



MANJALKIZHI: A SYESTEMATIC REVIEW ARTICLE ON UNIQUE SWEDANA MODALITY

¹Dr. Bhagyavathi S, ²Dr. Sanath Kumar D G

¹2nd year PG Scholar, ²Professor and HOD

¹Department of Panchakarma

¹KVG Ayurveda Medical College and Hospital, Ambateadka, Sullia, Dakshina Kannada, India

Abstract: Swedana is effective for managing pain in musculoskeletal disorders and is widely used by Ayurveda practitioners. Under many classifications of Swedana, Shamananga Swedana mentioned by Sushruta is practised for management of pain where the benefits are obtained by absorption of potency of medicines through the skin. Kerala, a state in India renowned for its Ayurveda tradition, practices Manjalkizhi. The ingredients of Manjalkizhi are Haridra Churna, Laja, Tila, Shatapushpa, Kanyasara, Sarjarasa and Egg, most of these possess Ushna Veerya, Ruksha and Laghu Guna, Kaphavatahara and Vedanasthapana properties hence it can be considered under Ruksha Pinda Sweda. Rookshana is adopted as the main line of treatment followed by Vatahara Chikitsa in the diseases like Manyasthambha, Avabahuka, Kaphavataja Gridrasi, Katigraha, Amavata etc as there is involvement of Kapha along with Vata. Therefore, this Pinda Sweda can be integrated into clinical practice as Rooksha Swedana. Manjalkizhi consists of the drugs which are easily available and it is economical. This approach provides a valuable addition to traditional treatment methods.

KEYWORDS:

Manjalkizhi, Swedana Karma, Pinda Sweda, Rooksha Sweda, Kerala traditional practice.

INTRODUCTION

Literature review

I. Swedana:

The procedure which reduces Sthambha (stiffness), Gauravata (heaviness), Sheetata (coldness) in the body and which induces perspiration is considered as Swedana [1]. This procedure is applicable as Poorva Karma (Pre-operative measure in context of Panchakarma), Pradhana Karma (Prime treatment modality as Shadupakramas- six treatment principles), Pashchat Karma (Post-operative measure in the context of Shalya Nirharana, Murdagarbha) [2]. Swedana emerges as a crucial and highly recommended treatment option not only for Vataja Vyadhis but also for Vata-Kaphaja Vyadhis [3]. This procedure can also be used as Shodhananga and Shamananga Swedana where the benefits of Shamananga Swedana is mentioned as Agnideepti (increases digestive fire), Maardavam (produces softness), Twakprasadam (brings luster to the skin), Bhaktashradda (increases food intake), Srotasam Nirmalatwam (cleanses the channels), Hanti Nidra Tandra (reduces drowsiness and excessive sleep), Sandhi Stabdha Hanti (reduces the stiffness in joints), Cheshta Aashu (helps to increase the range of movements of affected joints) [4]. Acharya Charaka has broadly classified Swedana into Sagni and Niragni Sweda which is further classified into 13 types and 10 types respectively [5].

II. Pinda Sweda/ Sankara Sweda:

All types of Pinda Sweda are included under Sankara Sweda by Acharya Charaka [6]. Acharya Sushruta and Vagbhata has mentioned 4 types of Sweda like Tapa, Ushma, Upanaha and Drava Sweda where all Pinda Sweda are included under Ushma Sweda [7],[8]. Acharya Vangasena, Bhela, Kashyapa has included all Pinda Sweda under Sankara Sweda [9], [10], [11]. Fomentation using bolus prepared of drugs with or without being wrapped in the cloth is termed as Pindasweda [12]. The term Pinda denotes a lump or bundle. It is also known as Sankarasweda [6]. Sankara stands for ‘mixture’ which signifies that it is a combination of different materials. It is mentioned as among 13 types of Sweda Sankarasweda is the best out of them [13]. The ancient physicians of Kerala collectively call five procedures as Keraleeya Panchakarma due to their established prevalence in the practice and Pindasweda is one among them [14].

The drugs like Tila, Masha, Kulattha, Amlakanjika, Ghrita, Taila, Mamsa, Odana, Payasa and Krushara with Mamsa may be used for Pindasweda for conditions of Vata. Either the drugs like Tila should be boiled and made into bolus and used for Sweda by dipping in liquids such as Kanjika or Ksheera, or it may be made into semisolid like Payasa or Odana and made into bolus and used for Swedana. This procedure is mentioned as Snigdha Pinda Sweda. In the same method powdered dung of cow, donkey, camel, pig etc. may be made into bolus and used for Sweda in conditions of Kapha. This procedure is used as Rooksha Pinda Sweda [15].

