

## VISHA IN AYURVEDA & IMPORTANCE OF THEIR SHODHANA

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### ABSTRACT

*Visha Chikitsa (Treatment of Poison) describes how harmful substances affect body activities and how they harm human tissues. Through diet and environmental contamination of the air, water, and soil, humans are continually exposed to potentially harmful environmental pollutants. Despite their alleged negativity, Visha Dravyas are employed in many Ayurvedic formulations due to their quick effectiveness and very low dosage. Numerous Visha Dravyas of mineral, plant, or animal origins are described in Ayurveda. In the Ancient Samhitas, particular antidotes for poisons are recommended in order to reverse their effects. Charaka Samhitha, Sushruta Samhita, and Ashtanga Sangraha, among other ancient literature, offer substantial information on this branch of Ayurveda. A deadly poison, according to our ancient Acharya, can be transformed to treat chronic diseases. According to our old Acharya, if a poison is used correctly, it can transform into an extremely effective remedy. This assessment is a straightforward attempt to condense knowledge on the various Ayurvedic treatments for toxic and semi-poisonous medicines as they are portrayed in the Indian medical system (Ayurvedic Antidote).*

## INTRODUCTION

The substances which are not so lethal but produces certain toxic symptoms are categorised under Upavisha. In Atharvaveda two types of visha are found one is sthavara and other is jangama and their management through mantrachikitsa is narrated. In Ramayana Rama and Lakshmana were treated for poisoning by Vaidya Sushena with the help of Sanjeevani vidya along with four types of herbs from Himalaya. In Mahabharata, poisoned Bhima was treated by the sarpavisha. Further, a conversation between Kashyapa and Takshaka regarding treatment of poisoning (vishachikitsa) is also reported in Mahabharata. Brahmapurana (3/51) also narrates the conversation between Dhanvantari and Nagadevi which gives information about use of Vishachikitsa at that time. A poison is commonly defined as a substance which when administered, inhaled or swallowed is capable of acting deleteriously on the body & hazardous damage to vital organs. Vishas are classified into 2 main categories like Nasiargika and Kritrima. Under kritrimavisha two types of poisons like Gara Visha and Dushi Visha.

Types of Visha		
Sr. No.	Akritrima	Kritrima
1.	<p>Sthavara</p> <p>a.Plant origin</p> <p>b.Khanija origin</p> <p>natural ← → artificially prepared</p>	Garvisha
2.	Jangama	Dushivisha

In Ayurveda, plants are primary source of medicine. A number of compounds have been isolated from medicinal plants and bring in use for mankind. However, most of these medicines have been withdrawn because of their toxicity or adverse effect. Various poisonous plants, like Bhanga (*Cannabis sativa* linn) Ahiphen (*Papaver somnifera* linn), Vatsnabha (*Aconitus ferox*), Kupilu (*Strichnos nuxcomica* linn), Dhatura (*Dhatura metel* linn), and minerals like Parad (mercury), Arsenic have been used in Ayurveda as different plants having phytochemical area still use in crude form or after Shodhan process.

Charak also explains the importance of Shodhana while using plants as medicines and if used improperly is a fatal poison. In Rasashastra, Shodhana process is a part of Samaskara of drug, which is used to alter quality of drugs, hence in Rasashastra, Shodhana means not a process of purification but also involves the detoxification and enhancing the efficacy of drugs. Shodhana process described for various drugs depending on the Guna (nature) and Dharma (Properties) of the drug. In Agadtantra, one of the parts of Ashtangayurveda has specific importance regarding study of poisons, which helps to prevent persons from effect of poison. Also, these poisonous plants mainly called, Visha and Upvisha. Using as medicinal use must be used after process of purification (Shodhana), which helps to prevent the fatal effect of vishadravya and have important medicinal uses, so it is important to understand the process of Shodhana of Visha and Upvisha mentioned in Ayurvedic text.<sup>2</sup>

### General Shodhana

- Gomutra Nimajjana.
- Swedna.
- Bharjana.
- Bhavana.
- Nisnehana
- Kshalana.
- Nistwachkarana.<sup>3</sup>

### Shodhana Of Visha Dravya Vastanabha, (*Aconitum ferox*)

The roots of Vatsnabha were cut into small pieces and tied in pottali, it can be detoxified by placing it in cow's milk or goat milk in Dolayantra for 3-6hrs. After that, pieces of Vatsnabha are washed with warm water and used for therapeutic purpose.

### Shodhana Of Upvisha Dravya (Sub-Poisonous Drug)

**1) Ahiphena (*Papaver somniferum* linn) -**

The exhudate is dissolved in water, filtered with cloth, and then mixed with Godughda (cow's milk), which is heated over a low flame. Ginger juice is then added to the paste, which is then thrice through and dried in the shade.

**2) Bhallataka (*Semicarpus anacardium* linn) (Seed) -**

The top portion of Bhallataka fruits should be removed with a knife and mixed with brick powder before being placed in a pottali (bag) and tied at the mouth with thread. When the brick powder becomes wet with oil, this is gently rubbed by hands, and the skin of the Bhallataka is unwrapped and washed with hot water to produce shudh Bhallataka.

**3) Bhang (Cannabis sativa linn) (Except Seed) -**

Leaves are tied in a cloth and soaked in water; the process must be repeated until the discharge of a greenish hue stops.

**4) Dhatura (*Dhatura Metal* Linn) -**

Seeds are preserved in potallis and Swedana (Fomented) in Dolayantra by adding Godughda (cow's milk) or Gomutra (cow's urine) for three hours. Once that, seeds are washed with warm water and dried in the sun. The seeds are used after the seed coat has been removed.

**5) Gunja (*Abrus precatorius* linn)-** Seeds are tied in two layers of fabric and suspended in Godughda, Gomutra, or kanji—any of these—

for Swedan taken in Dolayantra. The suspension is then boiled with Gunja seeds, which are then removed, cleaned in hot water, dried, and preserved.

**6) Jaipala (*Croton tiglium*)-**

Remove the physical imperfections of seeds by washing them with water, drying them in the shade afterward, and removing the outer covering. Next, the cotyledons are gently divided to remove the radicle with a knife. Seeds are knotted in potalli and put through three rounds of Swedana using Godugadh (cow's milk).

**7) Swedana technique is used to purify the roots of Karveera (*Nerium indicum*).**

The roots are cleaned with water and dried in Dolayantra after being soaked in Godugdh (cow's milk) for three hours after Shodhana.

**8) Langli (*Glosiosa superoba* Linn)-**

Fresh Langli roots and seeds are soaked in cow's urine for 24 hours before being washed with lukewarm water to detoxify them.

**9) Snuhi (*Euphorbia nerrifolia* Linn)-**

Snuhi milk is gathered, combined with Imli (tamarind) juice, placed in a container, and let to dry in direct sunlight. Once properly dried, it should be used.

**10) Kuchla (*Strychnus nuxvomica*)-**

For seven nights, the seeds of the Kuchala plant must be submerged in fresh cow urine (Gomtra).

It is then taken off and rinsed with water.

The seed coat and embryo are removed, and the cotyledons are placed in Goghrit (cow's ghee) and powdered cells before the seeds are further detoxified by Swedana boiling with Godughda (cow's milk) in Dolayantra for three hours.<sup>4</sup>

## DISCUSSION

In Ayurveda, toxicity of any drug is well versed. Along with that precaution from that toxicity and its treatment is also said in various texts and books. Dose description is also explained to avoid the hazardous effects of medicines. Anupana and sahpana also play a very important role to get rid of noxious effects of different drugs of toxic effects after Shodhana. Poisons can be used as a catalyst to increase the drug action with which they are taken because they are highly potent and fast acting drugs.

But To lessen the fatality of the toxin, they should be cleansed before utilising. These Visha & Upvisha can cure various diseases which are difficult to treat.

## CONCLUSION

Toxic alkaloids of various medicines are being detoxified and removed from the plants with the help of easily available medias. Ayurveda emphasized on the use of these plants after purification especiaaly in case of internal use. Sometimes, on external application purification ids not a mendatory step before use as medication. So for chronic and life threatening diseases , use of poisons is proved to be beneficial.

## Acknowledgement

We pay our regards to the higher authorities for their support .

## Conflict of Interest

None .

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**NOMENCLATURE OF NAVAYAS LOH W.S.R. TO IRON  
DEFICIENCY**

**ANAEMIA : A LITERARY RESEARCH**

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**Abstract**

Ayurveda a stream of science in which miraculous properties of various dravyas are hidden. These give us all the required contents in its vegetations, minerals and metals etc. Among these, iron is very essential micronutrient for body which is required for essential biochemical & biological reactions within body. Among all the Ayurvedic preparations, Navayas Loh is that formulation which contains eight iron containing plant parts and one metal that helps to treat anaemia, heart diseases, skin diseases, piles and jaundice etc. Anaemia is a serious global public health problem of today's era and it particularly imparts its affect on young children and pregnant women. WHO estimates that 42% of children less than 5 years of age and 40% of pregnant women worldwide are anaemic.

Anaemia is a condition of deficiency of haemoglobin concentration in body. Haemoglobin has oxygen carrying capacity and should remain within normal limits in body for normal functioning of body otherwise symptoms like fatigue, dizziness, dyspnoea may occur. Nutritional deficiency is the major reason of anaemia these days. This article will make the way to good health approach via Ayurveda.

**Keywords :** Ayurveda, Anaemia, Haemoglobin, Iron, Navayas Loh.

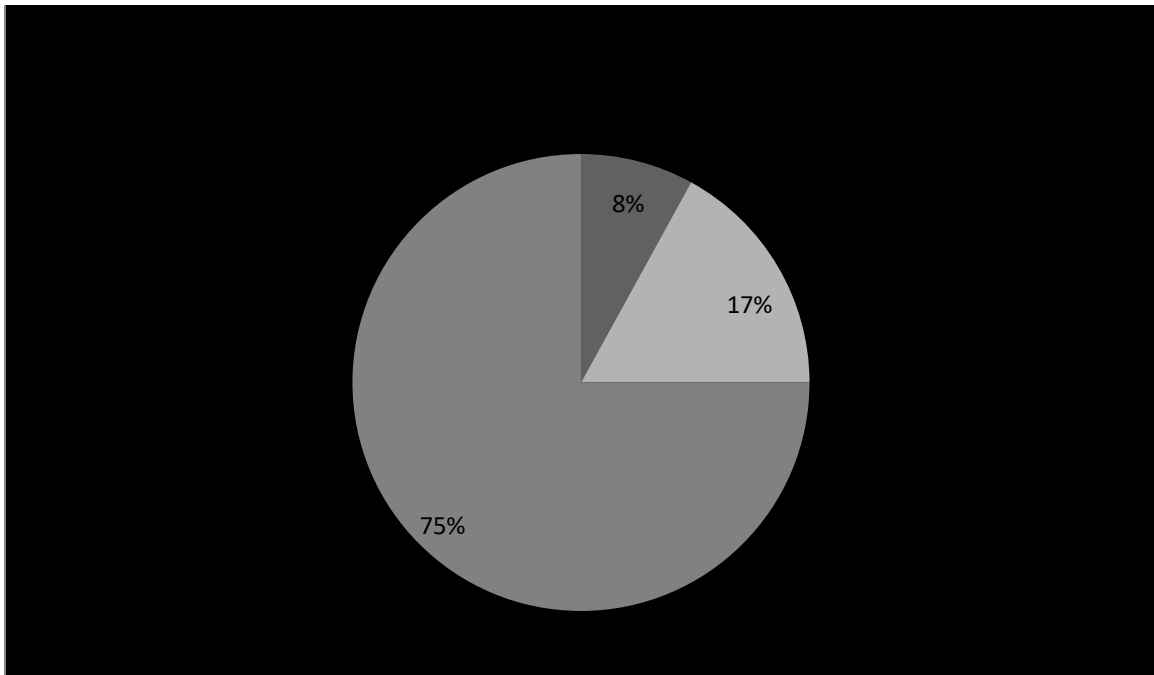
## Introduction

Anaemia is denoted as Pandu Rog in Ayurveda. It is the disease of predominating Pitta Dosha (fire) in body. In this case Rasa Dhatu (plasma) gets overdigested leading to shortage of that particular Dhatu. It leads to further shortage of next Dhatus in body. Body survives only if normal Rakta Dhatu (blood) is produced. Due to importance of Pitta Dhatu in Dhatu Poshan (nourishment) it is placed in Dash Pranayatan (vital abode) in Ayurvedic texts. Pitta is Katu (pungent) and Ushana (hot potency) in nature so if present in excess in body reduces Dhatus and Malas (residues) by aggravating their digestive functions as Dhatus are not getting nourishment in case if Pitta is higher in concentrations in body. In return Vata Dosha (air) due to its drying nature, makes other Dhatus dry and so diminish them. In case of Kapha Dosha (mucous) which is Margavrodhaka (barrier) in nature become a barrier for Rasa Dhatu pathway. It further leads to deficiency of nutrients in next Dhatus due to lack of required proportions so leads to lowering of levels of Dhatus. So in all these cases Rasa Dhatu is directly affected by Pitta, Vaata and Kapha Dhatus or Doshas. So it is of utmost importance that our diet should be a balanced diet according to the seasons so that proper production of all the secretions must be regulated timely by our body.

## Classification of Anaemia

Classification of Anaemia according to WHO (g/dL)<sup>1</sup>

Population	Non-Anaemia	Mild Anaemia	Moderate Anaemia	Severe Anaemia
6-59 months of age	$\geq 11$	10-10.9	7.9-9	$< 7$
5-11 years of age	$\geq 11.5$	11-11.4	8-10.9	$< 8$
12-14 years of age	$\geq 12$	11-11.9	8-10.9	$< 8$
Non- pregnant women ( $\geq 15$ years)	$\geq 12$	11-11.9	8-10.9	$< 8$
Pregnant women	$\geq 11$	10-10.9	7-9.9	$< 7$
Men ( $\geq 15$ years)	$\geq 13$	11-12.9	8-10.9	$< 8$

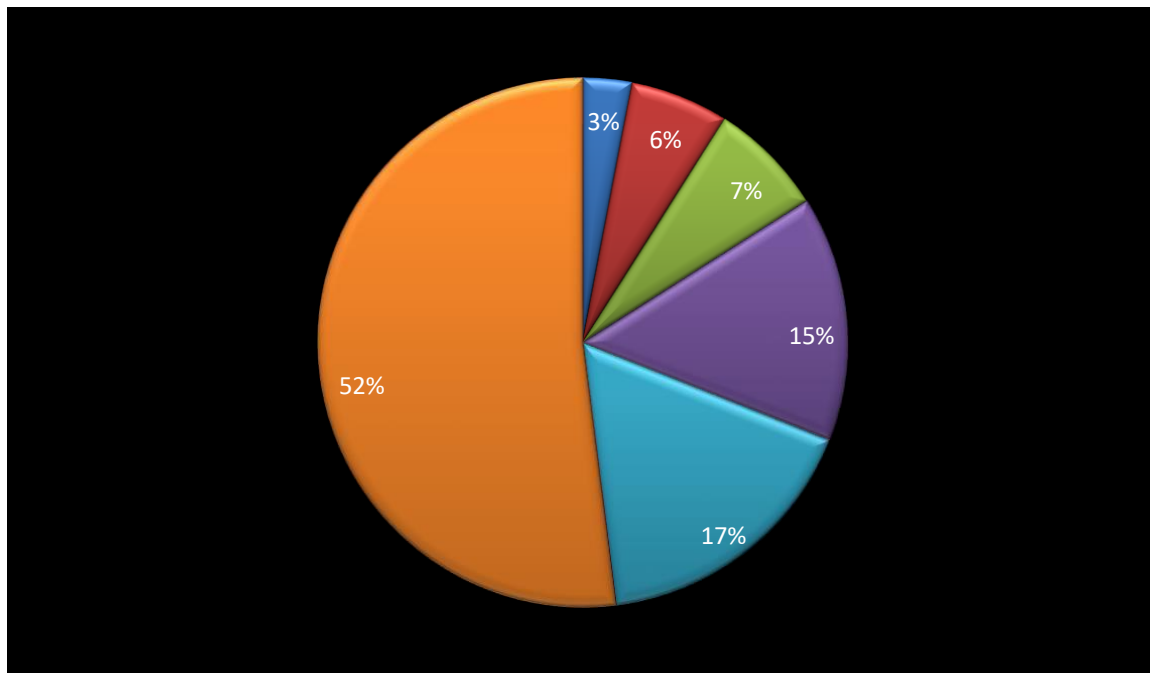


**Distribution of signs among anaemic adolescents**

8% Sore tongue

17% Koilonychia

75% Pallor



**Distribution of symptoms among anemic adolescents**

3% Weight loss

6% Shortness of breath

7% Dizziness

15% Restlessness

17% Lack of concentration

52% Fatigue

**Methods** Treyushantriphlamustvidangchitrikah samah |

**Navayorajso bhagastachchurnam madhusarpisha ||**

**Bhakshyet Panduhridrogkushtharshah kamlap ham ||**

**Krishanatreya's Navayas Loh<sup>2</sup>**

1. Shunthi (Zingiber officinale) – 1 Part
2. Marich ( Piper nigrum) – 1Part
3. Pippali ( Piper longum) – 1 Part
4. Amla ( Embelica officinalis) – 1 Part
5. Bahera ( Terminalia bellerica) – 1 Part
6. Vidang ( Embelia ribes) - 1 Part
7. Nagarmotha ( Cyprus rotundus) -1 Part
8. Chitrakmoola ( Plumbago zeylanica)–1Part
9. Loh Bhasma ( Iron metal ash) – 9 Parts

Each of these contents contain iron in it so it is used in anaemia. As

1. **Shunthi-** Its rhizome part is used. It contains inorganic elements such as a) Fe b) K  
c) Mg  
d) Mn  
e) P  
f) Al etc.<sup>3</sup>

Iron is present 279.7 mg/ 100g of ginger root.<sup>4</sup>

2. **Marich** – Its fruit part is used. It is a perennial crop. It is known as “ King of Spices”. It contains iron.<sup>5</sup>  
Iron content is 16.8 mg/100gm in it.<sup>6</sup>
3. **Pippali** – Its fruit part is used. It contains 62.1 mg/ 100g iron.<sup>7</sup>
4. **Amla** – Its fruit part is used. It contains 1.2 mg/ 100g.<sup>8</sup>
5. **Bahera** – Its seeds contain iron  $2.71 \pm 0.53$ mg/ Kg.<sup>9</sup>
6. **Vidang-** Its seeds are used. It contains iron content in 5.734 ppm.<sup>10</sup>
7. **Nagarmotha** –Its leaves contain 10.12 mg/ 100g of iron content.<sup>11</sup>



8. **Chitrakmool**- Its root contains essential micronutrients like iron 2.92 ppm.<sup>12</sup>
9. **Loh Bhasma**- Iron content is present in the form of  $\text{Fe}_2\text{O}_3$  in 89.48% (average) in Loh Bhasma.<sup>13</sup>

## Discussion

Pandu (anaemia) is very prevalent disease these days. Literary research is the need of the hour for its safe and specific usage in iron deficiency anaemia. Its each drug contains iron in it. Our ancient sages described very wisely Navayas Loh for anaemia without any laboratory investigations amazingly.

