



HYDRADENITIS SUPPURATIVA- A SUCCESSFUL AYURVEDIC MANAGEMENT – A CASE STUDY

**Dr. Santosh Gulabrao Chavhan^{1*}, Dr. Sachin Ashok Naik² and Dr. Lomesh Pittambar
Gedam³**

¹Professor & H.O.D. Dept of Rognidan and Vikrutividnyan, D.Y.Patil University School of
Ayurveda, Nerul, Navi Mumbai.

²Asso. Professor, Dept of Rognidan and Vikrutividnyan, D.Y.Patil University School of
Ayurveda, Nerul, Navi Mumbai.

³Assist. Professor, Dept of Sanskrita Samhita Siddhanta, D.Y.Patil University School of
Ayurveda, Nerul, Navi Mumbai.

Article Received on 02/01/2017

Article Revised on 23/01/2017

Article Accepted on 13/02/2017

*Corresponding Author

**Dr. Santosh Gulabrao
Chavhan**

Professor & H.O.D. Dept
of Rognidan and
Vikrutividnyan, D.Y.Patil
University School of
Ayurveda, Nerul, Navi
Mumbai.

ABSTRACT

Ayurveda is the great medical science of India which is practiced since ancient time. Ayurveda is the only hope, when the challenges of resistant cases are alarming day by day. Each country has its own traditional medical system, which they practiced since centuries back but due to lack of a well written script it gradually disappears. In India traditional medical system i.e. Ayurveda is enriched with a well defined Doshik (Morbid) theory of disease etiology, types, clinical features, treatment modalities etc. in a very well organized and

systematic manner. Depending on the Basic Texts as like Bruhatrayee and Laghutrayee, Ayurveda is still practicing in India with great success. Hydradenitis Suppurativa is a one chronic and recurrent ailments of skin which is not having confirmative solution with modern medicine. In Ayurveda, skin disorders are explained with their treatment under the head of Kustha Vyadhi in a very scientific manner. Ayurveda management would stand one superior than modern medicine in Hydradenitis Suppurativa vis-a- via other skin disorders.

KEYWORDS: Hydradenitis Suppurativa, Kustha, Kshudra Kustha, Kshudraroga, Skin Diseases.

INTRODUCTION

Hidradenitis suppurativa (HS) is a rare, chronic skin disease characterized by clusters of abscesses or subcutaneous boil-like "infections" (often times free of actual bacteria) that most commonly affects Apocrine sweat gland bearing areas, such as the underarms, under the breasts, inner thighs, groin and buttocks.^[1] The disease is not contagious. There are indications that it is hereditary among certain ethnic groups and autoimmune in nature. Onset is most common in the late teens and early 20's.

HS outbreaks are painful in tender areas and may persist for years with interspersed periods of inflammation, often culminating in sudden drainage of pus. This process often forms open wounds that will not heal and frequently leads to significant scarring. For unknown reasons, people with **HS** develop plugging of their apocrine glands.^[2]

Incision and drainage procedures may provide symptomatic relief.

HS flares may be triggered by emotional/erotic stress, sweating, hormonal, changes, heat and humidity and the condition is exacerbated by friction from clothing.

Persistent lesions may lead to the formation of sinus tracts, or tunnels connecting the abscesses or infections under the skin.^[3] At this stage, complete healing is usually not possible and progression is variable, with some experiencing remission for months to years at a time, while others may worsen and require multiple surgeries. Bacterial infections and cellulitis (deep tissue inflammation) are other common complications of **HS**. Depression and physical pain are often seen with **HS** and can be difficult to manage.^[4]

In Ayurvedic Classics various skin diseases have been described under the heading of Kushtha. Kushtha is divided into two major division as Mahakushtha which are seven in numbers & Kshudra kushtha which are eleven in numbers.

