whole treatment combination of Jeevak plus capsule, Gynae vin syrup, Haritaki churna for Anulomana, and Triphala kwatha for Yoni prakshalan, Himtone forte as Rasyana and Balya aushadhi when used in patients of Shweta Pradaraa.	Triphala Kwath is used as Yoni Prakshalana but comparative

- Many studies have been carried out on *Shweta Pradaraa* with different internal formulations.
- Many *Kwath* are also available in market but few studies have been done for *Yoni Prakshalana* in *Shweta Pradaraa*.
- Drugs *of Panchvalkal kwath* for *Yoni prakshalan* endangered. So, availability of *Panchvalkal* drugs in market is less.

Material and Method:-

Place of study or Source of Data: -

The clinical materials required for *Shweta Pradara* will be screened and enrolled from OPD and IPD of Dept of Stree and Prasuti MGACH&RC Salod (H.), Wardha and AVBRH.

Sample size: 60

Group A:- Control Group (30)

Group B :- Standard Group (30)

Sampling Procedure: Randomization computer generated table

Type of Study: Interventional study

Study design: Randomized standard control single blind superiority clinical trial.

Grouping And Posology

Group	Sample size	Intervention	Dose and Frequency	Duration	Follow-up
Group A	n =30	Panchvalkal kwath in Yoni prakshalan	500ml once in a day for <i>yoni</i> Prakshalan	16 days	0 th ,8 th ,16 th Days
Group B	n =30	Kareeradi kwath in Yoni	500ml once in a day for <i>yoni</i>	16 days	0 th ,8 th ,16 th Days

	prakshalan	prakshalan		
--	------------	------------	--	--

Study Duration: - 2 years

Drug Collection And Authentication:

Raw materials would be obtained from trustworthy sources, identified and authenticated by the department of Dravyaguna, Mahatma Gandhi Ayurved College, Hospital & Research Centre, Salod(Hirapur), Wardha.

Case definition: Patient with classical symptoms of *Shweta Pradara* on the basis of examination will be selected for the study.

Data collection tools and process

Eligiblity Criteria

7.1 Inclusion criteria:

- Female patients (Age 18 year -55 year) in reproductive period of life will be included in this study irrespective of marital status.
- Married/unmarried female's patients will be taken for this study.
- Female patients having signs and symptoms of *Shweta Pradara* will be included.

7.2Exclusion criteria:

- Female patients having signs and symptoms of abnormal Vaginal Bleeding such as Menorrhagia, metrorrhagia.
- Female patients having pregnancy will be excluded from this study.
- Female patients having Hormonal disbalance, diabetes, HTN. Those patients who are having carcinoma or other severe systemic illness.

Detail of drug preparation

Sr.no.	Name of	Botanical name	Family	Part used
	Dravya			

1	Kareer	Capparis decidua	Capparidaceae	Mool twak
2	Dhav	Anogeissus latifolia	Combretaceae	Twak
3	Nimbha	Azadirachta indica	Meliaceae	Twak
4	Aark	Calotropis procera	Asclepiadaceae	Pushp
5	Venu	Bambusa arundinacea	Graminae	Patra
6.	Koshaamra	Schleichera oleosa	Sapindaceae	Twak
7.	Jambu	Syzygium cumini	Myrataceae	Twak
8.	Jingini	Lannea coromandelica	Anacardiaceae	Mool
9.	Aarush	Adhatoda vasica Nees	Acanthaceae	Mool
10.	Draksha(sura)	Vitis vinifera	Vitaceae	Phal

Assesment Criteria

Subjective Criteria

- Shweta Srava(vaginal discharge)
- Katishoola
- Yoni kandu

Sr. No.	YONIGHAT SARAV (DISCHARGE)	GRADE
1.	No discharge	0

2.	Mild discharge (rarely) wetting under clothing, a mild discharge, and moistness in the vulva	1
3.	Moderate discharge (wetting of under garments)	2
4.	Heavy discharge (Heavy discharge which needs vulva pads)	3