## Conclusion

Navayas Loh is the most popular drug of choice for anaemia in Ayurveda. Its each content contains iron in different concentrations. That is why its nomenclature is due to the presence of nine iron containing dravyas (contents). If taken within prescribed doses and with suitable Anupana (vehicle) along with balanced diet according to age, it may prove to be a boon for human life. If timely intake of Navayas Loh is taken then untimely health hazards can be avoided. **Conflict of Interest** None.

## Acknowledgement

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## Gunja (Abrus Precatorius): A Review

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### ABSTRACT

Gunja (Abrus precatorius Linn.), also known as Indian liquorice, is regarded as one of the most toxic but also visually stunning seeds in the world. It is classified as an Upavisha (semipoisonous medication) and is utilised widely in several Ayurvedic formulations with significant medicinal value.

According to Ayurveda, Gunja should only be administered after appropriate Shodhana (purification techniques) using various media, including Godugdha (cow's milk), Kanji (sour gruel), etc.

Common names for Abrus precatorius Linn. include Gunja and Jequirity, and it is widely distributed throughout India's plains. It is classified as an Upavisha (semi-poisonous medications) and is widely utilised in several Ayurvedic formulations with significant therapeutic value. It has been noted that Gunja's seed, root, fruit, and leaves are used as an ingredient in many formulations. Netra roga (Eye Diseases), Khalitya (Alopecia), Sarpa Visha (Snake Poison), Jwar (Fever), Indralupta (Alopecia), Keshya (Hair Tonic), Prameha (Urinary Disorder), etc. are some of the diseases. Different dosage forms are used to administer different parts of the Gunja plant, including swarasa (juice), kwatha (decoction), lepa (paste), anjan (application in the eye), avaleha (semi-solid preparations), taila (oil), rasa (mineral preparation), vati (pills), modaka (solid dosage form) ghrita (fat soluble preparations) & churna (powder).

**KEYWORDS:** Ayurveda, Gunja, Medicinal value, Shodhana, Upavisha.

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### INTRODUCTION

With a very extensive materia medica, Indian medicine uses pharmaceuticals from all three sources—plant, mineral, and animal—for a variety of different purposes. The majority of medicines are, however, of plant origin. Gunja, one of the traditional medications derived from plants.

The Vaidyas of Ayurveda use a plant known botanically as Abrus precatorious Linn., a member of the Fabaceae family, for the management of various illness situations.

In addition to Jequirity in English, Gunja and Gunchi in Hindi, and Gumchi and Gunja in Gujarati, it is also known as Gunja in Sanskrit. It has several branches and is a creeper. The leaves have 20–40 leaflets and resemble tamarind leaves. Flowers are clustered and pink with bluish undertones. Legumes range in size from 1.5 to 3.5 cm.

### MATERIALS & METHODS

The synonyms, qualities, and other information about use were alluded to in several samhitas (classical books), nighantus (lexicons), samgraha granthas (compendia), and other literature.

The primary indication of actions and different formulations were collated, critically examined, and organised in a methodical way.

List of the several synonyms for Gunja.

1. Shweta Gunja - White-colored Gunja is a variation.
2. Rakta Gunja - Red-colored Gunja is a variety.
3. Uchhata - It can readily access regions that are higher up.
4. Krishnala - Seeds' eye is black.
5. Kakachincha - Gunja seeds produce sound similarly to tamarind seeds.
6. Kakananti - When ripe, Gunja fruits make a rattling sound.

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7. Raktika - Crimson variety seeds are red in colour.
8. Kakadani - Black variety seeds are dark in colour.
9. Kakapilu;
10. Kakavallari;
11. Chudamani;
12. Tamra;
13. Kakanantika;
14. Shikhandika looks cresty when it blooms.
15. Sheetpaki - Winter is when seeds ripen
16. Sughata being in good health
17. Rati In order to weigh jewellery, a specific amount of seed (120 mg) is used.
18. Rakta Phalika - It produces fruits with red seeds.
19. Krishna Raktika - One of its varieties features seeds that are black and red.
20. Manufacturing of Gunja Resembling tamarind fruit sound of rattling when ripe
21. Ghunghuchi - It belongs to the group.
22. Addaravalli and
23. Gunjika
24. Kakajangha
25. Shikhandini
26. Kakini
27. Kanchi
28. Kakasha are the remaining candidates. Its black variation resembles crows in colour.
29. Kanichi
30. Chhontali- It is an acrobat.
31. Shangushta- When shaken, the dried fruits will produce an odd sound.
32. Kakatikta - seeds that are black and have tikta rasa.
33. Kakatundika -similar to the tamarind fruit sound of rattling when ripe.
34. Kaka- bearing a religious stigma.
35. Sauma -Saumya, its white variation.
36. Shikhandi .
37. Aruna.
38. Tambika.
39. Krishnachudika- is somewhat orange red in colour. Its seeds are black and beneficial to health.
40. Raktakamboji- Crimson seeds' red colour is the reason why.
41. Vanya -It's simple to locate in untamed jungle.
42. Shyamalchuda- Fruits grow in clusters.
43. Kakashimbi - After ripening, legumes turn black .
44. Raktala- It has red seeds of the red variety.
45. Dhvankshanakh
46. Raktasalya -It's a crazed creeper.
47. Dhvankshanakh
48. Durmoha - excessive doses that can make you lose consciousness
49. Vaysadini
50. Chatoki
51. Tulabiji
52. Angavallari

## PHARMACOLOGICAL QUALITIES

Gunja's pharmacological qualities Include

- kashay-tikshna rasa,
- laghu-ruksha-tikshna virya,
- katu vipak.
- It calms the vata and kapha doshas.
- To treat a variety of illnesses, including
- Daurbalya,
- Shukravikar,
- Khalitya,
- Palitya,
- Vataroga,
- Aruchi,
- Viryavikar,
- Netravikar,
- Vrana vikar,
- Krumiroga,
- Bhrama roga,
- Indralupta,
- Aruchi,
- Urustambha,
- Kushtha roga.<sup>1</sup>

## CLINICAL FEATURES

Ingestion of seeds or extract: When the seeds are swallowed raw or after cooking, they are not poisonous. Seeds must be crushed or chewed for harmful effects to occur. Ingestion of seeds or extract causes:

1. Severe irritation of upper GIT
2. Abdominal pain
3. Nausea
4. Vomiting
5. Bloody diarrhoea
6. Rectal bleeding
7. Weakness
8. Cold perspiration
9. Trembling of the hands
10. Weak rapid pulse
11. Tachycardia
12. Headache
13. Dilated pupils
14. Hallucinations
15. Drowsiness
16. Tetany and
17. Circulatory collapse <sup>2</sup>

## AAMAYAKA PRAYOGA OF GUNJA

1. Gunja + Jala - Prepare paste and apply in case of Sandhishota
2. Gunjakalka Lepa - Do Siraprachanna in Grudrasi and apply Gunjakalka Lepa to reduce pain. <sup>3</sup>

## TOXIC EFFECTS

Though it is having all such therapeutic values like any other drugs due to its potential toxicity, and improper S

## Gunja (Abrus Precatorius): A Review

hodhana, or accidental intake leads to Gunja poisoning which if not treated is a life threatening condition.

It produces fatality in the dose of 90 to 120 mg, but death was reported even after one seed which was masticated well (budavari

1989) and Abrin (Active principle) in the dose of 0.0001 mg – 0.0002 mg/kg body weight sub cutaneously.

The toxic effects are produced in 3-5 days, 22 signs and symptoms of the toxicity are ingested seeds affect the gastrointestinal

tract, the liver, spleen, kidney, and the lymphatic system. Seed extract exposure causes eye damage, conjunctivitis and blindness.

The poisoning symptoms are acute gastroenteritis with nausea, vomiting and diarrhea leading to dehydration, convulsions, and shock.

In Ayurveda, Vishalakshana's are mentioned

- Asamashay Antra Daha (burning sensation in stomach and intestine),
- Vamana (vomiting),
- Virechana (purgation),
- Mutraghata (retention of urine or oliguria),
- Hrudayaavasad (affects heart).

### MANAGEMENT OF GUNJA VISHA

Gunja Visha is managed by Swarasa of Tanduleeyaka with sugar or Cow's milk with sugar internally along with administration of Dates, Grapes, or Tamarind Amalaki juice or decoction with honey based in signs and symptoms.<sup>4</sup>

### MODE OF ACTION

Abrus seeds are harmless when ingested whole, since the hard outer shell resists digestion. But chewing or crushing of the seed release abrin. The "B" polypeptide chain binds to the intestinal cell membrane while "A" polypeptide chain enters the cytoplasm. In cytoplasm "A" act on 60S ribosomal subunit and prevents binding of elongation factor EF-2 thus inhibiting protein synthesis, thereby causing cell death.<sup>5</sup>

### CONCLUSION

Ayurveda refers to Gunja as an irritating organic vegetable poison under the term Sthavara vanaspathic visha. All plant

components are poisonous, but the seed is the most dangerous.

Gunja seed has a lovely appearance. It accidentally poisons because of its appealing seeds. It is utilised as an ingredient in many Ayurvedic preparations after adequate purification and is applied both internally and externally for a variety of ailments, including shotha, kandu, kustha, krimi, etc. Traditional folkloric medicinal plant parts are such the root, seed, and leaf. This plant exhibits a wide range of pharmacological traits and activities. It is important to be aware that using plants improperly or excessively might be dangerous.

### DISCUSSION

Animals and humans both rely on plants and vegetables for nourishment. Some plants are poisonous to both humans and animals, which can have fatal consequences. The deadly plant known as gunja is widely distributed throughout India. There are two varieties of it: Sweta Gunja and Rakta Gunja (red variety) (white variety). Both have medical use.

Gunja is crucial for forensic purposes. The seeds are employed as an abortifacient, a homicide weapon, and a toxin for livestock. Many therapeutic preparations, including Gunja bhadra rasa, Gunja taila, and rajamrighanka rasa, utilise this plant's seed, root, and leaves. Despite this plant's deadly effects, it is a well-known medicine having therapeutic applications in the Indian medical system.

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## Management of Persistent Pulmonary Air Leak with the Drentech™ Simple System. Case Report

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### ABSTRACT

Persistent pulmonary air leak affects between 10-15% of pulmonary surgical procedures, generally requiring management through the use of conventional chest drainage systems (water-sealed pleural chamber) of subjective interpretation due to poor detection sensitivity. of leaks, resulting in increased morbidity, hospital stay, and costs

**KEYWORDS:** Persistent pulmonary air leak, Necrotizing Pneumonia

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### INTRODUCTION

Pulmonary air leak is a frequent problem in thoracic surgery, its prevalence on the 1st postoperative day is up to 26-54% (1,2). Persistent air leak is defined as that which remains on the 3rd day after surgery (3, 4)

A small group of patients with bacterial pneumonia does not follow the usual predictable course even under optimal conditions of medical treatment, developing a process of necrotizing pneumonia with segmental, lobar extension, even to the entire lung (5), it is decided in these patients the surgical management depending on its extension segmentectomy, lobectomy and/or debridement (5,6). When the necrotic process involves the periphery of the parenchyma, and the most central lung tissue is viable, surgical debridement is recommended, although this is associated with an increase in complications including bleeding and persistent air leak (6). The most important goal in the postoperative management of lung surgery is the adequate drainage of the pleural space of fluid and air.

The measurement or classification of leaks in traditional chest drainage systems are based on the appearance of "bubbles in a chamber" being inherently prone to subjective interpretation, observer variability, as well as clinical experience, prolonging endopleural tube removal and/or making your hasty withdrawal.

The appearance of new digital systems would finally manage to optimize the evaluation by identifying patients with a high risk of air leak for early intervention and/or their conversion

into a one-way valve, allowing outpatient management of the patient and early hospital discharge with adequate results. (7) Currently, there are few studies that evaluate the clinical impact of digital drainage systems compared to conventional ones. The report of this case managed with this therapy on an outpatient basis is made.

### CLINICAL CASE

A 64-year-old male patient, dedicated to field activities, currently retired since he was 60 years old, marital status married, primary schooling, lives in a material house, has all the urbanization services, reports exposure to biomass twice a week. week approximately from the age of 15, unknown vaccination schedule. Pathological personal history: He only refers to an ankle fracture that required surgical management at the age of 32, the rest were asked and denied.

Under direct questioning, he refers to the onset of his illness at the beginning of November 2022 with episodes of cough without a predominance of hours with hyaline sputum, which was later accompanied by hemoptysis and dyspnea on medium exertion, unquantified feverish peaks, predominantly at night. , accompanied by pain in the right subcostal region. On 11/25/22, the patient was admitted to hospital with data on systemic inflammatory response, laboratory studies and laboratory studies were performed, reporting: Leukocytes: 23,000 cells/mm<sup>3</sup>, Neutral: 95%, platelets: 180,000 cells/mm<sup>3</sup>, Hb: 9.3 mg/ dl, Hct: 27%, a chest TV is performed (Figure 1) which reports a 50% pleural effusion with air-fluid

## Management of Persistent Pulmonary Air Leak with the Drentech™ Simple System. Case Report

level in the right hemithorax, thoracentesis is performed, draining 400cc of clear purulent fluid (**Figure 2**).

Medical management and antibiotic therapy based on carbapenem (Meropenem 1gr every 12 hours) is started, Pleural Fluid cytochemistry is performed, which reports DHL: 1762.0 U/L, Glucose: 38, Total Proteins: <2.0 Amylase: <30.0, as well as cytology which reports: Color: greyish, PH: 8, Appearance: Turbid, Total Cells: 80640 cel mm<sup>3</sup>, Segmented: 97%, Mononuclear Cells: 9%. Requesting evaluation for cardiothoracic surgery for endopleural tube placement, reporting lung entrapment with severe pleural thickening, for which surgical management was chosen. An open right thoracotomy was performed with a muscle-sparing technique on 11/26/22 (**Figure 3**), obtaining as findings: Lung entrapment, organized empyema with severe thickening of the parietal and visceral pleura, destruction of the lung parenchyma at the level of the middle lobe, in after surgery consequent to a large area of destruction on the middle lobe, bleeding in the layer appears as well as poor expansion of said lobe; not being possible to perform a resection of lung tissue as well as hemodynamic deterioration, it was decided to perform damage control by debridement and placement of surgicel-type adhesive hemostatics, decortication, placement of 2 probes in the pleural cavity 28Fr anterior and 32Fr posterior and transfer to the care unit intensive care with endotracheal intubation and mechanical ventilation.

A simple control chest CT was performed the following post-surgical day to assess proper placement of drainage tubes. (**Figure 4**)

After 5 days, extubation was assessed without complications and he was admitted to hospital.

Persistent air leak is diagnosed, which evolves to be forced expiratory; being handled with suction water seal.

During his hospitalization with adequate evolution of septic symptoms but maintained expiratory air leak. After 3 weeks, it was decided to connect to a simple Drentech™ portable negative pressure system (**Figure 5**), being kept under surveillance for 2 more days and his discharge was decided on 12/22/22.

Surveillance was carried out by external consultation without complications for a period of 2 months and endopleural tube removal was scheduled on 03/24/23.