Kshudra kushtha & Kshudra roga almost cover the whole dermatology in Ayurveda. Kshudra roga has been described in a separate chapter by many Acharyas. Kshudra roga also plays a major role in understanding various skin disorders in Ayurveda. Kshudra roga has been described in major Samhitas of i. e. Charak Samhita, Sushruta Samhita, Ashtang Samgrah, Ashtang Hridaya, Sharangdhar Samhita, Madhavnidan, Bhavprakash, Yogratnakar, Vangsen

Samhita and in Bhaishajya Ratnavali. The classification of Kshudra roga as given by Acharya Sushruta is basic & standard. Many Acharyas have follows the classification of Acharya Sushruta in describing the Kshudra roga.

The word “Kshudra roga” is made up of two words i.e. kshudra and roga. Kshudra means Alpa or Short / Small / Minor and Roga means disease. So Kshudra roga are nothing but minor diseases. They are named Kshudra roga because their Nidan (etiology), Lakshan (clinical features) and Chikitsa (treatment) are described in short or brief. Kshudra roga comprises of a major part of the skin diseases. As its name indicate Kshudra roga are small and less severe diseases but it also contains some more severe disease like Agnirohini.

The difference between Kshudra Roga and Kshudra Kushtha can be done as follows:

Kshudra Kushtha	Kshudra Roga
It is described under the chapter of Kushtha and it is one of the type of Kushtha.	It is described in separate chapter, not under the chapter of Kushtha
They have a detail description about Nidan(etiology),Lakshan(features) & Chikitsa(treatment)	Their Nidan(etiology),Lakshan(features) & Chikitsa(treatment) are described very briefly.
Saptakodravyasangraha(seven dosha-dushya) are described in Kshudrakushtha.	Saptakodravyasangraha(seven dosha-dushya) are not described in Kshudraroga.

AIMS AND OBJECTIVE

1. To evaluate the Role of Ayurvedic Treatment in Hidradenitis Suppurativa.
2. To assess the better effect of Ayurvedic Treatment in Hidradenitis Suppurativa and other skin diseases than modern medicine.

DRUG PROFILE

1. SARIVA



1. Botanical name - Hemidesmus indicus	2. Family- Periplocaceae	3. Habit-Climber	4. Part Used- Root
---	-----------------------------	------------------	-----------------------

VERNACULAR NAMES

1. English -Indian Sarsaparilla	2. Sanskrit -Sariva, Ananta, Gopi, Shyama
3. Hindi -Magrabu, Hindisalsa	4. Kannada -Namdaberu, Sogadaberu
5. Malayalam -Nannari, Naruninti	6. Tamil - Nannari
7. Telugu -Sugandhipala	8. Trade Name -Anantmool, Sariva,

PROPERTIES

1. Rasa (Taste) - Tikta(Bitter), Madhura (Sweet),	2. Veerya (Potency) - Sheeta (Cold)
3. Vipaka (Post digestive effect) -Madhura (Sweet)	4. Guna (Property) -Snigdha (Unctuous),Guru (Heavy)
5. Dosha-Karma (Action on Doshas) - kaphavata hara ,Tridosha hara	
6. Karma(Actions) - Durgandha nashana (removes foul odour), Ama hara (removes undigested food), Raktaprasadana (blood-purifier), Mutra-janana & Mutravirajaniya (diuretic), Stanya shodaka (lactus purifying), Daha prasamana (pacifying burning sensation), Shotha hara (anti- inflammatory)	
7. Significant rejuvenative actions (Rasayana Karmas) - Asrajit (cures disorders of blood), Shukrala(increases semen), Garbhasthapana (foetus stabilizing).	
8. Indications (Rogaharatva) - Kustha(skin diseases), kandu(urticaria), jwara(fever), Meha(diabetes), Agnimandya(loss of appetite), Aruchi, Shwasa(Bronchial asthma / respiratory tract disorders), Vami(vomiting), Kasa(cough),Trishna(thirst),Pradara(menorrhagia),Atisara(diarrhoea),Visha(toxicity).	
9. Chemical Composition -Triterpenes, Sterol , Resin acids, Tannins, Saponins, Essential oil containing methoxy benzaldehyde, Root - Amyrin, Benzaldehyde, Hemidine ; Stem - Calogenin, Desinine, Emidine, Hemidescine, Coumarins -- Hemidesmine ,Hyperoside, Triterpenes ; Flowers - Rutin	