Sr. No.	KATISULA (BACKACHE)	GRADE
1.	No backache	0
2.	Mild (can withstand pain & can manage routine work)	1
3.	Moderate (cannot manage routine work & need to take rest	2
4.	Dependent on painkiller (cannot withstand pain & bed ridden)	3
Sr. No.	YONI KANDU (ITCHING)	GRADE
1.	No Kandu	0
2.	Mild itching (Slight rub)	1
3.	Moderate itching (Instant rub causes redness)	2

Objective Criteria: - Vaginal pH, Pap smear

Drug Analysis: Raw materials would be obtained from trustworthy sources, identified and authenticated by the department of Dravyaguna, Mahatma Gandhi Ayurved College, Hospital & Research Centre, Salod(Hirapur), Wardha.

Statistical Method:- According to objective criteria, both paired and unpaired, fssor subjective criteria, non parametric.

Observation And Results:- The result will be created using various charts, graphs and tables based on data from the follow up charts and observations. To determine the relevance of findings do the following. Improvement in range of katishoola, srav and yoni kandu.

Discussion:—Shweta pradara (Leucorrhoea) in accordance with ayurveda, is caused by kapha dosa vitiation. However, according to modern science, pathological leucorrhoea is caused by Doderlein lactobacilli while physiological leucorrhoea is caused by an increase in estrogen hormone under various conditions. It is a gram-positive lactobacillus that originates from the colon and enters the vagina after adolescence and then leaves after menopause. It turns glycogen into lactic acid to maintain an acidic vaginal PH. This stops the development of infectious organisms in the vagina. This is the vagina's built-in defence system. If the vagina's local hyegine is impaired for whatever reason, So local hygiene will be maintained or will be treated properly by using Kareeradi kwath and the Kapha vitiation will be improved by using kareeradi kwath locally. Other contents in Kareeradi kwath is also having sothahar (anti-inflammatory), jantughan(antibacterial) ,kandughana (helpul in itching), varana sodhana. The vaginal tract is kept clean and healthy by douching with lukewarm decoction. Kareer, dhav, nimbha, jambhu, vasa, Ark, Venu, koshaamra, jigini ,arush, Draksha all 10 drugs contains the kashaya rasa as predominance. The kashaya rasa is nothing but the astringent and having property of Sthambhan. The astringents are the tropically anti-inflammatory, can be used for all the inflammations of the skin and mucous tropically.

Scope of Implications of the proposed study

☐ This study will generate data for the effect of *Kareeradi kwath* in *Shweta Pradaraa*.

It is recommended that the study will be carried out in large number of patients to
confirm findings on wider scale.
As Kareeradi kwath is mentioned for all yoni sarav, its efficacy can be tested in other yonivyapad
Increases the wide range of availability of the drugs.
Future patent can be filed for Kareeradi Kwath if found more effective than
Panchvalkal Kwath.

Implications of the proposed study

- *Kareeradi kwath* will be cost effective for the social well being.
- Availability of drugs of kareeradi kwath is more in market.
- According to ayurvedic property of kareeradi kwath dravyas will be used in some skin diseases.
- If the the *kareeradi kawath* will be effective *in Shweta Pradara it* will be maintain the hygiene of the female genital tract and it also prevent the complicated disease.

Conclusion: -Conclusion will be followed by the thoughtful and analytical facts.

Ethical consideration:

The study will be initiated only after the ethical approval from IEC (MGACH & RC) followed by the prospective registration in CTRI (Clinical trial registry India).

Reference:-

- **1.** Tiwari P.V., Ayurveda Prasuti tantra & Stri Roga, IInd Part, 2nd edition, Varanasi, Chaukhambha Orientalia, 2000, reprint 2005, p. 266-268Tiwari P.V., Ayurvediya Prasuti tantra & Stri Roga, IInd Part, 2nd edition, Varanasi, Chaukhambha Oriantalia, 2000, reprint 2005, p. 266-268
- 2. Tiwari P.V., Ayurveda Prasuti tantra & Stri Roga, IInd Part, 2nd edition, Varanasi, Chaukhambha Orientalia, 2000, reprint 2005, p. 266-268Tiwari P.V., Ayurvediya Prasuti tantra