On the fifth post-surgical day, he shows adequate ventilation of the lung fields, maintaining a saturation by pulse oximeter of 97%, for which his discharge and follow-up appointment are decided. On 04/08/23, a follow-up appointment was made, he came with a simple CT scan of the control chest, reporting a bilateral reticular pattern of parahilar distribution and predominantly right, where a small irregular area of greater density was observed in the parenchyma compatible with a diagnosis of traction. of focal parenchyma (**Figure 6**) At Clinical Evaluation, well-ventilated lung fields, surgical wound scar in the right hemithorax with adequate evolution (**Figure 7**)

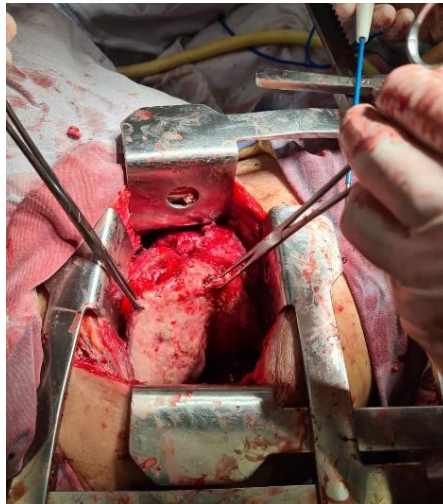


**Figure 1. Pleural effusion of 50% right hemithorax**

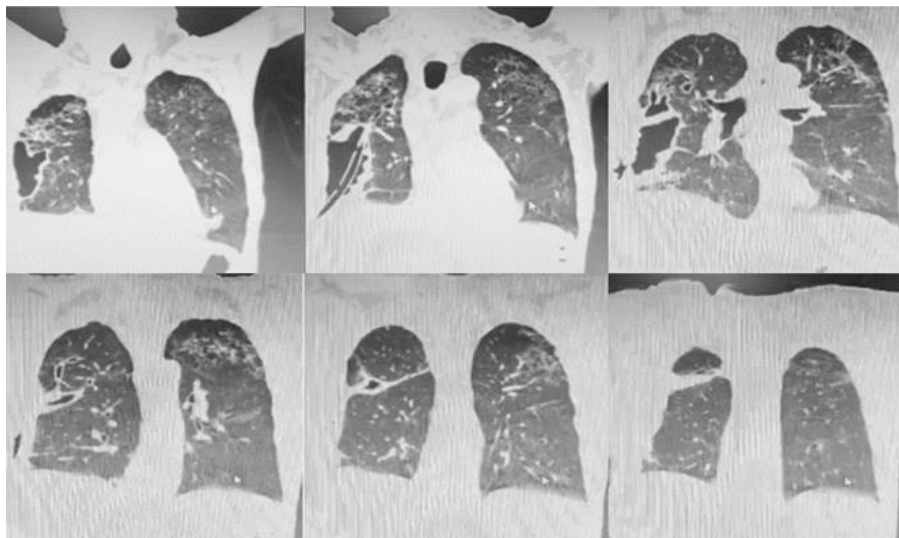


**Figure 2. Purulent drainage from the right pleural cavity**





**Figure 3. Right open thoracotomy**



**Figure 4. Simple CT of the Thorax on the 1st post-surgical day**



**Figure 5. Drentech™ Simple**



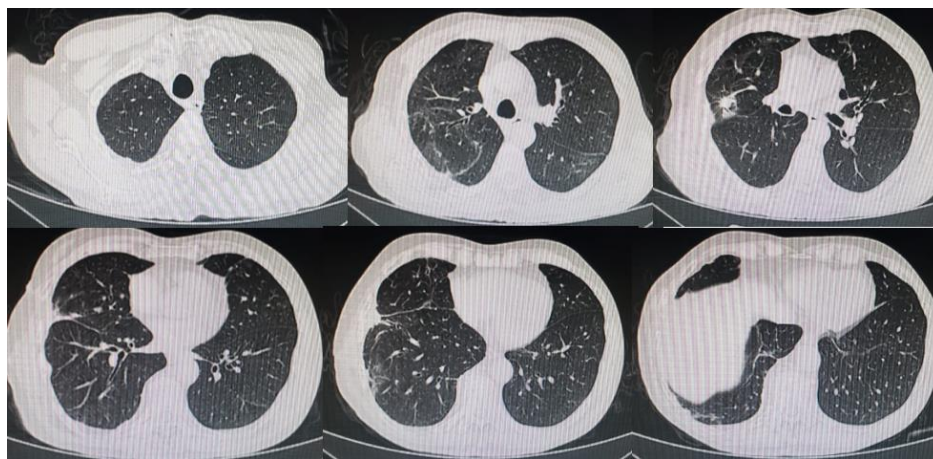


Figure 6. Simple chest tomography 3 months after open thoracotomy



Figura 7. Cicatrización de herida de toracotomía derecha abierta

## DISCUSSION

The postoperative management of a lung resection continues to be a challenge through the use of conventional chest drains, being a critical issue with non-standardized guidelines, depending on the surgeon's experience at the time of chest drainage tube removal (1).

Within cardiothoracic procedures, air leak occurs in up to 26-54% on the 1st postoperative day (1,3). A study of 20 children who underwent segmentectomy due to necrotizing pneumonia, presenting a leak as a complication, was published. persistent air in 20%. (7). The use of digital thoracic drainage devices has been useful in the management of patients undergoing thoracic surgery. Through a more objective evaluation of real air leaks, it has been possible to standardize the appropriate moment for the removal of the drainage tubes, as well as to identify the patients with the highest risk of persistent air leaks, promoting their early intervention and/or conversion to a valve. thus allowing early hospital discharge and outpatient management (8). In a multicenter prospective observational study of 117 patients undergoing VATS lung lobectomy for either benign or malignant disease at 3 high-volume centers in Italy between April 2017 and June 2018, reporting that digital devices influenced management clinical reporting in 13 of 25 patients

(52%) allowing early removal of the chest tube due to false positives for air leak compared to conventional drainage systems. (9).

In this patient, the presence of persistent air leak after decortication of lung tissue due to necrotizing pneumonia was identified, which was managed on an outpatient basis with Drentech™ type digital drainage, deciding the removal of chest tubes within a period of 90 days from its intervention. His evolution was favorable without prolonging his hospital stay, proving to be a therapy with adequate results.

## CONCLUSION

Portable digital systems offer a conservative therapeutic measure and a significant reduction in hospital stay, in which the air leak cannot be solved, a case report is made, requiring a larger population to report adequate experience and power. standardize the management of said system.

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## Critical Review Of Various *Triphla* Formulations For Ocular Health: A Literary Research

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### Abstract

Triphla is a great formulation described in Ayurveda texts by our ancient sages in past. It has a lot of uses for body wellness. It contains Embelica officinalis (Amla), Terminalia chebula (Haritaki) & Terminalia bellirica (Bahera) in equal quantities. It can be used as internal and external application for body as very fine powder and coarse powder as per the requirement of the Ayurvedic procedures. It is content of various Ayurvedic formulations. It helps to improve our digestive fire. If digestive fire of body is normal then all the Dhatavagnies will function normally which leads to proper production of all the Doshas, Dhatu & Mala of our body for a healthy life. In case of Eye diseases Majja Dhatu formation is disturbed which the result of disturbed metabolism. While kotha aids in the proper excretion of waste materials, Jatharagni aids in the proper digestion and assimilation of consumed food as well as the proper operation of other types of Pitta-metabolic factors, particularly Alochaka pitta (rods and cones functional entity) in the eyes. The longevity, health, and diseasefree life are maintained by the proper operation of these two systems. Several combinations of medications that work on both the aforementioned systems were explained by ancient Ayurveda experts. In this article we will discuss about only ocular health in case of Triphla.

**Keywords:** Ayurveda, Diseases, Metabolism, Ocular, Triphla.

### INTRODUCTION

#### Eye Anatomy: Parts of the Eye outside the Eyeball

The orbit is a protective bony socket in which the eye rests. The eye is connected to six extraocular muscles in the orbit. These muscles allow the eye to be rotated as well as moved up and down and side to side.

The sclera, the white portion of the eye, is where the extraocular muscles are connected. About the whole surface of the eyeball is covered by this dense layer of tissue.

#### The Surface of the Eye

A transparent membrane known as the conjunctiva covers the exterior of the eye and the interior surface of the eyelids.

The layers of the tear film keep the front of the eye lubricated.

The layers of the tear film maintain the lubrication of the front of the eye.

Tears have three layers and lubricate the eye. The tear film is the collective name for these three layers. The conjunctiva produces the mucous layer. The lacrimal gland produces the watery portion of tears. The lacrimal gland of the eye is located in the orbit, behind the outer brow, away from the nose. The oil that is a component of the tear film is produced by the meibomian gland. The tear duct allows tears to exit the eye.

### **The Front of the Eye**

The cornea, the transparent, dome-shaped front part of the eye, is where light is focused into the eye. The anterior chamber is the region behind the cornea that contains fluid. The substance is known as aqueous humour. Aqueous humour is continuously produced by the eye. Aqueous humour also drains from the eye in a region known as the drainage angle in order to maintain a consistent eye pressure. The lens is located directly behind the pupil. Light is directed towards the retina by the lens. To aid the eye in focusing on close-up objects, the lens adapts its shape. The lens capsule is suspended from the eye wall by a network of tiny fibres known as zonules. The lens capsule, which protects the lens when it is removed during cataract surgery, surrounds the lens. Several types of intraocular lens replacements are placed inside the capsule, where the natural lens once resided. The cornea and the lens both contribute significantly to our ability to see clearly by aiding in the focus of light as it enters the eye. In actuality, the cornea and lens together account for 70% of the eye's focusing power. Between the lens and the retina is the vitreous cavity. The cavity is filled with vitreous humour, a jelly-like material. The retina, the light-sensitive tissue lining the back of the eye, receives light that is directed into the eye by the cornea and lens after passing through the vitreous. Our finely tuned, central vision is provided by the macula, a small but extremely specialised region of the retina. Our peripheral (side) vision is provided by the peripheral retina, which is the other portion of the retina. Photoreceptors are unique cells found in the retina. Light is converted into energy by these cells, which is then sent to the brain. Rods and cones are the two different types of photoreceptors. Rods are responsible for seeing in the dark and for night vision. Cones offer centre (detail) vision and colour perception. Through the optic nerve, the retina transmits electrical impulses of light to the brain. Millions of nerve fibres make up the optic nerve, which sends these impulses to the visual cortex, the area of the brain in charge of human vision.<sup>1</sup>

### **Triphla in different diseases**

***Kaphapittajabhishyanda Triphlapinidika prokta naashne Shaleshmpityo:***

***Pishtva kanjiktoyen ghrithhrishta ch pindika ||***

Amalgamate with Kanji, fry in Ghrita & then apply in the form of Pindika. It pacifies Kaphapittajabhishyanda.<sup>2</sup>

***Raktabhishyanda Triphlalodhrayastibhih sharkrabhadrmustkaih ||***

***Pishtkaih sheetambuna seko raktabhshyandnashan |***

Dip triphla in water till required. Filter and give fomentation to eyes. It will pacify Raktabhishanda.<sup>3</sup>

### **Dhatradi Varti**

***Dhatrykshpathyabeejani ekdwitrigunani ch |***

***Pishtva varti jalaih kuryadnjanm dwirrenukm ||***

***Netrstraavm haratyaashu vaatraktrujm tatha |***

Take *amla* seeds 1 part, *bahera* seed 2 parts and *harar* seed endocarp 3 parts , triturate with water and make *Varti* (suppository) . Use it as *Anjana Karma* (applying on lower lid margins of eyes). It pacifies eye discharge & gout pain within a short period of time.<sup>4</sup>

### **Churnanjanana**

***Agnitaptam hi sauveeram nishinchyet triphlarasaih ||***

Red hot *Sauveeranjanana* (Antimony sulfide) on fire and the quench it in *triphla* juice & human female milk 7 times each respectively. Make it a soft paste . Apply on lower lid margins of eyes daily. It is used for all eye diseases.<sup>5</sup>

***Manahshiladyanjan Manahshila devkaastham rajanyo triphlaoshnam |***

***Lakshalashunmanjishthasaindhavelah smakshikah ||***

***Rodhram saavarkm churnamayasaam tamaramev ch |***

***Kaalanusarsarivanchaiv kukutanddlaani ch ||***

***Tuliani paysa pishtva gutikaam kaaryed budhah |***

***Kandutimirshukalarmraktrajyaupshantye ||***

Take *manshil* (Arsenic disulphide) , *devdaru* (*Deodar cedar*), *haridra* (*Curcuma longa*), *daruhridra* (*Berberis aristata*), *triphla*, *marich* (*Piper nigrum*), *laakh* ( *Laccifer lacca*), *lahsungiri*(*Syzygium aromaticum*), *manjistha*( *Rubia cordifolia*), *saindha* ( Rock salt), *ela* (*Elettaria cardamomum*), *swarnmakshik bhasma* (*Pyrite ash*), *lodhra* ( *symplocos racemosa*), *loh bhasma* (Iron ash), *tamra bhasma* (Copper ash), *tagar* (*Valeriana wallichii*), *kukutandtwak* (Egg shell powder) all in same quantities , make a very fine powder. Make tablets after triturating with cow's milk. Store in air-tight glass container. Pacifies *kandu*(itching), *timir* (blurring of vision), *shuklarma* ( pterygium), redness in eyes.<sup>6</sup>

### **CONCLUSION**

It is clear from the above discussion that *triphla* is used in various eye diseases safely in *ayurveda* since ancient times. It is used as decoction, suppository and tablet forms. *Anjana Karma* (collyrio procedure) is always done with the help of *Anjana Shalaka* ( collyrio rod). Melt lead metal and quench it in juices of *triphla*, *bhringraj* ( *Eclipta prostrata*) & *shunthi* ( *Zingiber officinale*) respectively. Then similarly quench it in ghrita, cow urine, honey & goat milk. Rods made with the help of this lead metal pacifies all the eye diseases.<sup>7</sup>

**Conflict of Interest:-** None

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### Concept note

## Nadi Vigyan Nidhi (treasure of pulse science) and Nadi Vikriti (distorted pulse) – an Ayurvedic concept

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### ABSTRACT

Nadi Vigyan is a vast and accurate science for diagnosing diseases. In ancient times, laboratory and ultrasound screening facilities were not available. Even then Pulse Diagnosis was popular for assessing the health condition of patients. This science is correlated with different Gods like Brahma, Vishnu and Shiva. Health status can be assessed with the help of various parameters of Nadi Vigyan. Those parameters are Colour, Temperature, Circulation, Smell, Direction of flow and Strength Time. Each Nadi has its own colour like white, black, or yellowish-reddish-blue. During touch, the temperature difference is observed in the form of warm, cool, semi-warm and cool. While observing Nadi flow, its peak could be irregular, long length or short length type. Nadi can be of different smells like without smell, sharp and medium smell. The movements of Nadi is in three directions that are upward, downward and oblique. It also varies in relation to weight i.e. light and heavy. In the daytime, interpreting Nadi is not similar to at night. Working strength is more in the daytime as compared to nighttime. Claudius Galen was said to be the first physiologist to describe the pulse in modern sciences but according to Ayurveda, this knowledge was transferred from Lord Shiva to Ravana and God Inder. From God Inder, it is again given to Kanaad. Both Ravana and Kanaad wrote their own books. Modern ECG is nothing but a refined, graphed and documented modern study of Nadi Vigyan. Although precautionary measures have a major role in Nadi Preeksa (study), an exact and more accurate interpretation of Nadi Gyan is the need of the hour to feel proud of our ancient sages in alleviating diseases.

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### INTRODUCTION

Nadi (pulse), Mutra (urine), Mal (stool), Jihva (tongue), Shabd (speech), Sparsh (touch), Netra (eyes) and Akriti (gait) are the eight types of examination techniques mentioned in Ayurveda for the diagnostic analysis of a patient. Hence, a physician should examine these eight parameters for disease diagnosis as given in the following Sanskrit quote (Mishra, 2007).

रोगाक्रान्तं शरीरस्य स्थानन्याष्टौ परीक्षयेत् ।  
नाडीं मूत्रं मलं जिह्वां शब्दस्पर्शदृगाकृतीः ॥  
(योग रत्नाकर)

*Rogaakrant sharirasya sthananyaashtau pareekshayet,  
Nadim mutram malam jihvam shabdasparsadrigakriteeh.  
(Yoga Ratnakar)*

Pulse diagnosis can be marked by observing the gait of living organisms that live in water, land and sky. Water-living organisms are leech, frogs, etc., terrestrial are snakes, goose, peacocks, etc., flying birds are Lava gulls, quail etc. For Nadi Pareeksha, the right-hand radial pulse

of male and the left hand of a female should be considered for diagnosis (Lal, 2010). Nadi can be observed at three points like the root of the hands, the medial side of the tibia and temporal regions (B/L). There are 16 Nadis which are very important in relation to life which is in the hands, feet, neck, nose, eyes, ears, tongue and reproductive organs (Lal, 2010).

### Kanth Nadi

Aguntak Jwara (typhoid fever), Trisha (thirst), Prishram (exertion), Maithun (intercourse), Glani (weakness), Bhaya (fear), Shok (grief) and Kop (aggression) should be diagnosed by Kanth Nadi.