2. MANJISTHA

1. Botanical Name- Rubia Cordifolia	2. Family - Rubiaceae	3. Parts Used - Roots, Stem
-------------------------------------	-----------------------	-----------------------------

The plant is used both, internally as well as externally. The roots of Manjistha are used for medicinal purpose. Externally, Manjistha is highly recommended in skin diseases associated with edema and oozing. The wound and ulcers dressed with Manjistha ghrita heal promptly and get dried up and well cleansed. Especially the chronic non-healing and cozing wounds respond very well. The Manjistha ointment medicated with Sat dhauta ghrita, is the best panacea for erysipelas. The burns and scalds heal up magically without scar formation, when treated with Manjistha ghrita. The chronic wounds are washed with the decoction of

manjistha and dressed with its rasakriya (solid extract). In fractures, the external splint of Manjistha, madhuka skin and amalaki leaves is beneficial. The root powder works well, with ghee, for the medicament of acne. Used externally as a paste by itself or with honey, it heals inflammation and gives the skin an even tone and smoothness. It is a powerful dye, imparting a reddish tinge to the skin and is used in dyeing the clothes also. Internally, Manjistha is valuable in a vast range of diseases. In diarrhea, Manjistha works well when combined with lodhra (*Symplicos racemosa*) skin powder. Manjistha is benevolent in gastrointestinal ailments like loss of appetite, dyspepsia and worm infestations, as it is an appetizer, digestant, destroys ama and a vermicide. Manjistha kvatha is widely used as a blood purifier. It acts mainly on rasa and rakta srotasas, alleviates the Kapha and Pitta doshas and eliminates toxins. This ameliorates the vitiation of bhrajaka pitta (pitta from the skin) and imparts better complexion to the skin. Manjistha was held in high esteem by ancient sages in the treatment of skin diseases. It is widely used, till today, in various skin disorders like erysipelas, eczema, acne, scabies and allergic manifestations. Manjistha helps in controlling the irritation of nerves and pacifies the mind, hence salutary in epilepsy, especially of Pitta type. The decoction of manjistha, triphala, daruharidra, guduci, katuka, nimba and vaca is used in gout with benefit.

3. GUDUCHI



1. Botanical Name - <i>Tinospora cordifolia</i>	2. Family - Menispermaceae	3. Parts Used - Stem
---	----------------------------	----------------------

VERNACULAR NAMES

1. Marathi - Guduchi, Gulvel	2. Sanskrit - Guduchi, Amrita,	3. Hindi - Giloya, Amrita	4. Bengali - Giloe, Gulancha
5. Gujarati - Gado, Galo	6. Telugu - Duyutige, Tippa - teega	7. Punjabi - Gllow	8. Tamil - Shindilakodi,
9. Malayalam - Amruthu, Chittamruthu	10. Kannada - Amrutha	11. Odia - Guluchi	12. Nepali - Gurjo

- Guduchi is one of the most highly valued and common herbs in Ayurvedic medicine. It has a rich history in the Indian sub-continent where it has been used and written about for thousands of years. It is considered one of the best Rasayanas (adaptogens) and is unusual in its potent versatility. In recent years, significant progress has been attained regarding its biological activity and medicinal applications. Guduchi, as it is most commonly called, has been described as “one which protects the body”. (Pole189).

The Sanskrit and Hindi name Amrita is derived from ancient Hindu scriptures where Amrita was used to bring the dead back to life and keep gods from growing ill and old. It is no wonder that it is also referred to as “nectar of immortality” and “heavenly elixir”.