III. Manjalkizhi:

The word Manjalkizhi consists of two words Manjal and Kizhi. Manjal means Haridra and Kizhi refers to Pinda in Malayalam. So Manjalkizhi/Haridrachurna Pinda Sweda is a procedure where Pinda sweda is performed by using a Kizhi (Pinda) contains Haridra, Laja, Tila, Shatapushpa, Sarjarasa, Kanyasara & Egg [16].

the qualities of ingredients of manjalkizhi are given in table no.1

table no.1

Name	Rasa	Guna	Veerya	Vipaka	Doshagnata
Haridra [17]	Katu, Tikta	Ruksha	Ushna	Katu	Kaphapittahara
Laja [18]	Madhura	Laghu	Sheeta	Madhura	Kaphapittahara
Tila [19], [20]	Katu, Tikta, Kashaya	Guru, Snigdha	Ushna	Katu	Vatahara, Kaphapittakara
Shatapushpa [21]	Tikta, Katu	Laghu, Snigdha, Tikshna	Ushna	Katu	Kaphavatahara Pittakara
Sarjarasa [22]	Kashaya, Tikta	Ruksha	Sheeta	Katu	Kaphahara
Kanyasara [23]	Tikta, Madhura	Snigdha, Picchila	Sheeta	Katu	Tridosahara
Kukkutanda [24]	Madhura	Guru	-	-	Vatakaphahara

MATERIALS AND METHODS:**I. MANJALKIZHI:****1. POORVAKARMA****I.1 Sambhara Sangraha:**

For Sarvanga Swedana- 8 Pottalis are required

For Ekanga Swedana- 2 Pottalis are required

ingredients for the procedure are given in table no 2. (the below mentioned quantity is for preparation of 1 pottali)
table no 2:

SR.NO	Ingredients	Quantity
1.	Laja	100g
2.	Tila	100g
3.	Haridra Churna	25g
4.	Shatapushpa Churna	25g
5.	Kanyasara	25g
6.	Sarjarasa	25g
7.	Egg	1

Materials required for the procedure are Droni, Gas stove, Vessels, Spoon, Kora cloth (18x18 inches), Thread (18 inches), Therapists, Attender.

I.2 Preparation of Manjalkizhi:

500ml of water should be taken and boiled. To the boiling water 25g of Kanyasara should be added and dissolved in it. Once the Kanyasara has dissolved, 100g of Laja should be mixed followed by 100g of crushed Tila. To the above mixture, 25g of Haridra, followed by Shatapushpa Churna, and then Sarjarasa should be added and mix properly after each addition. Finally, Kukkutanda (egg) should be break open and added to the mixture.

A cotton cloth of 18 inches in length and breadth, which is neither too thick nor too thin should be taken. Then the prepared mixture should be placed in centre of the cloth. The mixture has to be hold tightly at the base and tied securely. All the three corners should be brought to the centre and fixed. Using the larger fold, the three corners are tied together with thread to form a tuft. The tuft prepared thus forms a Pottali/Kizhi/Pinda which weighs about 250-300g.

I.3 Preparation of Patient:

- After evacuating the bowel and bladder, the patient should be asked to sit with legs extended or lie down over the Droni (massage table).
- Amalaki Tala Dharana (Talam)- application of the paste of Amalaki (*Emblica officinalis*) on the vertex of the head should be done i.e; in case of Sarvanga Swedana [25].

2. PRADHANA KARMA:**2.1. Procedure:**

- Five experienced therapists are needed for Sarvanga Swedana, while two therapists are required for Ekanga Swedana.
- The temperature of the heated bolus should be checked and hold the bolus in the right hand by its tuft.
- The parts of the body should be massaged uniformly, ensuring both sides are treated in a synchronized manner and in the same direction.
- It is essential to maintain a consistent temperature across all parts of the body.
- When the boluses cool down, they should be replaced with heated ones by the therapist.

2.2. Heating of Pottali:

- Vessel should be heated and the prepared Pottali should be placed in the vessel and moved continuously to avoid burning of the Pottali.