### Nasa Nadi

Maran (death), Jivan (life), Kaambaadha (Sexual desire), Kanth Rog (throat infection), Mastak Rog (nervous system diseases), Kaan Rog (ear diseases) and Pavan Rog (Vata or air diseases) should be taken into consideration by Nasa Nadi. All Nadi can be palpated in the area of 2 Angula Parmaan (1.763 cm x 2) (Lal, 2010).

## NADI PAREEKSHA USES

Various Doshas, and Dhatus conditions, their Sadhyata and Asadhyata can be better understood with the help of Nadi pareeksha.

## CLINICAL INDICATORS (C/I)

Immediately after bathing, eating, in sleepy condition, in the urge of food and water, in extreme heat, after vigorous exercise, after oil massage, after intercourse and after having food.

## ROLE OF FINGERS IN NADI PAREEKSHA

Leaving one Anguli Parmaan from Nadhibandha, Nadi Pareeksha can be done. Three fingers are for Vaata, Pitta, and Kapha examination by touch e.g. first finger mimics Vata on medium touch, the middle finger depicts Pitta on Harsh touch and the ring finger tells about Kapha on light touch. Vata Nadi (semi-hot & cold) is related to Lord Brahma with blackish-blue colouration, Pitta Nadi (hot on touch) is related to Lord Shanker with yellowish–reddish-bluish colouration and Kapha Nadi (cold on touch) is related to Lord Vishnu with white colouration. The best time for the Nadi examination is early morning. In the early morning, Nadi is Snigda (soft), at noon it is hot, in the evening it is very fast and at night it is very sluggish. So the ideal time for pulse diagnosis is early morning. Vaata Nadi is of Vhisham (uneven) direction, odourless, oblique going and strong the day-night time. Pitta Nadi is long, of sharp odour, upward moving, and strong in the day. Kapha Nadi is of short length, of medium odour, downward moving and strong at night (Guguloth et al., 2017). The participation of Panchmahabhut and their effects on the body is given in Table 1.

**Table 1.** Panchmahabhutas participation and their effects on the body

S.No.	Mahabhut	Effects on body
1	Akasha	tranquility, peace, freedom, isolation, loneliness
2.	Vayu	hyperacidity, confusion, fear, anxiety, fluctuation of emotions
3	Agni	competition, aggression, judgment, violence
4	Jala	love, compassion, greed, attachment.
5	Prithvi	groundedness, stability, depression, heaviness

## HOMOEOSTASIS

In the case of homoeostasis, all the Nadi have their natural movements. Vat Nadi is compared with snake and leech-like movement, Pitta Nadi has crow, lava gull and frog-like motion and Kapha Nadi has pigeon, peacock, goose and cock like gait. In the case of dual Nadi, like both snake and frog movement is Vatapittaj. Snake & goose movement is known as Vatakaphaj. The frog and peacock movement is known as Pittakaphaj (Lal, 2010).

## DIVERSION FROM THE BASIC

### Vata

#### Jaloka Gati

When there is vertical spike than horizontal spike in index finger. The case may be due to impact of Pitta on Vata Dosha. *Indication:* joint pain, inflammatory condition, gouty arthritis, arthritis and hypothyroidism.

### Pitta

#### Partridge pulse

When there is sharp spike and irregular movement with low amplitude for 3-4 pulse as hoping movements. *Indication:* abdominal problem, gastritis, gastric ulcers and enteritis.

#### Quail Gati

When in middle finger, curvature is of blunt peak. *Indication:* prostatitis, cystitis, cervicitis, PID and urinary tract infection.

#### Crow Gati

When there is higher spike than partridge Gati along with notch. *Indication:* aortic valve problem and aortic regurgitation.

#### Camel Gati

When there is very high amplitude & 2 pointed spike movement with jerks. *Indications:* aortic stenosis, rheumatic heart disease, blood clotting in vessels and aortic regurgitation.

### Kapha

#### Pigeon Gati

When there is increased horizontal spike & decreased vertical spike due to pitta involvement. *Indications:* respiratory tract infection, asthma, COPD and Covid-19 positive.

#### Elephant Gati

When there is a feeling of an elephant head with a notch in the center with amplitude. *Indications:* lymphatic vessel obstruction, filariasis, lymphosarcoma and urticarial (Lal, 2010).

When there is an increase in Vatapitta in the body then it will be oblique and pulsating in nature. In excessive Vatakapha, Nadi is oblique and slow-moving. Pittakapha in excess shows pulsating and slow movement respectively.

In the case of Tridosha Nadi type, the movement of snake, lava and goose respectively in balance is a sign of treatable diseases. Vice versa is the indication of Panchtav Prapti. In Sannipatij diseases, excessive tridosha causes lava, titar (partridge), or bater (quale) movement in Nadi.

When the body is extremely warm and Nadi is cold and vice-versa is an indication of nearby death.

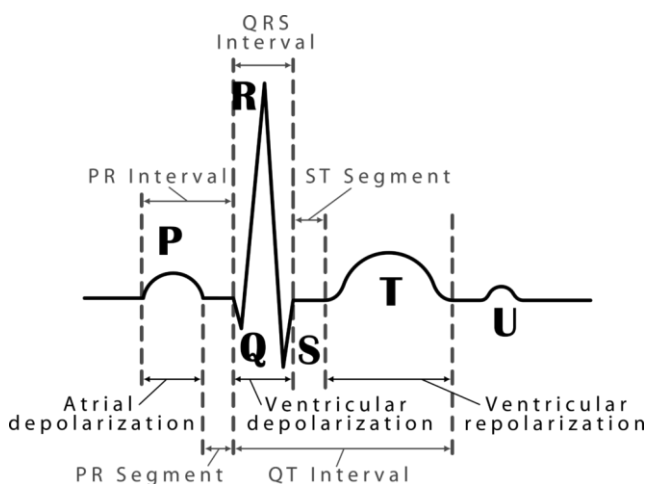
Sometimes the movement of Nadi is like an earthworm sometimes like a snake, sometimes weak sometimes strong then it may indicate death in the next month.

If Nadi moves fastly or stops for a bit of time and there are no symptoms of inflammation death within 7 days is said. In Sannipatij Jwar cold Nadi indicates death within 3 days. The bumblebee and drum-like movement of Nadi indicates death in one day. Shivering type and cold Nadi indicate death in one prahar (3 hrs).

Tridoshaj, fast Nadi and fever in the noon, vibrate like lightning indicates death on next day. Unpalpable Nadi indicates death in 12 Prahara (36 hrs). No palpation under the first finger indicates death in ½ Prahara. If Nadi palpates only beneath the lateral half of the ring finger then death can occur after 1 prahara. If Nadi palpates in the first finger, medial ¼ of the middle finger and non-palpable in the ring finger and warm then death can occur within three days. If Nadi palpates in the first finger, medial ¼ of the middle finger and fast then death can occur within four days. If it is slow then death occurs within 5 days. So Nadi Pareeksha can help to make us aware of the seriousness of the disease to take suitable precautionary measures (Lal, 2010).

## ANCIENT AND MODERN VIEW

Vata Nadi has an irregular rhythm and is horizontal in nature. Pitta Nadi is regular and vertical. Kapha Nadi is regular and vertical too with low amplitude (Kumar et al., 2019). In modern medicine, it is done with the help of an electrocardiogram (ECG) as shown in Fig. 1.



**Fig. 1.** A schematic diagram of electrocardiogram (accessed from Interactive-Biology.com)

The three fingers i.e. index, middle and ring fingers are placed at the wrist of the subjects over the radial artery as shown for disclosing the characteristics of doshic imbalance. The index finger shows Vata dosha, the middle shows pitta and the ring finger shows kapha dosha (Mathew and Vivekanandan, 2020).

## HOW TO MEASURE SYSTOLIC AND DIASTOLIC BLOOD PRESSURE

Systolic blood pressure can be measured with the help of Pitta Nadi and diastolic pressure can be measured by Kapha Nadi. Agni can be understood with the help of Nadi Preeksha, for example, if Vaat Nadi is excessively cold then Agni will be Visham. If Pitta Nadi is extremely hot then Agni will be Tikshan. If Kapha Nadi is cold then warm then it is the case of Mandagni. Agni is the base of the nutrition of the body. So Nadi Preeksha is a very important field of research for further exploration of Ayurveda.

## Acknowledgement

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## CONFLICTS OF INTEREST

The author(s) declare(s) no conflicts of interest.

## DECLARATION

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# A COMPARATIVE OPEN RANDOMIZED CLINICAL STUDY ON THE EFFICACY OF ARKA TAILAM IN THE MANAGEMENT OF PAMA (VIS- À-VIS) SCABIES

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## ABSTRACT

**Background-** All across the world, skin conditions are quite common. Scabies is an acute communicable illness because it can spread fast via close physical contact and is contagious. Little children are particularly prone to it. The symptoms of scabies include nocturnal scratching, vesicular or pustule eruptions, and tiny red lumps and blisters. Ayurveda claims that Pama and scabies are connected. Pama is one of the 18 forms of Kushtha (Skin Illness) listed in the Charak Samhita (Chikitsa Sthana), which is brought on by the vitiation of the Kapha and Pitta Dosha. **Aim & Objectives-** Evaluate the effectiveness of Arka Tailam in the management of PAMA (Scabies) **Methodology** -The study was carried out at OPD of Desh Bhagat Ayurvedic college Hospital Mandi Gobindgarh. **Discussion-** it is discussed that, statistically significant effect ( $P < 0.01$ ) from the clinical study that Arka Tailam local application is effective in reducing the signs and symptoms of scabies (PAMA). Hence, the said drug is useful in management of scabies (PAMA). But complete effect of Permethrin 5% lotion is seen even before 10th day of treatment in most of the patients, and the complete effect of Arka Tailam is seen very late in treatment. **Conclusion-** Arka Tailam takes longer time to cure the patient and quantity of Arka Tailam is also larger as percentage of active material present in Tailam is less. So, it is clear from the study that disease progress irrespective of sex, religion or creed and is mainly affected low socio-economic group patients which live in densely populated and polluted areas that's why it spreads fastly from one person to another.

**KEYWORDS** – Pama, Scabies, Arka Tailam, Skin Diseases, etc.

**INTRODUCTION: -**

Today the medical world is posed with complex challenges. Thus, time demands an integrated and pluralistic approach towards health care to cope up effectively with this situation. There has been a growing interest in Ayurveda in the past few years. To initiate fruitful dialogues between Ayurveda and Modern science, an in-depth understanding of both the systems prerequisite. Such an exercise should emerge from a stand point accepting that there are different world views existing in the world, Ayurveda being one among them.<sup>1</sup>

Ayurveda is the knowledge of life and longevity being started from Aadidev Brahma. Ayurveda is the oldest and best effective science of humanity. This system of medicine is bound to have a powerful imprint in the field of medicine of this coming century, which offer safe and proven remedies as an alternative to the allopathic medicine which has limitations. In the recent past, Ayurveda's position has gained confidence of being the major remedial source in many countries.<sup>2</sup> It is now widely accepted in and out of India, which establishes its worthiness for treating diseases and advocating specific diets and regimens. Prevalence of science like in the universe is considered to be the pride possession, which only take care of the human beings. Ayurveda is best open system i.e. built into the oldest layer of culture, which evident as it reflects the language of the Vedas, the oldest literature of mankind and is rooted in the entire culture and life of common people of country.<sup>3</sup>

Unfortunately, Ayurveda and other Vedic system in India was being preserved in family tradition and as a rule did not share their secrets openly. This picture is gradually changing since last few decades as extensive research is being carried out in the literary aspect, drug pharmacology and standardization of Ayurveda. This will help to recognize the potential it carries and will broaden the scope of natural healing throughout the world with a strong clinical model and a vast clinical experience.<sup>4</sup>

Ayurveda is a branch of medicine which originated and practiced in India for more than 5000 years. It is as fresh and useful to human today as it was in the ancient times, yet more relevant and applicable in these modern times. Its use provides a holistic approach to our daily lives. Founders of this holistic science learnt that the people who live in dense areas and polluted environment away from the nature are at major risk of having an array of health ailments. Even modern medical practitioners believe that vast majority of illnesses prevalent in the society are because of polluted environment, dense population, bad food habits and lack of physical activities. Skin diseases are one of the examples of this. It is said that skin is a mirror of human being. It reflects mental, physical and psychological status of an individual. Skin is the barrier between body's internal and external environment.<sup>5</sup> When the skin infects automatically the status of human being seems to look through.

According to Ayurveda most of the diseases are due to 'Pitta-Prakopa'. PAMA is one of them. PAMA is described in Ayurveda as Kshudrakushtha. Charaka, Sushruta and Vagbhatta, three authors of main text books of Ayurveda i.e. Charaka Samhita, Sushruta Samhita and Ashtang Hridya described PAMA as Kshudrakushtha. PAMA is described in Charaka Samhita in chikitsa sthaan saptam adhyaya i.e. kushtha chikitsa adhyaya . PAMA is caused due to aggravation of kapha in association with pitta.<sup>6</sup>

The parallel in western medicine to this disorder i.e. Scabies calls the attention of medical world due to its property of spreading from one person to other. Scabies is severe itchy and contagious skin disease. Both male

and female are equally affected. Its predominant feature is severe and continuous itching. It is a parasitic infestation of the skin, caused by female itch mite-sarcoptes scabiei, variety hominis order Acarina. It is caused by skin contact for a longer period of time (more than a few seconds).<sup>7</sup> Mere handshake may not spread this disease. Sexual contacts, hugging for a few moments etc. can spread the disease from a patient to the other. The long contact causes the spread of 10 – 15 mites.

Scabies commonly affects: Finger webs, Buttock folds, Axillary area and Genitalia. It is specially located in Inter digital clefts of the hands, wrists, elbows, thigh, ankles, axillary area, shaft of the penis and scrotum in males and breast in females.<sup>8</sup> This mite is a parasite that lives off the host (human) that means it gives no benefit to the host. The symptoms of the scabies are mostly due to the response of the immune system to the mites or to their eggs or saliva or feces. The skin rash and itching, mostly occur due to the allergic like reaction of the body to the mites. The common symptoms of scabies are intense itching, especially at the night (nocturnal itching) and the skin rash.<sup>9</sup> Continuous scratching of itchy areas leads to worsening of skin patches. This further exposes the skin to other infections and diseases (called secondary infections). It spreads by body contact. Polluted and contaminated environment worsen this condition. Predominant character is itching and is worsened by self-itching. Itching worsens at night.<sup>10</sup>

#### **MATERIAL AND METHOD: -**

The study was carried out at OPD of Desh Bhagat Ayurvedic college Hospital Mandi Gobindgarh. A total number of 100 patients were taken for the clinical trial i.e.50 patients each for Arka Tailam and Permethrin lotion for a period of 30 days and a follow up was carried out on 10<sup>th</sup>, 20<sup>th</sup> and 30<sup>th</sup> day. The study was carried out on the basis of selection criteria, and the patients were selected by conducting camps in and around Desh Bhagat Ayurvedic College with consent.

#### **SELECTION CRITERIA: -**

##### **INCLUSION CRITERIA**

- **Age** –patients between 10 to 60 year were selected irrespective of social and economic status.
- Both sexes, irrespective of caste and creed.
- Presence of signs and symptoms of PAMA(Scabies)

##### **EXCLUSION CRITERIA**

- Patients aged below 10 and above 60 years
- Patients with metabolic disorders such as Diabetes
- Patients with immunocompromised status such as HIV infection, Drug addiction, carcinoma etc.
- Patients with chronic infections like Jaundice, Tuberculosis etc.
- Patients with other sexually transmitted diseases.
- Patients on steroids
- Patients with superadded infection at the lesions
- Pregnant women

- Patients with any other conditions for which they are on medications

**DRUG:** -Arka Tailam and Permethrin lotion for local application.

**DRUG REVIEW:** - Pharmacognostic study of ARKA was conducted, phytochemical study was done, GCMS was done, herbarium sheet was prepared and authenticated by concerned authority of PG department of Dravyaguna, Desh Bhagat Ayurvedic college Hospital Mandi Gobindgarh. Photographs of Arka plant were also taken.

### PLAN OF WORK

**PROFORMA:** A special Proforma was prepared to maintain the records of all findings of patients and disease.

### INSTRUCTIONS TO THE PATIENTS

- To take Bath with scrubbing the infected part with soft bristled brush and to dry out the body with clean and dry towel.
- The previously used cloths and bedding should be boiled for about half an hour and washed before using again.
- The prepared Arka Tailam or Permethrin Lotion was asked to apply thoroughly on affected area at night.
- Then next day again proper bath should be taken thoroughly as stated earlier.
- Same procedure was followed for next 30 days or till the signs and symptoms disappear. Drug should remain at least for 12 hours on the affected area.
- Patients were advised to take normal diet

### ASSESSMENT CRITERIA

#### SUBJECTIVE CRITERIA:

Symptoms were assessed, converted in to numerical forms with the help of following grading method:

#### CRITERIA FOR ASSESSMENT OF SYMPTOMS

##### ITCHING: -

- Mild-Itching during night only but will not disturb the sleep
- Moderate-Intense itching at night which disturb the sleep
- Severe-Intense itch during day and night which disturb daily activities and sleep.

##### CRUSTS/SHEDDING <sup>(A)</sup>

- Mild-<5mm of crusts, minimal skin shedding.
- Moderate-5-10mm crusting, moderate skin shedding
- Severe->10mm crusts, profuse skin shedding.