It is a woody climbing shrub that is deciduous and perennial. This herbaceous vine grows on hedges. It is often seen growing up mango or neem trees. Herbalist Sebastian Pole writes that “those growing up neem trees are said to be the best as the synergy between these two bitter plants enhances guduchi’s efficacy.” It is indigenous to areas of India, Myanmar, and Sri Lanka. Guduchi typically grows deciduous and dry forests at elevations up to 1000 ft. Its flowers bloom in summer. The male flower is small, yellow or green in color, and occurs in clusters. Female flowers are usually solitary and are green. The fruits are the size and shape of a large pea and turn from green to red when ripe in winter. leaves are heart shaped (giving the name cordifolia to the plant) and mucilaginous. Its stems, when the fresh, have a green succulent bark covered by a thin brown bark and are studded with warty lenticels. When dry, the stem shrinks and the bark separate from the wood. The roots are long narrow aerial roots that arise from the branches. The stems, leaves, and roots are used in medicine. All three parts should be collected in the summer when the bitter qualities are most abundant.

Actions and Indications

Unusual in its qualities, Guduchi has a large variety of actions and is indicated in the treatment of many ailments. It Increases appetite, quenches thirst, increases strength, promotes life, increases life span, aphrodisiac, increases sexual potency, purifier of sperm, cleans the blood, relieves gout, relieves arthritis, alleviates skin disorders, destroys toxins, reduces burning sensations, reduces fevers, nerve tonic, bitter tonic, causes constipation, and rejuvenative. It is described in more modern and Western terms as having similar actions: Febrifuge, anti-periodic, alterative, diuretic, aphrodisiac, cholagogue, anti-inflammatory, anthelmintic, nerve tonic, bitter tonic, anti-rheumatic, and de-toxicant. Guduchi is incredibly versatile and is indicated for potential use in the following conditions: Fever, hepatitis, liver

damage, jaundice, diabetes, heart disease, tuberculosis, arthritis, gout, hemorrhoids, eczema, psoriasis, lupus, inflammatory skin conditions, autoimmune disease causing inflammation, urinary disease, secondary syphilis, bronchitis, chronic diseases of diarrhea and dysentery, seminal weakness, dyspepsia, general debility, leprosy, anemia, colic, worms, senile diseases, hyperacidity.

4. Haritaki



1. Botanical Name – Terminalia Chebula, Terminalia Reticulata.			
2. Family Name – Combretaceae	3. Kingdom – Plantae	4. Division – Mangoliophyta	5. Class – Mangoliopsida
6. Genus – Terminalia	7. Parts Used – Fruit, Root, Bark.		

VERNACULAR NAMES

1. Sanskrit - Haritaki, Abhaya, Pathya	2. Hindi - Harad	3. Marathi - Hirada	4. Kannada - Alalekaayi
5. Tamil - Kadukkai	6. Bengali - Horitoky	7. Assamese - Xilikha	8. Telugu - Karakkaya

> The deciduous Haritaki tree grows at an altitude of 1,800 meters. The round tree is crowned and branches spread out, with a diameter of 1.5 to 2.5 meters. The long ovate leaves are acute, in opposite pairs about 10 to 20 cm long. The flowers are dull white with spikes and can be found at the end of the branches. The fruit is hard and yellowish green in color. Each fruit has a single seed that is light yellow in color. The tree can be found in the sub Himalayan tracks, from Ravi to West Bengal and in the deciduous forests of Madhya Pradesh, Bihar, Assam and Maharashtra.

Uses & Benefits of Haritaki

- Haritaki has laxative, rejuvenative, purgative, astringent and dry properties.
- The paste of its fruit is effective in reducing swelling, hastening the healing process and cleansing the wounds and ulcers.
- The paste gives relief to the eyelids, in case of conjunctivitis.
- Gargling with haritaki decoction helps in stomatitis, oral ulcers and sore throat.
- It serves as a good astringent for loose gums, bleeding and ulceration in gums.