2.3. Procedure for moving the Pottali:

- The Pottali should be moved in two distinct steps during the procedure.
- Momentary touch: When the bolus is heated, the Pottali should be touched to the affected part repeatedly and momentarily, especially when the temperature is slightly high.
- Moving the Pottali: As the temperature of the Pottali decreases, it should be moved in a specific direction over the affected part.
- If a joint is affected: Using a circular movement with the Pottali.
- If the extremities are affected: Moving the Pottali in Anuloma Gati (along the direction of hair growth).
- The whole procedure should be continued for 20-30mins.

3. Pashchat Karma:

- The treated area should be cleaned with a dry towel.
- Advise the patient to take a hot water bath after resting for half an hour.
- Instruct the patient to avoid daytime sleep, travelling, consuming Vidahi Ahara (foods causing burning sensation), and sleeping in uneven places.
- Advise the patient to rest.

4. Precautions:

- Care should be taken while frying the contents of Manjalkizhi to avoid charring.
- Bolus should be tied firmly to avoid leaking of contents while applying it on the body of the patient.
- Temperature of the bolus should be checked by the therapist over dorsum of the hand before applying it on the patient.
- Bolus should be continuously moving over the heated vessel while reheating the pottali to avoid burning.
- The pressure, direction of the movements, rubbing etc should be controlled by the therapist during the whole procedure.
- Fresh Pottali has to be prepared daily.

5. Complications and its management:

- Shivering, fainting and rashes are the common complications seen in the patients during or after the procedure.
- Shivering occurs due to the uneven distribution of temperature or prolonged gap in between the replacement of boluses. In this condition, patient is advised to take rest, covered with a blanket.
- Fainting occurs due over use of the procedure. In this condition cold water should be sprinkled over the face.
- Due to overheating or sensitive skin or Pitta Prakriti rashes may occur in patients. Mixture of Madhu and Ghrita or Shatadoutha Ghrita should be applied over the affected parts.

6. Indications and contraindications:

Manjalkizhi is indicated in Kapha Samsrushta Vatavyadhis like Manyasthambha, Avabahuka, Katigraha, Vatakaphaja Gridrasi, and Amavata etc..

Contraindicated in Ajeerna, Jwara, Raktapitta, Kushta, Prameha, Pandu, Pittaja Vikaras etc.

DISCUSSION:

Twak is considered as the largest sensory organ through which the procedural effect of Swedana can be attained. The properties of the medicine used for Swedana undergoes Pachana by Bhrajakapitta and reaches all the Dhatus by the Veerya of Aushadhi finally results in stimulating of Dhatwagni and Srotoshodhana.

The probable mode of action of Manjalkizhi can be explained under Rookshana, Margavishodhana, Swedana and anti-inflammatory properties.

The ingredients like Haridra, Laja, Shatapushpa, Sarjarasa used for preparing the Pottali possess Laghu, Ruksha properties which are opposite to the Gunas of vitiated Kapha Dosha, thus further decreases Kapha Dosha by performing Rookshana Karma. The Rookshana achieved by this procedure helps to decrease the stiffness, heaviness and increases the range of movements in affected joints. The procedural effect of Swedana stimulates sympathetic receptors and hypothalamus which results in secretion of Adrenalin, thus causes adipose lipolysis and excretion of sweat. This can be understood as Kapha Medovilayana and therefore Manjalkizhi can be used as Bahya Rookshana modality.

Drugs like Shatapushpa possess Tikshna, Ushna Guna, and Tila is having Ushna Guna which penetrates into Sukshma Srotas (minute channels) and helps to expel the waste products out from the body through skin, hence clears the channels. Therefore, Manjalkizhi can help in removing the Avarana of Vata Dosha caused by Kapha and Meda which can be understood as Margavishodhana.

The procedure of Pinda Sweda causes local rise in temperature due to Ushna Tikshna Guna. During the process of Manjalkizhi there will be vasodilation of the localised blood vessels and promotes the removal of metabolic waste through circulation. Kumari, Shatapushpa, Kukkutanda possess Ushna, Snigdha Guna and Shoolahara properties which combats the Sheeta and Ruksha Guna of Vata thereby reducing Shoola, Stambha and therefore the action of Swedana can be attained.

The clinical study on Tila (sesame) showed that it reduces acetic acid induced writhes and formalin induced paw licking in mice. Similarly, it significantly delayed the reaction time of animal to the heat stimulus. Acetic acid causes inflammatory pain while inducing capillary permeability, formalin exhibits neurogenic and inflammatory pain while hot plate induced pain indicates narcotic involvement. In several researches it has been found that sesamin inhibits 5 desaturase activity, resulting in accumulation of diamolinolenic acid which displaces arachidonic acid and consequently decreases the formation of pro inflammatory 2- series prostaglandins (PGE₂). Therefore, sesame oil may have a therapeutic potential supplementation for pain and inflammatory disease due to presence of active principle ligands [26].