##### REDNESS/ERYTHEMA: -

- Mild- Redness over < 10% of affected body surface area.
- Moderate-Redness over 10-30 % of ABSA.
- Severe-Redness over >30 % of ABSA

##### INTENSITY OF LESIONS <sup>(A)</sup>:-

- Mild- Wrist, web spaces and feet only (<10% of the total Body surface area)

- Moderate-Above plus forearm, lower legs, buttocks, trunk Or 10-30 % TBSA
- Severe- Above plus scalp or >30% TBSA

**PUSTULES: -**

- Mild-Pustules over <10 % of affected body surface area.
- Moderate-Pustules over 10-30 % of ABSA.
- Severe-Pustules Over >30 of ABSA.

**OOZING: -**

- Mild-Oozing from < 10% of pustules.
- Moderate-Oozing from 10-30 % of pustules.
- Severe-oozing from >30% of pustules.

**DIMENSIONS OF BURROW <sup>(A)</sup>:-**

- Mild-Less than 0.5 cm
- Moderate-0.5 to 1 cm
- Severe-More than 1 cm

**Impact on daily life <sup>(A)</sup>:-**

- Mild-little impact on daily life.
- Moderate-leave activity many of times.
- Severe-Unable to do his/her daily activities.

**ITCHING: -**

- Severe itching worsens at night -3 (+++)
- Mild itching at night-2(++).
- Very little itching -1 (+).
- No itching – 0

**CRUSTS / SHEDDING <sup>(A)</sup>:-**

- Severe crusts-3(+++).
- Moderate crusts-2(++).
- Mild crusts-1(+).
- No crusts-0

**REDNESS / ERYTHEMA: -**

- Severe redness -3(+++)
- Moderate redness -2(++)
- Mild redness 1(+)
- No redness 0

**INTENSITY OF LESION <sup>(A)</sup>**

- Severe distribution and extent of lesion 3(+++)
- Moderate distribution and extent of lesion 2(++)
- Mild distribution and extent of lesion 1(+)



- Absence of lesion 0

#### **PUSTULES: -**

- Severe pustules-3(+++).
- Moderate pustules 2 (++)
- Mild pustules 1(+)
- No pustule 0

#### **OOZING: -**

- Severe oozing -3(+++).
- Moderate oozing -2(++).
- Mild oozing -1(+).
- No oozing -0.

#### **DIMENSIONS OF BURROWS :-<sup>(A)</sup>**

- Severe 3(+++)
- Moderate 2(++)
- Mild 1 (+)
- No burrows 0

#### **IMPACT ON DAILY ACTIVITY :-<sup>(A)</sup>**

- Severe impact on daily activity 3(+++)
- Moderate impact on daily activity 2(++)
- Mild impact on daily activity 1(+)
- No impact on daily activity 0

#### **SIDE EFFECT: -**

- Present 1(+)
- Absent 0

Sarshapa Tailam used in the preparation of Arka Tailam was obtained from the local market. Fresh Arka Patra collected from herbal garden of Desh Bhagat Ayurvedic college were washed under running water to remove the adhering dust from the leaves.

#### **PREPARATION OF ARKA TAILAM: -**

- Swarasa was extracted from the fresh Arka Patras by crushing in a juicer.
- In a stainless-steel vessel, 2000 ml of Sarshapa Tailam was taken and subjected to moderate heat. 2 liters of Swarasa was added to it.
- The mixture was stirred continuously to avoid sticking of contents to the bottom of the vessel.
- Heating was carried out for 4 hours till the Sneh siddhi lakshanas appear i.e. Water content of Swarasa is not left and only oil content remain.



- Then the vessel was taken out from the stove and let it cool then the contents were filtered through a double layered clean muslin cloth.
- 1680 ml of Arka Tailam was obtained and it was stored in clean, dry, air tight bottle containers to be given to patients of scabies.

### ANALYTICAL STUDY: - ORGANOLEPTIC CHARACTERS: -

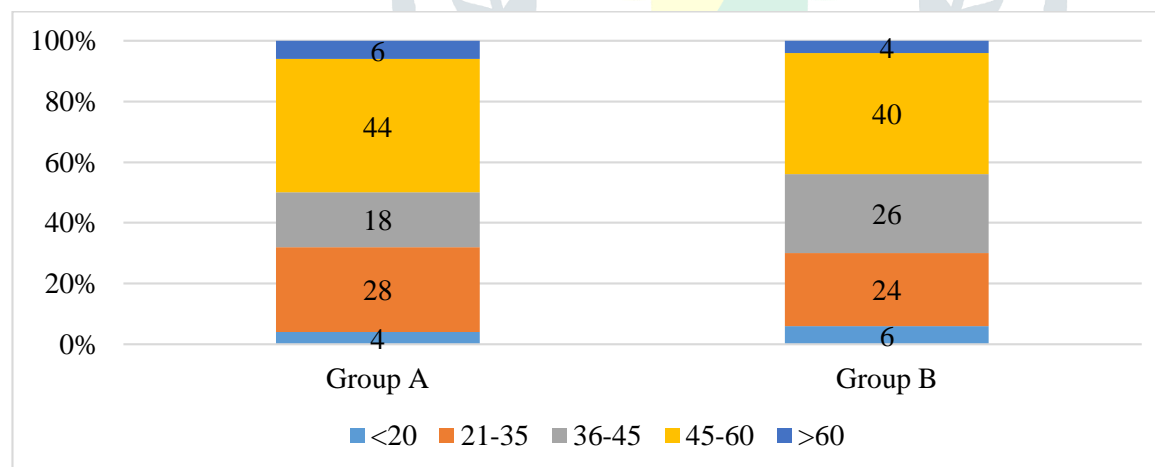
Arka Tailam was tested for the taste, odour, colour, appearance, touch and clarity.

### STATISTICS: -

**TABLE 1: DISTRIBUTION OF AGE OF THE PATIENTS**

Age	Group A		Group B	
	Frequency	Percent	Frequency	Percent
<20	2	4.0	3	6.0
21-35	14	28.0	12	24.0
36-45	9	18.0	13	26.0
45-60	22	44.0	20	40.0
>60	3	6.0	2	4.0
Total	50	100.0	50	100.0

**FIGURE 1: AGE DISTRIBUTION**



**TABLE 2: DISTRIBUTION OF GENDER OF THE PATIENTS**

Age	Group A		Group B	
	Frequency	Percent	Frequency	Percent
Male	32	64.0	28	56.0
Female	18	36.0	22	44.0
Total	50	100.0	50	100.0

FIGURE 2: GENDER DISTRIBUTION

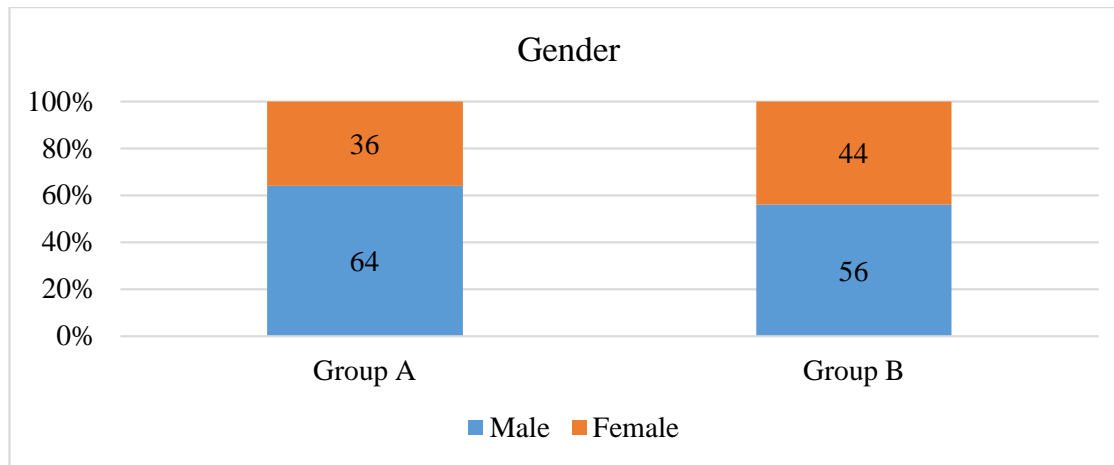


Table 3: Association of itching between Group A and Group B

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	0	0	0	0	13.26	2	0.00**
	Mild	16	33.3	8	17.4			
	Moderate	24	50	14	30.4			
	Severe	8	16.7	24	52.2			
10 Day	No Sign	1	2.1	0	0	19.67	2	0.00**
	Mild	42	87.5	22	47.8			
	Moderate	5	10.4	24	52.2			
	Severe	0	0	0	0			
20 Day	No Sign	44	91.7	14	30.4	37.37	2	0.00**
	Mild	4	8.3	30	65.2			
	Moderate	0	0	2	4.3			
	Severe	0	0	0	0			
30 Day	No Sign	47	97.9	41	89.1	3.17	2	0.21
	Mild	1	2.1	4	8.7			
	Moderate	0	0	1	2.2			
	Severe	0	0	0	0			

\*\*Significant at 0.01 level



FIGURE 3: ITCHING

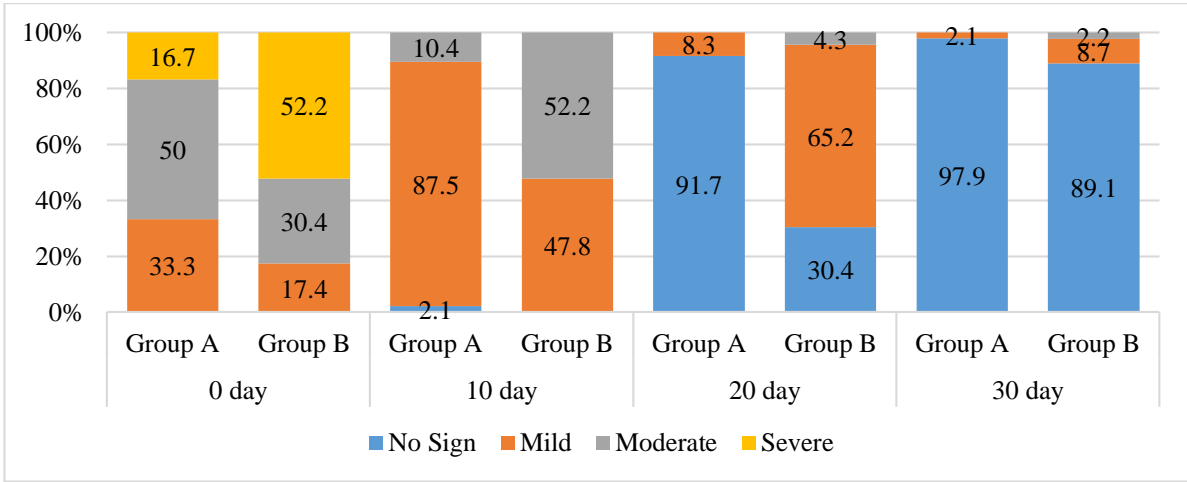
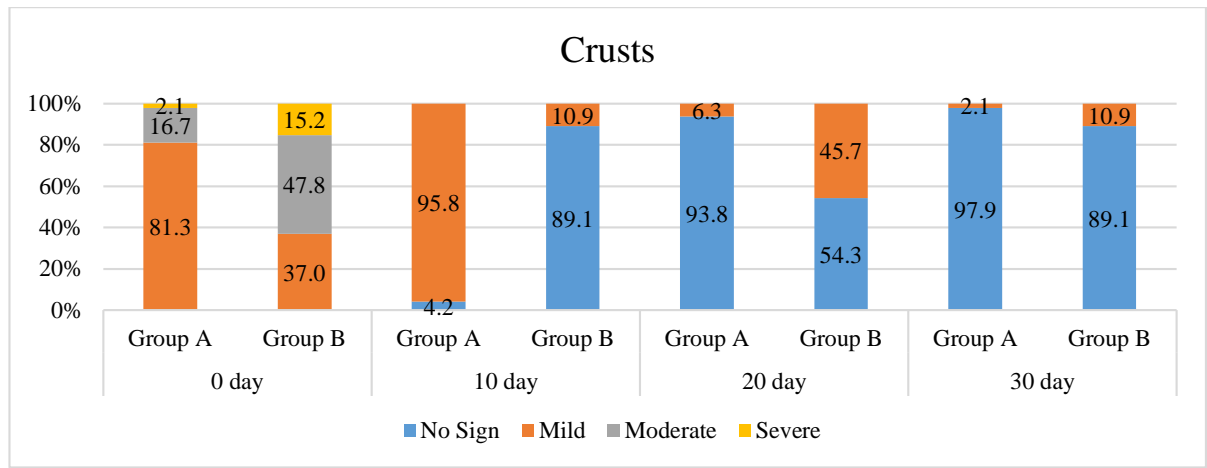


Table 4: Association of crust between Group A and Group B

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	0	0	0	0.0	19.64	2	0.00**
	Mild	39	81.2	17	37.0			
	Moderate	8	16.7	22	47.8			
	Severe	1	2.10	7	15.2			
10 Day	No Sign	2	4.17	41	89.1	7.25	2	0.03*
	Mild	46	95.8	5	10.9			
	Moderate	0	0	0	0.0			
	Severe	0	0	0	0.0			
20 Day	No Sign	45	93.7	25	54.3	19.20	2	0.00**
	Mild	3	6.2	21	45.7			
	Moderate	0	0	0	0.0			
	Severe	0	0	0	0.0			
30 Day	No Sign	47	97.9	41	89.1	3.03	2	0.08
	Mild	1	2.1	5	10.9			
	Moderate	0	0.00	0	0.0			
	Severe	0	0.00	0	0.0			

\*\* Significant at 0.01 level and \* Significant at 0.05 level

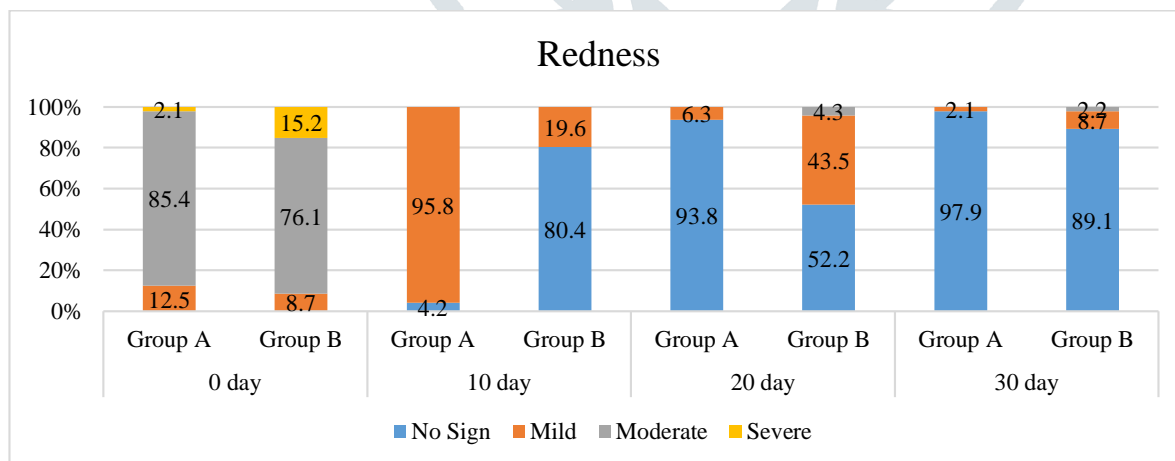
FIGURE 4: CRUST



**Table 5: Association of Redness between Group A and Group B**

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	0	0.0	0	0.0	5.33	2	0.07
	Mild	6	12.5	4	8.7			
	Moderate	41	85.4	35	76			
	Severe	1	2	7	15			
10 Day	No Sign	2	4.2	37	80.4	11.9	2	0.00**
	Mild	46	95.8	9	19.6			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			
20 Day	No Sign	45	93.8	24	52.2	20.9	2	0.00**
	Mild	3	6.3	20	43.5			
	Moderate	0	0	2	4.3			
	Severe	0	0	0	0			
30 Day	No Sign	47	97.9	41	52.2	3.17	2	0.21
	Mild	1	2.1	4	43.5			
	Moderate	0	0	1	4.3			
	Severe	0	0	0	0			