- The herb is used in preparing 'Triphala' that is used for hair wash, brush teeth in pyorrhea and treat bleeding gums.
- Regular consumption of haritaki powder, fried in ghee, promotes longevity and boosts energy.
- It responds well to gastrointestinal ailments, tumors, ascites, piles, enlargement of liver-spleen, worms and colitis.
- Powdered haritaki, mixed with jaggery, works well in gout.
- Its powder, when mixed with honey and ghee, is an effective remedy for anemia.
- Haritaki is combined with sunthi powder and given with hot water to lighten asthma and hiccups.
- Its decoction, when taken along with honey, is of great help in hepatitis and obesity.
- The herb improves memory and is salutary in dysuria and urinary stones.
- Haritaki helps in improving appetite and helps in digestion.
- It is a good nervine and helps in nervous weakness and nervous irritability and promotes the receiving power of the five senses.
- Since it is anti-inflammatory and astringent, it is helpful in urethral discharges like spermatorrhea and vaginal discharges like leucorrhoea.

5. RASAMANIKYA

Rasmanikya is a famous drug, frequently used by *Ayurvedic* physicians for *Vata-Kaphaja* diseases like *Shwasa*, *Kasa* and *Kushtha* (Skin disorders). Various methods of preparation have been found described in *Rasa* classics. Generally it is prepared by *Shuddha Haratala* which is kept between two thin transparent *Abharaka Patra* (mica sheets) in small scale and in *sharava* for large scale, heated up to desired level. There are so many methods and different liquid media have been found described for *Shodhana* of *Haratala*. Therefore the methods of preparation of *Rasamanikya* and *Shodhana* process of *Haratala* have been validated through various experiments. *Tankana*-treated *Haratala* (T. Treated) is found best for *Shodhana* process and final product too i.e. *Rasamanikya* in terms of pharmaceutical standards i.e. Ruby in colour, along with reproducibility of fixed quality.

6. LEECH THERAPY



This procedure is included under the five Bio-Purificatory procedures. Removal of impure blood from the body treats the root cause of the sufferings. Rakta mokshana or blood letting is practiced in India since thousands of years. Our saints included this procedure under the five Bio-Purificatory procedures.

Hematophagous animals including leeches have been known to possess biologically active compounds in their secretions, especially in their saliva. The blood-sucking annelids, leeches have been used for therapeutic purposes since the beginning of civilization. Ancient Egyptian, Indian, Greek and Arab physicians used leeches for a wide range of diseases starting from the conventional use for bleeding to systemic ailments, such as skin diseases, nervous system abnormalities, urinary and reproductive system problems, inflammation, and dental problems. Recently, extensive researches on leech saliva unveiled the presence of a variety of bioactive peptides and proteins involving Antithrombin (hirudin, bufrudin), Antiplatelet (calin, saratin), factor Xa inhibitors (lefaxin), Antibacterial (theromacin, theromyzin) and others. Consequently, leech has made a comeback as a new remedy for many chronic and life-threatening abnormalities, such as cardiovascular problems, cancer, metastasis, and infectious diseases. In the 20th century, leech therapy has established itself in plastic and microsurgery as a protective tool against venous congestion and served to salvage the replanted digits and flaps. Many clinics for plastic surgery all over the world started to use leeches for cosmetic purposes. Despite the efficacious properties of leech therapy, the safety and complications of leeching are still controversial.

Ayurveda Classical Indication

1.Vidradhi(Abscess)	2.Gulma(Lump)	3.Arsha (Piles)	4.Kustha (Skin Diseases)
5.Vatarakta (Gout)	6.Kantharoga (Throat Diseases)	7.Netraroga (Eye Diseases)	8.Granthi (Cysts)
9.Arbuda (Tumour)	10.Shlipada (Filariasis)	11.Vidarika (Rhagades)	12.Vishadansha (Poising)
13.Visarpa (Pemphigus)	14.Shiroroga (Headache)	15.Dantavesta (Dental Disorders)	16.Etc.