- & Stri Roga, IInd Part, 2nd edition, Varanasi, Chaukhambha Oriantalia, 2000, reprint 2005, p. 266-268
- 3. Achraya Charaka, Charak Samhita Shri Chakrapani virachita ayurveda deepika vayakhaya, Prologue by Prof. R.H Singh, Yoni Vyapad 30.82-83, Varanasi, Chaukhambha Varanasi Sanskrit, 2016.P. 638
- 4. Text book of gynaecology including contraception , 5 th edition DC Dutta edited by Hiralal Konar Proffessor ,obstetrics and gynecology Nilratan Sircar college and Hospital, Kolkata , INDIA 2008 reprint 2009 pg5245
- 5 Tiwari P.V., Ayurvediya Prasuti tantra & Stri Roga, IInd Part, 2nd edition, Varanasi, Chaukhambha Oriantalia, 2000, reprint 2005p. 266-268
- 6. Text book of gynaecology including contraception , 5 th edition DC Dutta edited by Hiralal Konar Proffessor ,obstetrics and gynecology Nilratan Sircar college and Hospital, Kolkata , INDIA 2008 reprint 2009 pg524
- 7.Text book of gynaecology including contraception , 5 th edition DC Dutta edited by Hiralal Konar Proffessor ,obstetrics and gynecology Nilratan Sircar college and Hospital, Kolkata , INDIA 2008 reprint 2009 pg524
- 8.Text book of gynaecology including contraception , 5 th edition DC Dutta edited by Hiralal Konar Proffessor ,obstetrics and gynecology Nilratan Sircar college and Hospital, Kolkata , INDIA 2008 reprint 2009 pg524
- 9.Text book of gynaecology including contraception , 5 th edition DC Dutta edited by Hiralal Konar Proffessor ,obstetrics and gynecology Nilratan Sircar college and Hospital, Kolkata , INDIA 2008 reprint 2009 pg524
- 10.Raghuram Y.S MD (Ay)Chikitsa: Treatment types, Ayurvedic classification, p. 266-268
- 11. Acharya Charak , Charak Samhita Shri Agnivesha virachita hindi vedhya Prologue by Prof Ravi Datta Tripathi reprint 2017 p11
- 12.P.V.Sharma, Dravyaguna Vigyan, Part 2 (Audbhid Aushadhi Dravya) Varansi, Chaukhambha Bharti Academy:2013.pg.148,433,580,612,658,674,685,800
- 13. Acharya Charak , Charak Samhita Shri Agnivesha virachita hindi vedhya Prologue by Prof Ravi Datta Tripathi reprint 2017 p11
- 14. Tiwari P.V., Ayurvediya Prasuti tantra & Stri Roga, IInd Part, 2nd edition, Varanasi, Chaukhambha Oriantalia, 2000, reprint 2005, p. 266-268
- 15.Panchvalkal, Imbue, cite on 29/06/2022, 18:06, <u>Panchvalkal Vaginal Hygiene Gets Ayurvedic Makeover Imbue Natural ,https://imbuenatural.com/blogs/blog/panchvalkal-vaginal-hygiene-gets-ayurvedic-makeover.</u>

Authors

- 1st Author :- Pg Scholar of Dept of Samhita and Siddhant Department , Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha , Maharastra .Orchid Id :- http://orcid.org/0000-0002-1179-1050
- 2nd Author :- Professor and HOD of department of Samhita and Siddhant Department Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra .Orchid Id :- http://orchid.org/0000-0001-7862-4401
- 3rd Author :- Associate Professor of department of Samhita and Siddhant Department Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra. Orchid Id:- http://orchid.org/0000-0002-1404-7438
- 4th Author :- Associate Professor of department of Samhita and Siddhant Department Mahatma Gandhi Ayurved College Hospital Research Centre Salod, Hirapur, Datta Meghe Institute of Medical Science, Wardha, Maharastra. Orchid Id:- http://orchid.org/0000-002-4314-4640