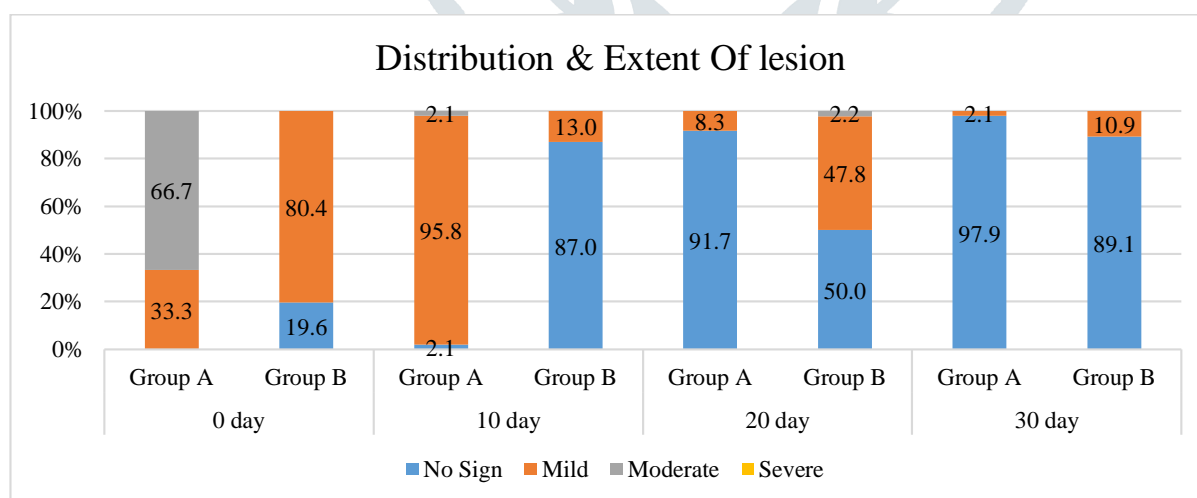
\*\* Significant at 0.01 level

**FIGURE 5: REDNESS**

**Table 6: Association of Distribution & Extent Of lesion between Group A and Group B**

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	0	0.0	9	19.6	2.28	2	0.13
	Mild	16	33.3	37	80.4			
	Moderate	32	66.7	0	0			
	Severe	0	0	0	0			
10 Day	No Sign	1	2.1	40	87.0	4.95	2	0.08
	Mild	46	95.8	6	13.0			
	Moderate	1	2	0	0			
	Severe	0	0	0	0			
20 Day	No Sign	44	91.7	23	50.0	20.0	2	0.00**
	Mild	4	8.3	22	47.8			
	Moderate	0	0	1	2.2			
	Severe	0	0	0	0			
30 Day	No Sign	47	97.9	41	89.1	3.03	2	0.08
	Mild	1	2.1	5	10.9			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			

\*\* Significant at 0.01 level

**FIGURE 6: DISTRIBUTION & EXTENT OF LESION**

**Table 7: Association of Pustules between Group A and Group B**

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	16	33.3	18	39.1	6.50	2	0.04*
	Mild	31	64.6	21	45.7			
	Moderate	1	2.1	7	15			
	Severe	0	0	0	0			
10 Day	No Sign	46	95.8	31	67.4	12.8	2	0.00**
	Mild	2	4.2	15	32.6			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			
20 Day	No Sign	48	100.0	46	100.0	-	-	-
	Mild	0	0.0	0	0.0			
	Moderate	0	0	0	0.0			
	Severe	0	0	0	0			
30 Day	No Sign	48	100.0	46	100.0	-	-	-
	Mild	0	0.0	0	0.0			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			

\*\* Significant at 0.01 level and \* Significant at 0.05 level

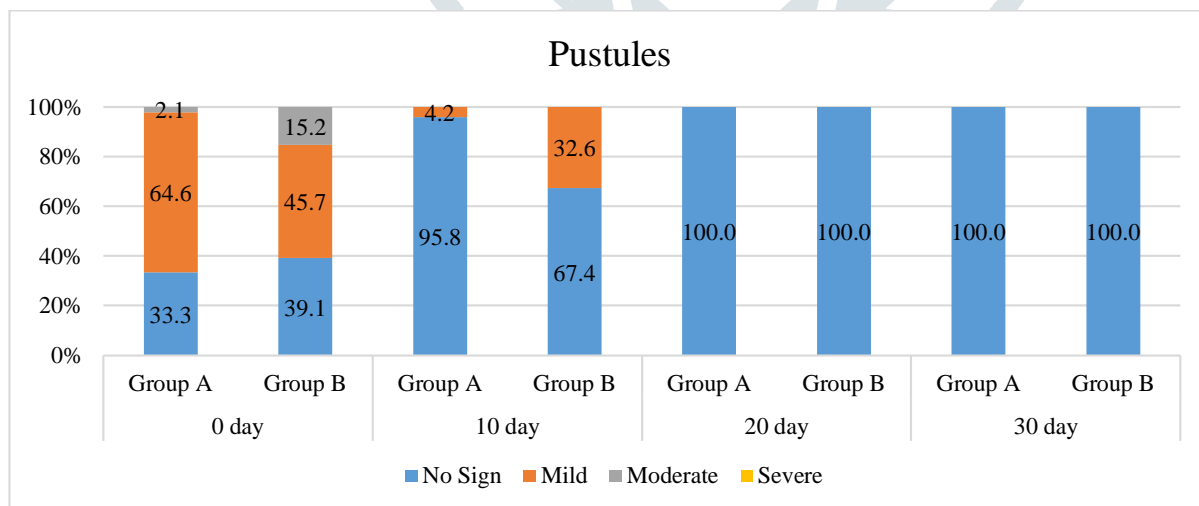
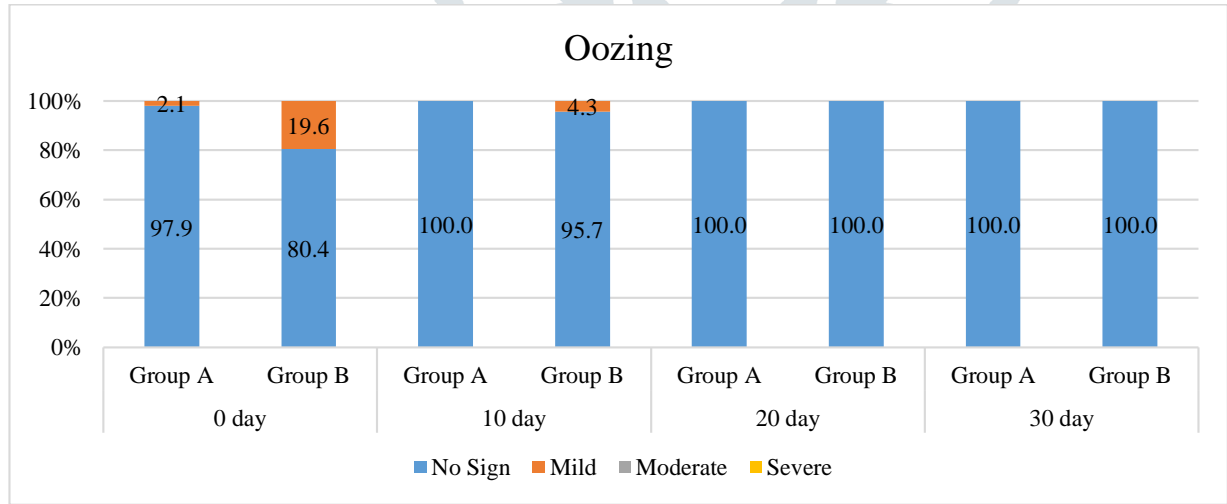
**FIGURE 7: PUSTULES**

Table 8: Association of Oozing between Group A and Group B

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	47	97.9	37	80.4	5.20	1	0.02*
	Mild	1	2.1	9	19.6			
	Moderate	0	0.0	0	0			
	Severe	0	0	0	0			
10 Day	No Sign	48	100.0	44	96.0	2.13	1	0.14
	Mild	0	0.0	2	4.0			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			
20 Day	No Sign	48	100.0	46	100.0	-	-	-
	Mild	0	0.0	0	0.0			
	Moderate	0	0	0	0.0			
	Severe	0	0	0	0			
30 Day	No Sign	48	100.0	46	100.0	-	-	-
	Mild	0	0.0	0	0.0			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			

\* Significant at 0.05 level

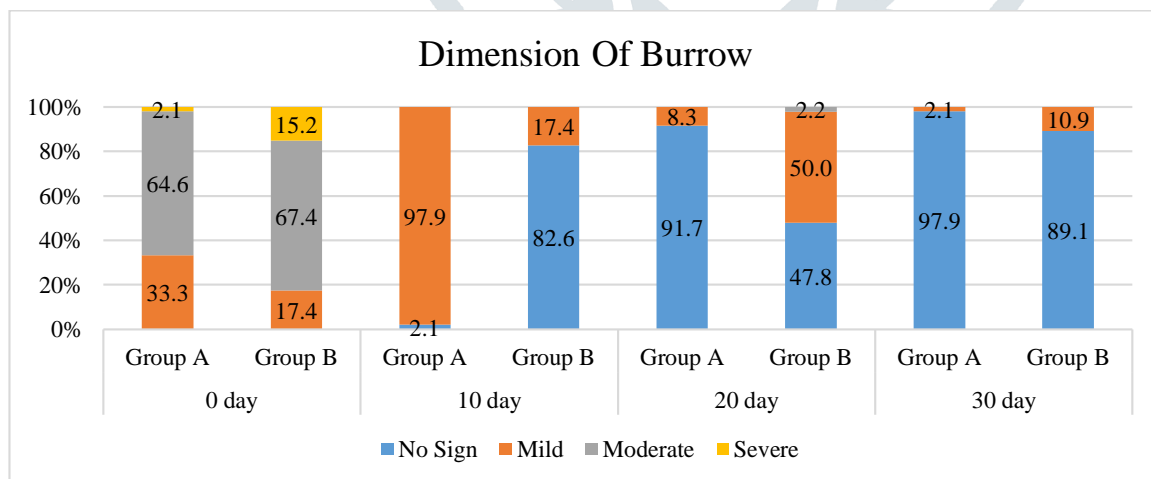
FIGURE 8: OOZING



**Table 9: Association of Dimension of Burrow between Group A and Group B**

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	0	0.0	0	0.0	7.13	2	0.03*
	Mild	16	33.3	8	17.4			
	Moderate	31	64.6	31	67			
	Severe	1	2	7	15			
10 Day	No Sign	1	2.1	38	82.6	9.91	2	0.00**
	Mild	47	97.9	8	17.4			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			
20 Day	No Sign	44	91.7	22	47.8	20.7	2	0.00**
	Mild	4	8.3	23	50.0			
	Moderate	0	0	1	2.2			
	Severe	0	0	0	0			
30 Day	No Sign	47	97.9	41	89.1	3.03	2	0.08
	Mild	1	2.1	5	10.9			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			

\*\* Significant at 0.01 level and \* Significant at 0.05 level

**FIGURE 9: DIMENSION OF BURROW**

**Table 10: Association of Impact of Daily Activity between Group A and Group B**

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
0 Day	No Sign	6	12.5	4	8.7	5.33	2	0.06
	Mild	41	85.4	35	76.1			
	Moderate	1	2.1	7	15			
	Severe	0	0	0	0			
10 Day	No Sign	1	2.1	31	67.4	17.3	2	0.00**
	Mild	43	89.6	25	54.3			
	Moderate	4	8	21	46			
	Severe	0	0	0	0			
20 Day	No Sign	44	91.7	17	37.0	30.8	2	0.00**
	Mild	4	8.3	27	58.7			
	Moderate	0	0	2	4.3			
	Severe	0	0	0	0			
30 Day	No Sign	47	97.9	41	89.1	3.17	2	0.20
	Mild	1	2.1	4	8.7			
	Moderate	0	0	1	2			
	Severe	0	0	0	0			

\*\* Significant at 0.01 level

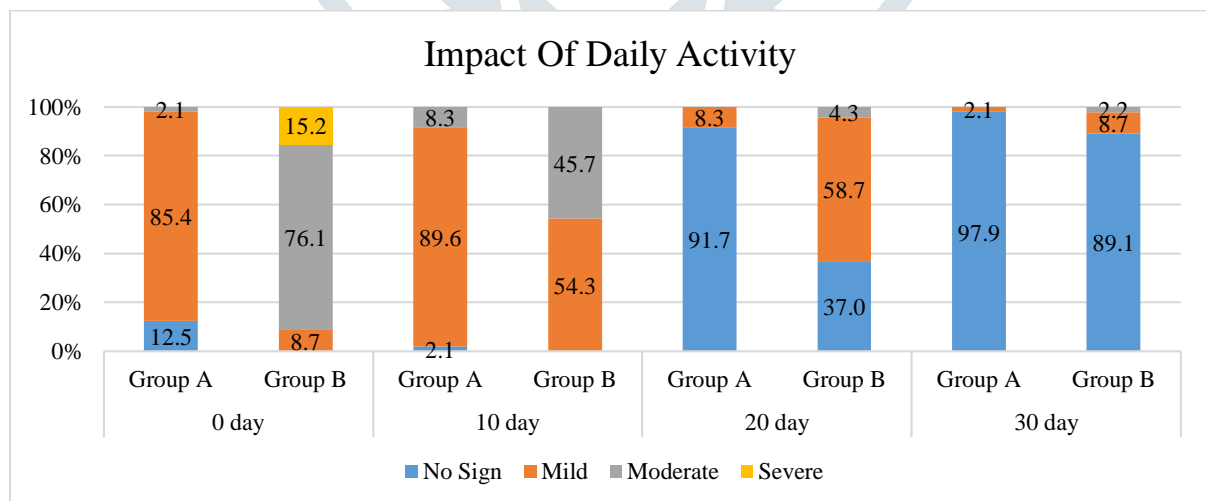
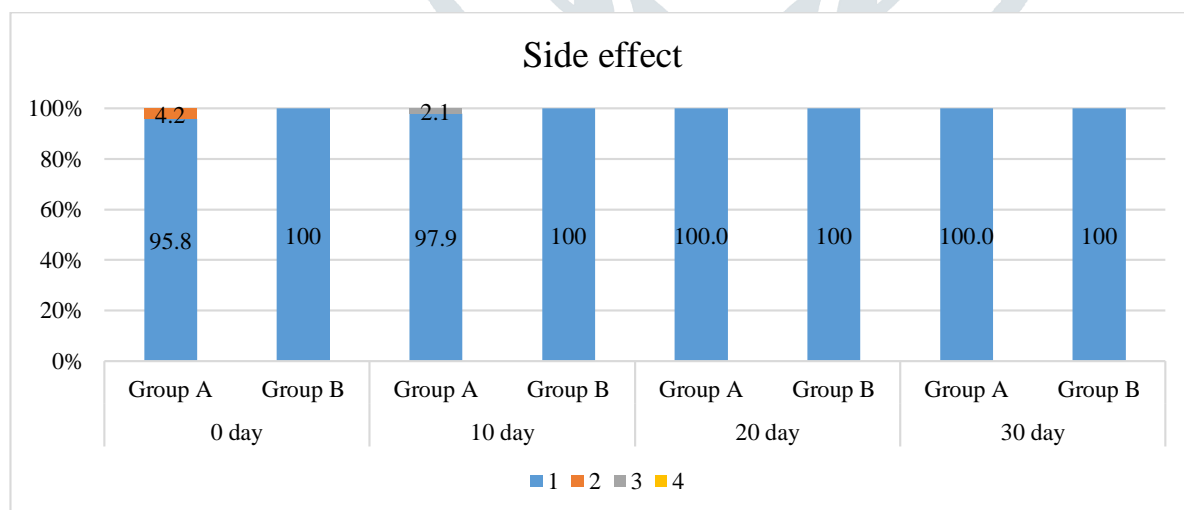
**FIGURE 10: IMPACT OF DAILY ACTIVITY**



TABLE 11: ASSOCIATION OF SIDE EFFECT BETWEEN GROUP A AND GROUP B

Time	Symptom	Group A		Group B		Chi-square value	df	p-value
		Frequency	Percent	Frequency	Percent			
1	No Sign	46	95.8	46	100.0	1.96	1	0.16
	Mild	2	4.2	0	0.0			
	Moderate	0	0.0	0	0			
	Severe	0	0	0	0			
2	No Sign	47	97.9	46	100.0	0.97	1	0.32
	Mild	1	2.1	0	0.0			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			
3	No Sign	48	100.0	46	100.0	-	-	-
	Mild	0	0.0	0	0.0			
	Moderate	0	0	0	0.0			
	Severe	0	0	0	0			
4	No Sign	48	100.0	46	100.0	-	-	-
	Mild	0	0.0	0	0.0			
	Moderate	0	0	0	0			
	Severe	0	0	0	0			

Figure 11: Side effect



## DISCUSSION

So, it is concluded statistically significant effect ( $P < 0.01$ ) from the clinical study that Arka Tailam local application is effective in reducing the signs and symptoms of scabies (PAMA). Hence, the said drug is useful in management of scabies (PAMA).<sup>11</sup> But complete effect of

Permethrin 5% lotion is seen even before 10<sup>th</sup> day of treatment in most of the patients, and the complete effect of Arka Tailam is seen very late in treatment.<sup>12</sup> Many of patients had complete relief even after 20 to 25 days of treatment. so, even if Arka Tailam is as effective as Permethrin 5% lotion after complete treatment for 30 days but there is a difference in efficacy of both the drugs in short period of treatment.<sup>13</sup> Arka Tailam takes longer time to cure the patient and quantity of Arka Tailam is also larger as percentage of active material present in Tailam is less.<sup>14</sup> But even if Permethrin 5% lotion is required in lesser quantity and has quick action it shows side effects in some patients like burning sensation over skin and even rashes over applied area.<sup>15</sup>

## CONCLUSION

It is also concluded from observations that both males and female patients were equally affected, most of the patients were from low socio-economic status and mainly were living or working in polluted, dusty or crowd environment. So, it is clear from the study that disease progress irrespective of sex, religion or creed and is mainly affected low socio-economic group patients which live in densely populated and polluted areas that's why it spreads fastly from one person to another which make this disease contagious in nature.