Researchers discovered that curcumin has anti-inflammatory properties by inhibiting the pro-inflammatory transcription factor (NF- κ B) in 1995. The capacity of *C. longa* to suppress both inflammatory prostaglandin derivative of arachidonic acid and neutrophil activity during inflammation may also indicate its anti-inflammatory activities [27].

It was reported that seed essential oils of Shatapushpa are the potential source of antioxidant and also have antimicrobial and antispasmodic properties. Recently the phytochemical screening, anti-depressant and analgesic effects of aqueous extracts by *Anethum graveolens* L. has been reported [28].

Sarjarasa contains triterpenic acid, tannin acid and phenolic has antibacterial, analgesic, and wound healing effect [29].

Kumari shows Anti-inflammatory, antiulcerogenic, anaesthetic, fertility, antifertility, hepatoprotective, antibacterial, antiprostaglandin effect, cathartic, hypotensive, antispasmodic, spasmogenic actions [30].

Phospholipids, Lutein/Zeaxanthin, Ovotransferrin, High-density Lipoproteins, Phosvitin are the phytochemical constituents of the Egg which exhibits anti-inflammatory property [31].

Therefore, Manjalkizhi can be used in the Inflammatory conditions like Rheumatoid arthritis, Gouty arthritis, Osteoarthritis, Ankylosing spondylitis, Lumbar Spondylitis, Cervical spondylitis and radiculopathies like Lumbar Spondylosis, Cervical Spondylosis.

Therapeutic application of Manjalkizhi:

This procedure can be useful in Vatavyadhis associated with Kapha Dosha as a Rookshana Karma. Diseases like Manyasthambha, Avabahuka, Vatakaphaja Gridrasi, Katigraha are having Vata Kapha Dushti. Manyasthambha a disease of Vatavyadhi caused by the obstruction of Vata Dosha by Kapha in Manya Pradesha (nape of the neck), and Rooksha Sweda is the primary treatment recommended for this condition [32]. Vatakaphaja Avabahuka, as described by Madhavakara, Rookshana should be implemented before proceeding with the Brihmana treatment approach [33]. Vatakaphaja Gridrasi, a disease of Vata Pradhana Dosha with the involvement of Kapha, Rookshana should be carried to pacify Kapha Dosha before treating Vata through Vatahara Chikitsa [34]. Amavata a disease associated with Ama and Vata Dosha, is specifically indicated for Rooksha Swedana, [35]. In all conditions involving Graha and Sthambha like Katigraha Kapha plays a significant role [36], hence Rooksha Sweda is an appropriate treatment method. Hence Manjalkizhi can be better treatment choice as an alternative Rooksha Sweda to Choornapinda Sweda, Valuka Sweda as it possesses both Kapha and Vata Prashamana qualities and doesn't increase Vata Dosha. Therefore, it can be incorporated in all Vatavyadhis associated with Kapha Dosha like Manyasthambha, Avabahuka, Vatakaphaja Gridrasi, Katigraha and Amavata.

CONCLUSION:

Swedana is an important therapeutic measure in Ayurveda which has got worldwide popularity because of its simple administration and its effectiveness in several disorders. Manjalkizhi provides both Rookshana and Swedana along with anti-inflammatory actions to bodily tissues. It is effective in Manyasthambha, Avabahuka, Vatakaphaja Gridrasi, Katigraha and other Vatavyadhi involving Kapha association and also in Amavata. This Pinda Sweda is easy to perform and cost effective hence can be used in day-to-day practice.

Studies can be done in diseases of Vatavyadhi associated with Kapha as an alternate approach for Rooksha Sweda.

REFERENCES:

1. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 22nd chapter, Verse-11, Pg no-120.
2. Acharya Sushruta, Sushruta Samhita with the Nibandhasangraha commentary of Sri Dalhanacharya and Nyayachandrikapanjikas of Sri Gayadasacharya on Nidana Sthana edited by Vaidya Yadavji Trikamjiacharya & Narayan Ram Acharya; Chaukhamba Orientalia, Varanasi; 2023; Chikitsa Sthana 32nd Chapter, Verse-17-19, Pg no-514.
3. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 14th chapter, Verse-8, Pg no-88.
4. Acharya Sushruta, Sushruta Samhita with the Nibandhasangraha commentary of Sri Dalhanacharya and Nyayachandrikapanjikas of Sri Gayadasacharya on Nidana Sthana edited by Vaidya Yadavji Trikamjiacharya & Narayan Ram Acharya; Chaukhamba Orientalia, Varanasi; 2023; Chikitsa Sthana 32nd Chapter, Verse-22, Pg no-514.
5. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 14th chapter, Verse-39-40,64-65 Pg no-90, 92.
6. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 14th chapter, Verse-25-27, Pg no-89.
7. Acharya Sushruta, Sushruta Samhita with the Nibandhasangraha commentary of Sri Dalhanacharya and Nyayachandrikapanjikas of Sri Gayadasacharya on Nidana Sthana edited by Vaidya Yadavji Trikamjiacharya & Narayan Ram Acharya; Chaukhamba Orientalia, Varanasi; 2023; Chikitsa Sthana 32nd Chapter, Verse-3, Pg no-513.
8. Acharya Vagbhatta, Ashtanga Hridaya with the Sarvangasundara commentary by Arunadatta and Ayurveda Rasayana commentory Hemadri edited by Pt. Hari Sadasiva Sastri Paradakara Bhisagacarya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 17th chapter, Verse-1, Pg no-253.
9. Dr. Rajeev Kumar Rai, Dr. Ram Kumar Rai. Vangasena Samhita. Varanasi: Kush Kumar Rai Prachya Prakashan; 2010; page no-780.
10. Krishnamurthy KH, Priya Vrat Sharma. Bhela-samhitā. Varanasi: Chaukhambha Visvabharati; 2000; Sutra Sthana 22nd chapter, Verse-1, page no-95.
11. Jivaka V. Kāśyapa-samhitā. Vatsya, Pandit Hemaraja Sarma, editors. Varanasi: Chaukhambha Sanskrit Sansthan; 2009; Sutra Sthana 23rd chapter Verse-26, pagr no-26.
12. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 14th chapter, Verse-41, Pg no-90.
13. Krishnamurthy KH, Priya Vrat Sharma. Bhela-samhitā. Varanasi: Chaukhambha Visvabharati; 2000; Sutra Sthana 22nd chapter, Verse-16, page no-97.
14. Dr. T. L. Devaraja. Keraliya- Panchakarma- Cikitsa- Vijnanam. 2nd ed. Pt. Siva Sharma, editor. Varanasi: Chaukhambha Bharati Academy; 2008; page no-13.
15. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 14th chapter, Verse-25-27, Pg no-89.
16. Surendran E, Manojkumar A K, ed. Panchakarma-A guide to treatment procedures in Ayurveda. Kottakkal: VPSV Ayurveda College; 2006.p36
17. Dr. Prakash L Hegde, Dr. Harini A text book of Dravyaguna Vijnana. Reprint, 2019. Vol. II. Varanasi: Chaukhambha Publications; Pg no- 333-343
18. Mishra Shribhava. Bhavaprakasa. 11th ed. Mishra SB, Vaisya SR, editors. Vol. 1. Varanasi: Chaukhambha Sanskrit Bhawan; 2010. Pg no-745
19. Acharya Vagbhatta, Ashtanga Hridaya with the Sarvangasundara commentary by Arunadatta and Ayurveda Rasayana commentory Hemadri edited by Pt. Hari Sadasiva Sastri Paradakara Bhisagacarya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 6th chapter, Verse-23, Pg no-88.
20. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentory by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Sutra Sthana 4th chapter, Verse-22, Pg no-33.