CASE REPORT

A Young Male Patient aged 35 years visited to My Clinic on 27/09/2013 with the-

Complaint of –

Swelling, Pain, Itching and Boils with Small amount of pus discharge from Both axillas since 08 years (2007).

On Examination

On the physical examination 2 sinus of sized 3-4 mm in diameter were present. The distance between 2 sinus openings was 3 cm in left axilla and 2 sinus openings was 2 cm in Right axilla. During inspection and palpation thick pus discharge was observed. The edematous area was recognized around the sinus, multiple tender nodule were also observed in the left axilla.

On general examination, there was no abnormality observed in respiratory system, cardiovascular system and central nervous system. There was no history of Diabetes Mellitus and Tuberculosis. Breast examination was normal. Patient weight was 86 kg.

Pathological investigations were carried out which observed within normal limits and finally the patient was diagnosed 'Axillary Hidradenitis Suppurativa' (Ayurvedic diagnosis 'Kaksha' Kshudra Kustha).

Past History – Initially Patient had Prurigo in Both Armpits for 5-6 Months. For That Patient Consulted to One Dermatologist (Doctor Name XY) on 13/01/2007. Dermatologist diagnosed the condition as Hydradenitis Suppurativa Clinically.

Patient was under the treatment of this Dermatologist From 13/01/2013 to 22/0/2013.

But Patient was not having good relief from the symptoms.

So Patient was consulted one Homoeopathic Doctor on 06/06/2011. This Homoeopathic Doctor referred the patient to another Dermatologist. This Second Dermatologist investigated the patient for FNAC and other Routine Haematological, Biochemical and Urine investigations. All Routine Haematological, Biochemical and Urine investigations were within normal limits. Cytology report of FNAC was suggestive of Hydradenitis Suppurativa. Meanwhile Patient was Consulted to Third Dermatologist on 08/06/2011 for the same.

With the treatment of these three Dermatologists, patient was having relief from the symptoms but on stoppage of medicine again there is recurrence of the symptoms.

One Dermatologist has suggested Incision & Drainage for the sinus tract formation in both axillae. But patient was not willing for this. So patient was Consulted to one Ayurvedic Doctor at Arya Viadya Sala Kottakala (Authorised Dealer, Kamothe, Navi Mumbai) on 30/03/2013 and patient was given Following Ayurvedic Treatment-

- Aragwadharishta 6 TSF BD
- Khadirarishta 6 TSF BD
- Tab. Kaishor Guggula 1 tab TDS
- Eladi Cream for Local Application

Patient has taken above treatment for one month, but no satisfactory relief.

So again patient was Consulted to one Homeopathic Doctor in Kamothe on 26/08/2013.

This Homeopathic Doctor referred the patient to me on 27/09/2013.

On First Visit of 27/09/2013, patient was having following Symptoms-

- Severe Itching in Both Axillae
- Severe pain
- Suppurative Boils with Sinus Tract formation
- Severe Tenderness

Myself also have given the following treatment for one month –

- Tab. Arogyavardhini 2 BD
- Tab. Gandhakrasayan 2 BD
- Tab. Triphala Guggula 2 BD
- Nimba patra churna for Local application

But patient was not having satisfactory relief with these medications.

Then on next visit after one month, I have started the following:

Treatment –

- Rasamanikya Bhasma – 2 Gms. Mixed with 1) Sariva Churna – 50 gms.
2) Manjistha Churna – 50 gms.
3) Guduchi Churna – 50 gms.

Above mixed churna was given in the dose of 2.5 grams with Luke warm water BID after meal.

- Jalaukavacharan (Leech Application) in both axillae once a week for one month.
- Paste of Survari Hirada Churna for local application.

With above management, patien was having good relief from the symptoms after a week and after one month, there was complete relief.