## CONFLICT OF INTEREST -NIL

## SOURCE OF SUPPORT -NONE

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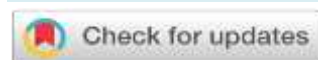


**A CONCEPTUAL STUDY TO REVIEW THE VISHAGHNA PROPERTIES OF APARAJITA (CLITORIA TERNATEA LINN.) FROM NIGHANTU'S****Ritu<sup>1</sup>, Kulbhushan<sup>2</sup>, Dushyant Singh<sup>3</sup>, Arun Kumar<sup>4</sup>**

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*Nighantus* is the door to the proper understanding of the hidden treasure of *Ayurveda*. They contain knowledge about all the *Ayurvedic* herbo-mineral drugs and elaborate on them in an easy manner. *Aparajita* (*Clitoria ternatea* Linn.) is a drug known for the treatment of many diseases, especially it is useful in digestion and it is *Sheet Virya Pradhana* (having cold potency). Here, we compile the data related to *Vishaghna* properties of *Aparajita* as per different *Nighantu*.

**Keywords:** *Ayurveda*, *Nighantu*, *Aparajita*, *Visha*, *Vishaghna*, *Amavisha*, etc.**INTRODUCTION**

*Nighantus* is the door to understanding the hidden treasure of *Ayurveda*. They contain knowledge about all the *Ayurvedic* herbo-mineral drugs and elaborate on them in an easy manner. There are several

*Nighantu* who is holding *Ayurvedic* knowledge for years. *Dhanwantri Nighantu*<sup>1</sup>, *Bhavprakash Nighantu*<sup>2</sup>, *Raja Nighantu*<sup>3</sup>, *Kaidev Nighantu*<sup>4</sup>, etc. are some most known among them. Every *Nighantu*

has specific properties some contain data related to the therapeutic efficacy/use of different *Ayurvedic* herbo-mineral drugs, some have the knowledge of the complete drug starting from its name and remedies. Some compiled the other data and elaborated the difficult words in the simplest form. Some give knowledge about the way of life healthy and healthy. One thing common in all the *Nighantu* is they are disciplined manner having different types of *Varga's* (groups) of drugs according to their origin/features/shape/size etc. Overall, these *Nighantu's* having a vast knowledge ocean from which one drop can be beneficial for a research

scholar. *Aparajita* (*Clitoria ternatea* Linn.)<sup>5</sup> is a drug known for the treatment of many diseases, especially because it is useful in digestion<sup>6</sup> while it is *Sheet Vi-rya Pradhana* (having cold potency)<sup>7</sup>. It is a creeper and is available almost in every part of India. *Aparajita* (*Clitoria ternatea* Linn.) is having properties like *Tridoshghna*<sup>8</sup>- *Pandhurogahara*<sup>9</sup>-*Amanashaka*<sup>10</sup>-*Sarpvishaghana*<sup>11</sup>-*Vishaghna*<sup>12</sup> etc. *Rishbhakadi Agad*<sup>13</sup>-*Parmagad*<sup>14</sup>-*Amritghrit*<sup>15</sup> etc. are some preparations in which *Aparajita* (*Clitoria ternatea* Linn.) is used. Here, we compile the data related to *Vishaghna* properties of *Aparajita* as per different *Nighantu*.

**Table 01:** Classical categorization of *Aparajita* (*Clitoria ternatea* Linn.)

S. No.	Classical text	Gana & Varga
1.	<i>Bhavaprakash Nighantu</i> <sup>16</sup>	<i>Guduchyadi Varga</i>
2.	<i>Priya Nighantu</i> <sup>17</sup>	<i>Pipalyadi Varga</i>
3.	<i>Madanpala Nighantu</i> <sup>18</sup>	<i>Abhayadi Varga</i>
4.	<i>Adarsha Nighantu</i> <sup>19</sup>	<i>Plashadi Varga</i>
5.	<i>Kaidev Nighantu</i> <sup>20</sup>	<i>Aushadhi Varga</i>
6.	<i>Dhanwantri Nighantu</i> <sup>21</sup>	<i>Karveeradi Varga</i>
7.	<i>Dravyaguna Hastamalka</i> <sup>22</sup>	<i>Aparajita Kula</i>

**Table 02:** Vernacular Names of *Aparajita* (*Clitoria ternatea* Linn.)<sup>23</sup>

S. N.	Language	Names
1.	<i>Sanskrit</i>	<i>Aparajita, Gokarnika, Aasphota, Girikarnika, Ashwakhura, Aardrakarni, Katabhi, Dadhipush-pika, Gardabhi, Shitapushpi, Shwetaspanda, Shwetabhadra, Supushpi, Vishahantri, Naagpar-yaykarni, Shwetapushpi, Shweta, Gajkarnika, Shwetanama, Shjwetawanna, Abheda, Sheeta, Mohanashini, Vishnukranta, Vaajikhura.</i>
2.	<i>Hindi</i>	<i>Aparajita</i>
3.	<i>Bengali</i>	<i>Aparajita</i>
4.	<i>Gujrati</i>	<i>Kaaligarani, Kaalikoyal</i>
5.	<i>Tamil</i>	<i>Kaakkanam</i>
6.	<i>Telgue</i>	<i>Dinten</i>
7.	<i>Kannad</i>	<i>Shankhapushpa</i>
8.	<i>Marathi</i>	<i>Gokarna</i>
9.	<i>Malyalam</i>	<i>Shankapushpm</i>
10.	<i>English</i> <sup>24</sup>	<i>Winged-Leaved Clitoria</i>

**Table 03:** Synonyms of *Aparajita* (*Clitoria ternatea* Linn.) in Different Classical texts

S. N.	Synonyms	P. N <sup>25</sup>	M.P. N <sup>26</sup>	S.W. N <sup>27</sup>	K. N <sup>28</sup>	D.N <sup>29</sup>
1.	<i>Girikarnika</i>	+	+	+	-	+
2.	<i>Kokila</i>	+	-	-	-	-
3.	<i>Ashwakhura</i>	-	+	+	+	+
4.	<i>Aparajita</i>	-	+	+	+	+
5.	<i>Valli</i>	-	+	-	+	+
6.	<i>Katavi</i>	-	+	+	-	+
7.	<i>Swet Pushpi</i>	-	+	-	+	-
8.	<i>Mahasweta</i>	-	+	-	+	-
9.	<i>Vishaghni</i>	-	+	+	+	-
10.	<i>Gardabhi</i>	-	-	+	-	-
11.	<i>Sweta</i>	-	-	+	-	+
12.	<i>Janika</i>	-	-	+	-	-
13.	<i>Gwadani</i>	-	-	-	+	+
14.	<i>Neelpushpi</i>	-	+	-	+	+
15.	<i>Ugandha</i>	-	+	-	-	-
16.	<i>Mahaneelasyanda</i>	-	+	-	-	-
17.	<i>Vashika</i>	-	-	-	+	-
18.	<i>Papini</i>	-	+	-	+	-
19.	<i>Swetsyanda</i>	-	-	-	+	+

**Table 04:** Action & uses of *Aparajita* (*Clitoria ternatea* Linn.) in Different Classical texts

S. N.	Classical text	Action & uses
1.	<i>Bhavaprakash Nighantu</i> <sup>30</sup>	<i>Mutral, Vednasthapana, Vamankaraka, Udarshulkarana, Virechanakaraka, Mutrajanan, UdarRoga-Kaphavikara-Mutravikara-Galgand-Gandmala-Shotha-Apachi-Netraroga-Unmad-Amavata-Kushtha-Vishanashaka.</i>
2.	<i>Priya Nighantu</i> <sup>31</sup>	<i>Vishaghna-Medhya-Kanthya-Chakshushya-Shulhara-Amapachana.</i>
3.	<i>Madanpala Nighantu</i> <sup>32</sup>	<i>Medhya, Amapachana, Jwarghna, Vishaghna, Kushthagha, Kasaghna, Grahbhuthara, Kandughna, Kanthya, Shulhara, Shothahara, Shirovirechana, Unmad, Tridoshajrogahara, Dantshulhara, Grabhstrav-pata,</i>
4.	<i>Dhanwantri Nighantu</i> <sup>33</sup>	<i>Vishaghna, Tridoshshyamaka, Netrahitkari, Kushthagha, Rujahara, Grahghni, Kanthya, Shula-Kushtha-Ama-Vrana-Shopha-Nashaka.</i>
5.	<i>Dravyaguna Has-tamalka</i> <sup>34</sup>	<i>Ardhavybhedhaka, Karnmulagranthishothahara, Galgandhara, Sandhivatahara, Jalodara, Shukramehahara, Sarpvishahara, Amavatahara, Kushthagha.</i>

**Table 05:** Rasapanchaka of *Aparajita* (*Clitoria ternatea* Linn.) in Different Classical texts





S. N.	Classical texts	Rasa	Guna	Virya	Vipaka	Dosha-Karma
1.	<i>Dhanwantari Nighantu</i> <sup>35</sup>	<i>Tikta</i>	-	-	-	<i>Pittashamaka</i>
2.	<i>Priya Nighantu</i> <sup>36</sup>	<i>Tikta, Katu</i>	-	<i>Sheeta</i>	-	<i>Vishaghna, Medhya</i>
3.	<i>Nighantu Adarsha</i> <sup>37</sup>	<i>Tikta</i>	-	<i>Sheeta</i>	<i>Katu</i>	<i>Tridoshaghnta</i>
4.	<i>Madanpala Nighantu</i> <sup>38</sup>	<i>Katu, Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Tridoshshamak</i>
5.	<i>Dravyaguna Has-tamalka</i> <sup>39</sup>	<i>Kashaya, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	-	<i>Aampachan, Vishaghna, Sarpvishahara</i>
6.	<i>Kaidae Nighantu</i> <sup>40</sup>	<i>Tikta</i>	-	<i>Sheeta</i>	-	<i>Aamnashak, Vishnashak, Tridoshshamak</i>



**Table 06:** Taxonomical classification of *Aparajita* (*Clitoria ternatea* Linn.)<sup>41</sup>

S. N.	Taxonomical Classification	
1.	Kingdom	Plantae
2.	Clade	Angiosperm
3.	Order	Fabales
4.	Family	Fabaceae
5.	Genus	Clitoria
6.	Species	<i>Clitoria ternatea</i>

**Table 07:** Botanical Description of Different varieties of *Aparajita* (*Clitoria ternatea* Linn.)

S. N.	Botanical de- scription	<i>Sweta Aparajita</i> <sup>42</sup>	<i>Neel Aparajita</i> <sup>43</sup>
1.	Habit	It is a perennial herbaceous plant.	<ul style="list-style-type: none"> <li>It assembles the same features of <i>Sweta Aparajita</i> (<i>Clitoria ternatea</i> Linn.) but the only difference is its flower color.</li> <li>It is of cold potency and bitter in <i>Rasa</i>.</li> <li>It is useful in dysentery with blood, fever, burning syndrome, vomiting, insanity, intoxication, vertigo, distress, asthma, and severe cough.</li> <li>Southern <i>Vaidyas</i> accept <i>Aparajita</i> as <i>Shankhapushpi</i>, only on the basis of its flower resembling a Conch.</li> </ul>
2.	Stem	It grows as a vine or creeper, doing well in moist, neutral soil.	
3.	Leaves	Elliptic, obtuse leaves	
4.	Flowers	They are about 4 cm (1+1/2 in) long by 3 cm (1+1/4 in) wide white flowers.	
5.	Fruits	The fruits are 5–7 cm (2–2+3/4 in) long, flat pods with six to ten seeds in each pod. They are edible when tender.	
6.	Seeds	Its pods have six to ten seeds in each pod. They are edible when tender.	
7.	Root	As a legume, its roots form a symbiotic association with soil bacteria known as rhizobia, which transform atmospheric N <sub>2</sub> into a plant-usable form (a process called nitrogen-fixing), therefore, this plant is also used to improve soil quality through the decomposition of nitrogen-rich plant material.	
8.	Distribution	It is grown as an ornamental plant and as a revegetation species (e.g., in coal mines in Australia), requiring little care when cultivated. The distribution of all other taxa in subgenus <i>Clitoria</i> is restricted to Southern and Eastern Africa, India, Madagascar, and other islands of the Western Indian Ocean	
9.	Image	 	 

Therapeutic uses of *Aparajita* (*Clitoria ternatea* Linn.)

- 1. Jalodara** – It can be used for *Virechana Karma* in Jalodara (Ascites)<sup>44</sup>.
- 2. Mutrakricha** – Its root Phant (steeped decoction) is beneficial<sup>45</sup>.
- 3. Swasa-Kasa** – Roasted seed with *Gurr* (jiggery) and *Sandhav* (rock salt) is beneficial in children<sup>46</sup>.
- 4. Sarp Visha** (Snake poison)<sup>47</sup> –
  - Aparajita* is beneficial in *Dravikara Sarp Visha*.
  - Aparajita* root bark and *Nirgundi* root bark powder in equal amounts are beneficial in *Dravikara Sarp Visha*.

5. *Kamla* – Its root bark powder is beneficial with butter milk<sup>48</sup>.
6. *Andvridhi* – Its seed paste is beneficial in testicle inflammation<sup>49</sup>.
7. *Grabhapatavrodhaka* – *Sweta Aparajita* root bark is beneficial in abortion when used with milk. It can control abortion<sup>50</sup>.
8. *Grabhasthapanarth* – Pregnant women are advised to tie *Sweta Girikarnika Mula* (root) on their pelvic area<sup>51</sup>.
9. *Vajikaranartha* - *Swet Girikarnika Patra* (leaves) advised with milk in the early morning<sup>52</sup>.
10. *Fish Poison* – The equal quantity of powder of *Sweta Aparajita Mula* (root), *Shonth*, *Pippal*, and *Marica* is mixed with *Ghrita* according to the total weight of the powder of all drugs. The mix together make a paste. Apply this paste on bite spot<sup>53</sup>.

Useful Part *Aparajita* (*Clitoria ternatea* Linn.)<sup>54</sup>

- *Pushpa* (Flowers)
- *Patra* (leaves)
- *Moola Twak* (root bark)
- *Beej* (seeds)

Dosage *Aparajita* (*Clitoria ternatea* Linn.)<sup>55</sup>

- *Moola Twak* – 1-3 Masha
- *Beejchurna* – 10-20 Ratti
- *Beejchurna* – 1-2 Ratti (in children)

## DISCUSSION

*Aparajita* is a beautiful plant that can grow as an ornamental plant having medicinal value. According to Ayurvedic classical texts, *Aparajita* is having properties like *Tridoshshamaka*<sup>56</sup>, *Aampachana*<sup>57</sup>, *Vishaghna*, especially *Sarpvishahara*<sup>58</sup>. The best description of *Visha* is mentioned in *Agad Tantra*<sup>59</sup>, but the *Dravyaguna Vigyana*<sup>60</sup> is having deep knowledge about each and every *Dravya* of this earth or universe. Broadly *Visha* is divided into three<sup>61</sup> categories – *Jangam-Sathavara-Kritrum Visha*. *Acharya Charaka*

also mentioned one more category of *Visha* i.e., *Garvisha* which originate from incompatible combinations of food. The *Garvisha*<sup>62</sup> is of two types – first in which all the food items are nonpoisonous but incompatible by nature like the intake of milk with raw fish; in the second one there is a combination of poisonous food and nonpoisonous food like snake poison mixed in the pudding. The common properties of *Visha* are *Vayay-Vikashi-Suksham-Chedi-Madkari-Aagney-Yogvahi*<sup>63</sup> etc. *Aparajita*<sup>64</sup> is having properties like *Katu-Tikta-Kashaya-Rasa*, *Laghu-Ruksha-Guna*, *Sheeta-Virya*, *Katu-Vipaka*, and *Tridoshshamaka*. Most of *Acharya* discussed its *Vishshamaka*<sup>65</sup> properties, and some of them clearly mentioned that it works in *Sarpavisha*<sup>66</sup>. As *Aparajita* all the properties are opposite to the properties of *Visha*. According to *Samanya-Vishesh Siddhanta*<sup>67</sup>, we can say that opposite properties of *Aparajita* can be responsible for its *Vishghna* effect. If observe closely the *Visha* is *Agni Mahabhuta Prathana*. The *Katu-Tikta-Kashaya-Rasa* of *Aparajita* is having *Akasha-Vayu-Pridhvi Mahabhuta Prathana* which indicated that it could suppress the *Agni Guna* of *Visha*. The *Laghu-Ruksha-Guna* of *Aparajita* is having *Vayu Mahabhuta Prathana* which indicated that it again could suppress the *Agni Guna* of *Visha*. The *Sheeta-Virya* of *Aparajita* is having *Vayu-Jal-Pridhvi Mahabhuta Prathana* which indicated that it can again suppress the *Agni Guna* of *Visha*. After observing the conceptual data related to *Visha* and *Aparajita*, we can say that *Aparajita* is capable to treat *Vish*-related problems. It can be perfectly proven with help of experimental and clinical studies.

## CONCLUSION

As above said *Aparajita* is capable to treat *Vish*-related problems or having *Vishaghna* properties conceptually. Further, research must be conducted on this valuable plant so that an old theory will be established on modern parameters.