21. Dr. Prakash L Hegde, Dr. Harini A text book of Dravyaguna Vijnana. Reprint, 2019. Vol. III. Varanasi: Chaukhambha Publications; Pg no- 709-715
22. Dr. Prakash L Hegde, Dr. Harini A text book of Dravyaguna Vijnana. Reprint, 2019. Vol. III. Varanasi: Chaukhambha Publications; Pg no- 687-691
23. Dr. Prakash L Hegde, Dr. Harini A text book of Dravyaguna Vijnana. Reprint, 2019. Vol. II. Varanasi: Chaukhambha Publications; Pg no- 502-508
24. Acharya Priyavrata Sharma, editor. Kaiyadeva-Nighantu. 2nd ed. Varanasi: Chaukhambha Orientalia; 2006; Dhanya Vargal Verse-16, page no-303.
25. Dr. T. L. Devaraja. Keraliya- Panchakarma- Cikitsa- Vijnanam. 2nd ed. Pt. Siva Sharma, editor. Varanasi: Chaukhambha Bharati Academy; 2008; Pinda Sweda, Verse-16; page no-23.
26. Gawai AA, Tappe BA, Raghuwanshi B, Mankar A, Vaidya S. TILA - NAVNEETADI LEPA: LITERATURE REVIEW. INTERNATIONAL AYURVEDIC MEDICAL JOURNAL [Internet]. 2020 Mar;8(3):3024–6. Available from: Abhijeet A. Gawai: Tila - Navneetadi Lepa: Literature Review. International Ayurvedic Medical Journal {online} 2020 {cited March, 2020} Available from: http://www.iamj.in/posts/images/upload/3023_3026.pdf
27. Fuloria S, Mehta J, Chandel A, Sekar M, Rani NNIM, Begum MY, et al. A Comprehensive Review on the Therapeutic Potential of Curcuma longa Linn. in Relation to its Major Active Constituent Curcumin. Frontiers in Pharmacology [Internet]. 2022 Mar 25; 13:820806. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8990857/Md>.
28. Moshfekus Saleh-E-In, Sultana N, Hossain N, Hasan S, Md. Rabiul Islam. Pharmacological effects of the phytochemicals of Anethum sowa L. root extracts. 2016 Nov 14;16(1).
29. Waddar SB, Chalageri CC. A Clinical Study to Evaluate Effect of Sarjarasa Malahara Lepa (Sarjarasa Ointment) in the Management of Padadari (Crack Heel). International research journal of Ayurveda and Yoga. 2024 Jun 30;7(6).<https://www.irjay.com/index.php/irjay/article/view/1193>
30. A COMPREHENSIVE REVIEW AND PHARMACOGNOSTICAL STUDIES OF AYURVEDIC MEDICINAL PLANT KUMARI (ALOE VERA LINN - Yahoo India Search Results [Internet]. in.search.yahoo.com. [cited 2024 Jul 23]. Available from: [https://in.search.yahoo.com/search?fr=mcafee&type=E210IN885G0&p=A+COMPREHENSIVE+REVIEW+AND+PHARMACOGNOSTICAL+STUDIES+OF+AYURVEDIC+MEDICINAL+PLANT+KUMARI+\(ALOE+VERA+LINN](https://in.search.yahoo.com/search?fr=mcafee&type=E210IN885G0&p=A+COMPREHENSIVE+REVIEW+AND+PHARMACOGNOSTICAL+STUDIES+OF+AYURVEDIC+MEDICINAL+PLANT+KUMARI+(ALOE+VERA+LINN)
31. Zhang X, Chelliappan B, S R, Antonysamy M. Recent Advances in Applications of Bioactive Egg Compounds in Nonfood Sectors. Frontiers in Bioengineering and Biotechnology. 2021 Dec 16;9.
32. Acharya Sushruta, Sushruta Samhita with the Nibandhasangraha commentary of Sri Dalhanacharya and Nyayachandrikapanjikas of Sri Gayadasacharya on Nidana Sthana edited by Vaidya Yadavji Trikamjiacharya & Narayan Ram Acharya; Chaukhamba Orientalia, Varanasi; 2023; Chikitsa Sthana 4th Chapter, Verse-20, Pg no-428b.
33. Sri Madhavakara. Madhavanidanam. Madhukosa commentary by Sri Vijayaraksita and Srikanthadatta, Sastri Bhisagratna SB, editor. Vol. 1. Varanasi: Chaukhambha Sanskrit Sansthan; 2006; 22nd chapter Vatavyadhi Nidanam Verse- 64, page no-168.
34. Acharya Charaka, Charaka Samhita with the Ayurveda Deepika commentary by Chakrapanidatta edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Orientalia, Varanasi; 2023; Chikitsa Sthana 28th chapter, Verse-56-57, Pg no-619.
35. Sri Madhavakara. Madhavanidanam. Madhukosa commentary by Sri Vijayaraksita and Srikanthadatta, Sastri Bhisagratna SB, editor. Vol. 1. Varanasi: Chaukhambha Sanskrit Sansthan; 2006; 25th chapter Amavata Nidanam Verse- 1-5, page no-178.
36. Sri Bhavamisra. Bhavaprakasa with Vidyotini Hindi Commentary by Pandith Brahmasankara Misra. 11th ed. Vol. 2. Varanasi: Chaukhambha Sanskrit Bhawan; 2010, Amavatadhikara Varse-53, Page no-286.