Patient was Visited to me on 05/02/2015 and told me that He is not having any single symptoms of Hydradenitis Suppurativa up till now. There is no recurrence since October 2013 up till now. The Patient is still under observation of me for recurrence of Hydradenitis Suppurativa since last Three years and patient is not on any Medications. Only Leech is applied regularly for once a month.

CONCLUSION

To conclude, this Ayurvedic Management (Internal Medication with Mixed formulation of Rasamanikya, Powder of Sariva, Manjistha, Guduchi, Local Lepa Application with Paste of Survari Hirada and Local Leech Application) for Hydradenitis Suppurativa would be popular therapeutic practice and for a wide range of diseases. Also it was applied as an unscientific home remedy by traditional therapists. But Nowadays, Ayurveda came back to the contemporary medicine with wide range of applications, which were proven and supported by a huge number of scientific studies and case reports. Ayurvedic treatment in the field of Skin Disorders and Hydradenitis Suppurativa is expected to be of paramount importance due to the ease of application and reduced side-effects. Hence, more efforts should be undertaken to optimize this utilization.

REFERENCES

1. Shri Vagbhattacharya, Rasa Samuchchaya Ratna, Kulkarni D.A. Hindi commentary. 70-72. Vol. 3. New Delhi: Meharchand Laxmandas Publication; 1998; Page 64.
2. Sharma Sadananda, Tarangini Rasa. 11th Edition. 2. Vol. 49. New Delhi: Motilal Banarsidas; 2000; Page 21. 11/83-93, p. 257-258.
3. Dhundhukanath, Chintamani Rasendra, Mishra S. N. Hindi commentary. 128-133. Vol. 9. Varanasi: Chaukhamba Orientallia; 2000; Page 376.
4. Bhatta K.G, Sangraha Rasendra Sara, Tripathi I. D. Hindi commentary. 2nd Edition. 191-196. Vol. 1. Varanasi: Chaukhamba Orientallia; 1998; Page 48-49.

5. Bhatt Krishnaram, Manimala Siddha Bhesaja. Kaladhar Bhatt Hindi commentary Published by Chaukhamba Krishnadas Academy. 3rd Edition. 66-67. Vol. 4. Varanasi: Page 159–160.
6. Parvatiputra Nityanath, Rasa Ratnakar. Vadikhanda Ridhikhanda, commentary by Swaminath Mishra, Published by Chaukhamba Publishers. 2nd Edition. 84-86. Vol. 3. Varanasi: Page 35.
7. Hari Prapanna Ji, Rasa Yoga Sagar. 1st Edition. II. Varanasi: Krishnadas Academy; 1998; Page. 563–565. 2531-2538.
8. Acharya Y. T., editor. Ayurved Dipika & Jalpa Kalpataru commentary. 2nd Edition. V. Chaukhambha Publishers: Varanasi; 2002. Agnivesha's Charaka Samhita; 3197–3199.
9. Acharya Y.T, et al., editors. Sushruta, Sushruta Samhita, Kalpa Sthan, Nibandha Sangraha Dalhana commentary. 9th Edition. 5. Vol. 2. Chaukhambha Surabharati Prakashan: Varanasi; 2003; Page 564.
10. Patel, Bhatt Rasamanikyam - P.G. Thesis, GAU. 1966-1967.
11. Anadkat Harish A, et al. Pharmaceutico - clinical study of Rasamanikyam resulting its efficacy on Kshudra Kushta. 1988.
12. Mishra D.K, et al. Rasamanikya Evam Yashadamrut MalAhara Ka Nirmanatmaka Tatha Vicharchika Vyadhi Par Prabhavotpadaka Adhyayana. 1999.
13. Shrimannarayan K. “A compilation work on Drug Research Standardisation of Rasaushadhi”, GAU. 2004.
14. Michalsen A, Roth M, Dobos G, Aurich M. Stuttgart, Germany: Apple Wemding; 2007. Medicinal Leech Therapy.