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## TO EVALUATE THE EFFICACY OF THE YAJNA KARMA TO CONTROL/ARREST THE AIRBORNE MICROBES

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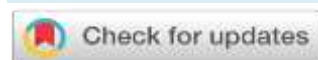
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## ABSTRACT

*Yajna Karma* is an age-old scientific technique innovated by our seer saints to purify the air, the water, the mind, and the body. Many herbs, cow's Ghee, and the firewood of the specific trees are used for the purpose. The various ingredients used in the *Yajna Karma* have the inherent potential to detoxify the atmosphere and the surroundings by eliminating microbes and chemical toxic substances.

**Keywords:** *Yajna Karma*, *Agnihotra*, *Ayurveda*, etc.

## INTRODUCTION

- In India, during the *Vedic* age, *Yajna Karma* was the efficient and consistent ritual of purifying the environment and, hence maintaining a perfect ecological balance. It was being performed as a regular practice by the inmates of *Gurukuls*, *Aranyakas*, and *Grihasthas*. Moreover, the use of medicinal smoke is also mentioned in *Ayurveda* as *Dhoomnasya*<sup>1</sup> and in

*Vedas* as *Yajna Karma*. It was used for medical, ecological, and spiritual pursuits. Therefore, in modern times also, *Yajna Karma* can be used for physical, mental, and ecological issues. The *Yajna Karma* is supposed to purify the atmosphere and the water by controlling the microbes and chemical substances present in them. It also can be used for therapeutic



purposes as well as to help faster germination of the seeds. The present study is aimed to evaluate the effect of *Yajna Karma* on the purification of the environment by reducing or/and eliminating the microbes present in the air.

### Aim & Objectives

1. To isolate and quantify micro-organisms present in indoor air by using the passive method.
2. To evaluate the efficacy of *Yajna Karma* with help of a scientific microbiological study.
3. To conclude the effect of the *Yajna* on the microbes suspended in the air.

### Requirement of the material and equipment

1. *Vedic Hawan Samgri* with other medicinal herbs used for purifying the environment. (Figure-1)
2. Specially designed formulation of *Ayurvedic* herbs having time-tested efficacy for the *Yajna Karma* (Figure-2)
3. A spare room
4. Nutrient Blood Agar media (for the growth of bacteria)
5. Potato- Dextrose Agar media PDA (for growth of fungus)
6. Chemicals and Reagents for biochemical Tests
7. Gram-Staining
8. Lacto-Phenol Staining
9. Incubator (37°C)
10. Laminar Air Flows
11. Glass-wares
12. Microscopes for microscopic Examination

### Methodology

**The following methodology was adopted for the evaluation and performance of the *Yajna*:** -

- A separate room was kept for this purpose.
- Before the performance of the samples, the microbes were collected by an expert microbiologist.
- The following steps were taken to collect the samples –

- ✓ For these Passive methods were used (kept Petri plates open in the room for 1 hour)
- ✓ First of all, nutrient blood agarified plates and PDA plates were kept for 60 min in the room above 1 ft. from the floor in the center of the room.
- ✓ After exposing the plates then were kept in an incubator at 37° C for 48 hrs.
- ✓ After cultivation of micro-organisms follows gram staining.
- ✓ After gram staining and microscopic examination then proceed for bio-chemical test.
- ✓ After bio-chemical test analysis then a particular micro-organism is isolated.
- ✓ To quantify the micro-organism in a room using the following formula: -

$$\frac{\text{CFU}}{\text{Time}} \times \text{Area of Petri dish}$$

\* CFU value x Area of Room, colony forming unit

- The photographs of the colonies so developed were taken for the study.
- *Yajna* was performed from 11:00 am to 12:30 am in the room in the building of Ayurvedic pharmacy. This room measured 194.19. The *Ahuti* of *Hawan Samgriri (Gayatri Mahima)* {Table no.1} and especially prepared formulation of the *Ayurvedic* herbs {Table no.2} and few other *Sugandhi-ta Dravya* (aromatic *Ayurvedic* herbs) {Table no.3}. The *Yajna* was completed with the Chanting of *Vedic Mantras*. The door and windows of the room were kept open for around 3 hours and 15 min till the smoke of the *Yajna* was present in the room. There the door and the windows were shut till 1:15 pm on 25/03/2022.
- There a team of microbiologists collected the samples of the air in the room the next day at 12:40 pm.

**Table 01: Detail of ingredients used in Gayatri Mahima Hawan Samgiri**

✓	Made with excellent quality ingredients collected from the Himalayan region of India.
✓	Used for mental peace and the purification of the atmosphere

**Table 02: List of ingredients used mixed with Hawan Samgiri of Gayatri Mahima separately**



S. N.	Ingredient	Role in Yajna Karma
1.	Agar (Agarwood) <sup>2</sup>	Having aromatic properties and is used to remove bad smells.
2.	Anardana (Dry pomegranate seeds powder) <sup>3</sup>	Pomegranate has antioxidant, anti-viral, and anti-tumor properties and is said to be a good source of vitamins, especially vitamin A, vitamin C, and vitamin E, as well as folic acid.
3.	Aam (mango) <sup>4</sup>	Having Absorbent properties in its bark When mango wood is burnt, a gas called formic aldehyde (H-CHO) is produced which kills dangerous viruses and bacteria and purifies the environment. This gas is produced even when jaggery is burnt.
4.	Bhoj Patra (Himalayan Silver Birch) <sup>5</sup>	Essential oils are also used to treat psychiatric disorders and have a pleasant aroma.
5.	Chawal (Rice) <sup>6</sup>	Having essential oils and also used to treat psychiatric disorders
6.	Cow Dunk Cake <sup>7,8</sup>	Using cow dung to disinfect an area involves coating the floor with a paste of fresh cow dung. Burning cakes of dried cow dung are also said to repel insects and mosquitoes. It contains bacteria named Mycobacterium vaccae which is responsible for activating neurons that produce serotonin. Serotonin is a neurotransmitter that contributes to making a person feel happy. Cow dung protects everybody. It is anti-radiation. It prevents radiation.
7.	Dry Rose Petals <sup>9</sup>	Helps in purifying the atmosphere.
8.	Go Ghrita (Cow's clarified butter) <sup>10</sup>	Cow's Ghee as it works as an antidote to poison. Its fragrance purifies the physical environment. When the cow's ghee is burnt in the fire, the fragrance goes up with the fire and mixes with the atmosphere. The fat particles from the yajna fire are overloaded with dust particles in the atmosphere and come back to the earth in the form of rain which nourishes the vegetation of mother earth. Also, Russian scientists prove that the smoke generated due to burning the cow's ghee will reduce the effect of radiation in the atmosphere up to a significant extent.
9.	Guggulu (Indian bdellium) <sup>11</sup>	Antibiotic herbs like Guggulu when burnt cause rain and purify the atmosphere. Havan ritual is like giving back to the atmosphere what we have taken from the atmosphere. The aromatic herbs when burnt remove the foul odour in the atmosphere through their fragrance.
10.	Haldi Root (Turmeric) <sup>12</sup>	Its antiseptic properties disinfect the air.
11.	Indra Jo (Conessi) <sup>13</sup>	The herbs offered in fire get vaporized and spread in an environment that spiritually charges and purify the surrounding with its disinfectant and purifying properties. The medicinal and nourishing vapors of Hawan herbs also enter the body through breathing and pores of the skin in micro gaseous form helping enhance the health of the body.
12.	Jayaphal (Nutmeg) <sup>14</sup>	It contains essential and has many health benefits like anti-bacterial, and anti-inflammatory properties and spiritually it brings prosperity.
13.	Jo (Barley) <sup>15</sup>	The chemical reaction and sublimation of selected wood and Hawan Samagri in an inverted pyramid-shaped Yajna-Kunda deliver a vast amount of health benefits and therapeutic and environmental purification applications.

14.	<i>Jatamansi (Spike-nard)</i> <sup>16</sup>	Increase GABA, 5-HT, and 5-HIAA and perform an anti-convulsion function.
15.	<i>Karpura (Camphor)</i> <sup>17</sup>	Burning Camphor can aid in keeping our minds calm and at peace with its fragrance.
16.	<i>Kamalagatta (Lotus seed)</i> <sup>18</sup>	Burning Camphor can aid in keeping our minds calm and at peace with its fragrance.
17.	<i>Karpura Kachari (Ginger Lily)</i> <sup>19</sup>	Purify the environment and improve health.
18.	<i>Loban (Benzoin resin)</i> <sup>20</sup>	Burning Loban/Benzoin acts as an AntiDepressant. „ It directly affects the TRPV3 protein in our brain, producing warm sensations on the skin. When one comes in contact with the „loban“ incense, an anxiolytic effect is experienced, and the individual feels relaxed and stress-free, with a clear mind.
19.	<i>Chandan (Sandalwood)</i> <sup>21</sup>	It contains both $\alpha$ -santalol and $\beta$ -santalol. This everpresent chemical constituent contributes greatly to Sandalwood oil's grounding effect on emotions.
20.	<i>Navgrah Samhidha</i> <sup>22</sup>	Spiritually charge and purify the surrounding. (Ark-Palash-Khadir-Peepal-Apamarga-Audambar-Sami-Durva-Kusha)
21.	<i>Nagarmotha (Nut grass)</i> <sup>23</sup>	Anti-inflammatory, anti-microbial, antifungal, and anticonvulsant action.
22.	<i>Nagakesar (Ceylon ironwood)</i> <sup>24</sup>	Anti-inflammatory, anti-pyretic
23.	<i>Peeli Sarson (Yellow mustard seed)</i> <sup>25</sup>	Contain volatile oils and helps in burning other ingredients. For the veneration of ancestors, used in Tantric tradition to get rid of bad spirits; oil is used in the reverence of the planet Saturn (Shani).
24.	<i>Panchtulsi Panchanga</i> <sup>26</sup>	They all together work to boost immunity, skin care, and overall health care for the body.
25.	<i>Sukha Nariyal (Dry coconut)</i> <sup>27</sup>	Increase GABA and, serotonin levels and perform an anti-convulsion function.
26.	<i>Shakkar</i> <sup>28</sup>	Releases the formic aldehyde gas. Since, formaldehyde is effective only in the presence of water that is why there is a ritual of sprinkling the water around the Havan-Kund and in the air. Water is also available in form of water vapours found in the atmosphere.
27.	<i>Satavari (Buttermilk root)</i> <sup>29</sup>	Antioxidant, antimicrobial, anti-inflammatory.
28.	<i>Tila (Sesame)</i> <sup>30</sup>	Antioxidant, antimicrobial, anti-inflammatory.
29.	<i>Tagar (garden heliotrope)</i> <sup>31</sup>	Antioxidant, antimicrobial, anti-inflammatory.




**Table 03: List of a few other Sugandhita Dravya (ingredient) used in Hawan Samgiri** <sup>32</sup>

S. N.	Ingredient	Role in Yajna Karma
1.	<i>Kshudra Ela</i>	Helps in purifying the atmosphere with their aromatic effect and also the essential oils present in them help in burnt other ingredients.
2.	<i>Lavanga</i>	
3.	<i>Javitri</i>	
4.	<i>Supari</i>	

**The experiment was done in the following cycle:-****An experiment conducted on 22<sup>nd</sup> March 2022****Passive Method for Bacteria (Table 1)**

<b>Observation Before Yajna Karma on 22<sup>nd</sup> March 2022</b> (Time:- 1:50-2:50pm Temp:- 31°C)	<b>After Yajna Karma (Yajna Karma completed on 25<sup>th</sup> March 2022)</b> (Time:- 12:40-1:40pm Temp 33°C)
1. 20 colonies. 2. “Staphylococcus SPP”. • CFU (colony forming unit of Bacteria in the room) – 3.16/m <sup>3</sup>	<b>No growth</b> of Bacteria was seen after placing petri plates for about 1 hour in the room at 33°C.
<b>Related Photographs</b>	
 <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Bacterial colonies</div>	 <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">No growth of Bacteria</div>

### Passive Method for Fungus (Table No. 2)

<b>Observation Before Yajna Karma on 22<sup>nd</sup> March 2022</b> (Time:- 1:50-2:50pm Temp:- 31°C)	<b>After Yajna Karma (Yajna Karma completed on 25<sup>th</sup> March 2022)</b> (Time:- 12:40-1:40pm Temp 33°C)
1. 8 colonies. 2. A. Flavus, A. Niger and P. Chrysogenum were present • CFU (colony forming unit of Fungus in the room) – 245.97/m <sup>3</sup>	1. 5 No. of Fungal colonies found 2. The same fungus was found • CFU (colony forming unit of Fungus in the room) – 0.791/m <sup>3</sup>
<b>Related Photographs</b>	
 <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">A. Flavus, A. Niger and P. Chrysogenum Fungal colonies</div>	 <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">A. Flavus, A. Niger and P. Chrysogenum Fungal colonies</div>
 <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">P. Chrysogenum Fungal colonies</div>	

## DISCUSSION

*Yajna Karma* is a very effective ancient Karma having a holistic approach innovated by Indian saints.

*Yajna Karma* is having great value to maintain the ecological balance and can clear the air of suspended toxic chemical particles as well as various kinds of microbes. It also provides a therapeutic advantage to

many kinds of diseases whether somatic or psychosomatic. Here, this *Yajna Karma* is limited to studying the impact of *Yajna* on microbial growth in the air. Based on the studies of the samples of the bacteria and fungus suspended in the air so collected before and after the *Yajna* and the impact of the same is explained in table no 1&2. Vedas emphasize performing *Hawan* twice daily for purification of the environment, spiritual growth, purity of mind, and personal growth. This practice in India dates back to 7500 years back. For a practice to have survived for thousands of centuries must have a rational scientific basis. It strongly suggests that *Hawan* is not merely burning of few substances, but it destroys harmful gasses like Sulphur dioxide and Nitrous oxide suspended in the air. It also kills the germs present in the air (30). Mixing of *Hawan Samgiri*, *Ghee* and other products put into the fire produces smoke at a high temperature which spread to the atmosphere. We are putting *Ghee* and other such products which are rich in oil like rice, *Masha ki dal* (lentils), *Tila* (sesame seeds), barley seeds, etc. When they are burnt in fire the molecules of the *Ghee* and the oil contain in various herbs expand in the air. Molecules of various herbs used in the *Hawan Samgiri* get attached to the molecules of the *Ghee* and the oil. The fatty substances used in *Yajna* are mainly *ghee* and others of vegetable origin. *Ghee* helps in the rapid combustion of cellulose of wood and keeps the fire alight. All fatty substances used are combinations of fatty acids, which volatilize easily. The combustion of the glycerol portion gives acetone bodies, pyruvic aldehyde, glyoxal, etc. the hydrocarbons produced in the reactions again undergo slow combustion, and as a result, methyl and ethyl alcohols, formaldehyde, acetaldehyde, formic acid, and acetic acids have resulted. This sublimation of the oil and the molecules of the herbs which have strong medicinal value and pharmacological activity impact the atmosphere and human beings as it is inhaled. The inhaled medicine first reaches the brain followed by the lungs and other subtle components of the body. We use mango wood as firewood in the *Hawan*. On burning it releases FORMIC ALDEHYDE gas which kills harm-

ful bacteria to purify the atmosphere. Chemically also Formaldehyde is sprayed to disinfect walls and ceilings and is also used to preserve the fruits as formic acid which is produced by burning mango wood. Similarly, *Loban* used in *Hawan Samgiri* has benzoin in it the key benefit of burning *Loban* is that it acts as a bactericidal. The project started on 21.03.2022 with the preparation of petri plates adhering to the strict scientific norms for 24 hours. Plates were exposed in the room of *Hawan* on 22.03.2022 at 1:50 pm for one hour. *Hawan* was performed on 25.03.2022 at 11:30 am. Similarly, the petri plates prepared in a similar fashion were again kept in the *Hawan* room for 1 hour on 26.03.2022 to collect the samples of the microbes after the *Hawan*. The samples so collected were studied to the findings of the impact of the *Hawan* on the microbes present in the room in which the *Yajna Karma* was conducted. On observing the plates on which the sample was collected prior to the *Hawan* it was found that the major bacteria that grew on the medium was *Staphylococcus* SPP and 20 colonies of this bacteria had grown on the medium. But when the plates on which the samples after the *Hawan* were collected were observed by microscopy no growth of *Staphylococcus* SPP bacteria was found. When the petri plates for collecting the samples before the *Hawan* were observed, it was found that 3 types of fungi i.e., *A. Flavus*, *A. Niger*, *P. Chrysogenum*. Total 8 numbers of colonies of these fungi were found before the *Hawan*. When the impact of the *Hawan* was studied it was found that the colonies were reduced from 8 to 5. Thus, the *Yajna Karma* arrested the growth of *Staphylococcus* SPP and greatly reduced the growth of the three strains of the fungi.

## CONCLUSION

We conclude that *Yajna Karma* is helpful in purifying the atmosphere by greatly impacting the presence and the growth of the microbes suspended in the air. If the *Yajna Karma* is done in a proper manner with the proper mixture of the various herbs and prescribed firewood it can help control harmful bacteria. Efforts



should be made to design a model to cleanse the air and maintain a healthy eco system to prevent pandemics and the spread of microbes at the change of the season. A standardized practice of *Yajna Karma* at homes, colonies, residential societies, and on-premises of hospitals/nursing homes should be performed to check the microbial growth with herbs that are more eco and health-friendly.

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