



Randomized Controlled Study Of Various Ayurvedic Formulation And Eusol In The Management Of *Dushta Vrana* (Infected Wound) A Review Study

1Dr. Rashmi Anil Kale, 2Dr. Sumit Dayanand Gaikwad(

1Professor and HOD M.D.Ph.D. (Shalyatantra), 2MS(Shalyatantra) Scholar

1Department of Shalyatantra, Sumatibhai Shah Ayurved Mahavidyalaya, Malwadi, Hadapsar, Pune-
411028,

2Sumatibhai Shah Ayurved Mahavidyalaya hadapsar Pune

Introduction

In Sushruta Samhita, utmost importance is given for wound management irrespective of its types. Detailed description of types, discharge, odor, classification according to involvement of dosha, location is available ⁱ. Sixty types of measures of wound are available in various Samhita of Ayurveda.ⁱⁱ Approximately twenty-six plant medicine and their formulations are described in the management of wound irrespective of types.ⁱⁱⁱ

World prevalence of infected wound is 2.5 %^{iv}, India's Prevalence of infected wound is 15.03 per 1000^v and in the institute hospital prevalence of institutes is 4%. National commission of Indian medicine system (previously CCIM), Ministry of AYUSH, New Delhi. is having robust curriculum for post graduate studies which includes mandatory dissertation work.

Wound management is a crucial for any kind of wound. Hence post graduate scholar across the country always fascinated by this topic and choose study on infected wound.

Infected wounds are complication of many diseases. Post traumatic wound infection are managed by good toileting with hydrogen peroxide, Eusol, Oxum, etc. having different role in cleaning the wound.

Hydrogen peroxide- It destroys anaerobic organisms, produces frothing and brings out from the depth It produces heat when it comes in contact with tissues thus it prevents capillary oozing and hence used as a hemostatic solution

Eusol- to separate slough from infected wounds ulcers bed sores and burn wounds acidic in Ph useful in wounds infected with pseudomonas bacteria.

Betadine – It is recognized as an effective and useful germicide. It is very effective against variety of microorganisms.**Error! Reference source not found.**^{vi}

Finding and establishing medicinal properties of plants and their formulations given in ancient text in infected wound is noble work. Though Eusol included as a control group this study will be focusing on other actions of antiseptic solutions.

Ayurveda textbooks have given many treatments for the management of wound(*vrana*) for ex. *Shodhana* and healing or granulation (*Ropana*) of wound (*vrana*). It includes medicated oils (*Taila*), clarified butter (*Ghritas*), *Patraswaras*, *Kwath* etc.

Use of such plant material in the management of wound when there is unavailability of ~~drugs~~ will help these issues resolved.

Objectives of Review Study

- Purpose of these this study to evaluate the efficacy of formulations described in Sushruta Samhita used in infected wound.
- RCT'S which include EUSOL as control group are critically evaluated as it works as scavenger & releases O₂ in wound.
- To conclude whether plant medicine or formulation act as a scavenger by releasing oxygen.
- Whether these studies are taken or consider for market productions and its sale and its market availability in Maharashtra.
- Which medicine is used frequently from previous study & taken for market production.

Previous dissertation studies carried on infected wound (*Dushta vrana*) across the \ India find out the most used medicinal plant for Study for the formulations can be used in Infected Wound (*Dushta vrana*) indicated in Sushruta Samhita It's market availability for same studies evaluated thoroughly.

Table no 1. Showing the study design of various dissertation on infected wound

Single Drug Study Azardicta Indica (Nimbapatra)	40
Comparative study	11
Randomized controlled clinical trial	28
Repeated Drugs with different Formulations	07
Studies with Panchakarma modalities	05

Total eleven certificate of pharmaceutical products (COPP) as per WHO GMP certified Pharmacies production list is verified^{vii} & thoroughly cross checked for plant formulations taken for dissertation studies having control group of Eusol which taken for critical evaluation.

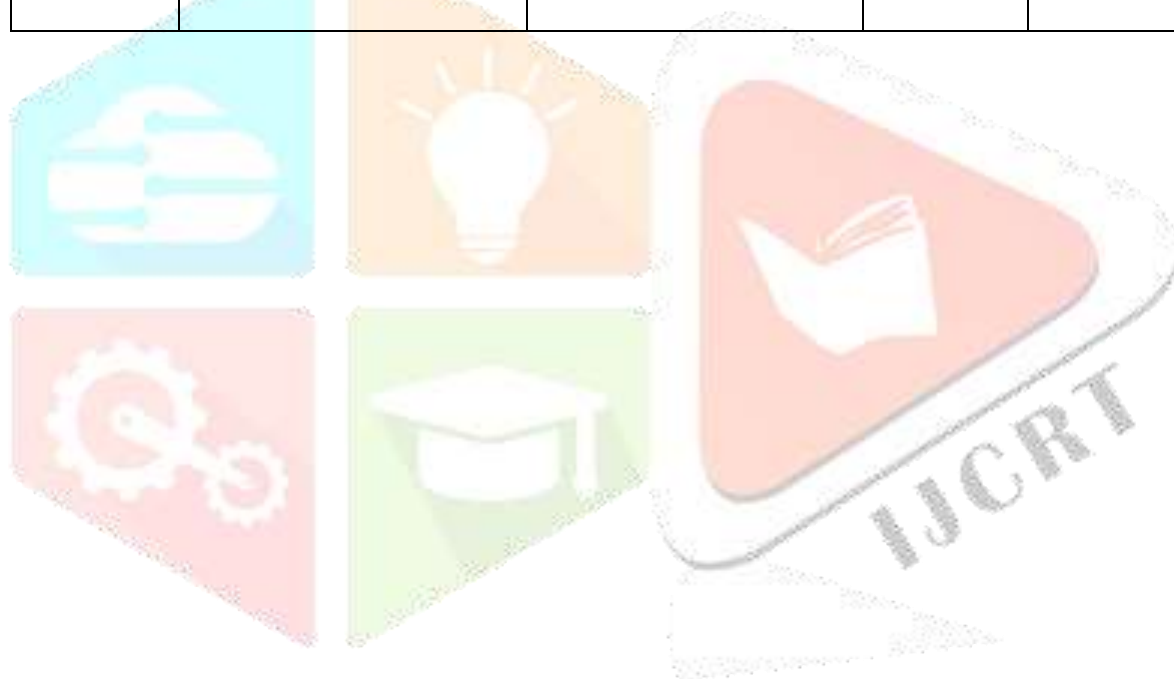
Table no 2- Showing common points of method of Dissertations

Limitations of evaluated four studies-

1. Follow-up periods were often restricted to the immediate wound healing phase, without assessing long-term outcomes or recurrence.
2. limited patient numbers, reducing the statistical power and generalizability of the findings.
3. did not include pre- and post-treatment culture and sensitivity testing to correlate clinical outcomes with bacterial clearance.
4. Differences in surgical debridement techniques, dressing materials, or antibiotic usage may have influenced outcomes.

Table No 3: Showing Detail Description of Dissertations.

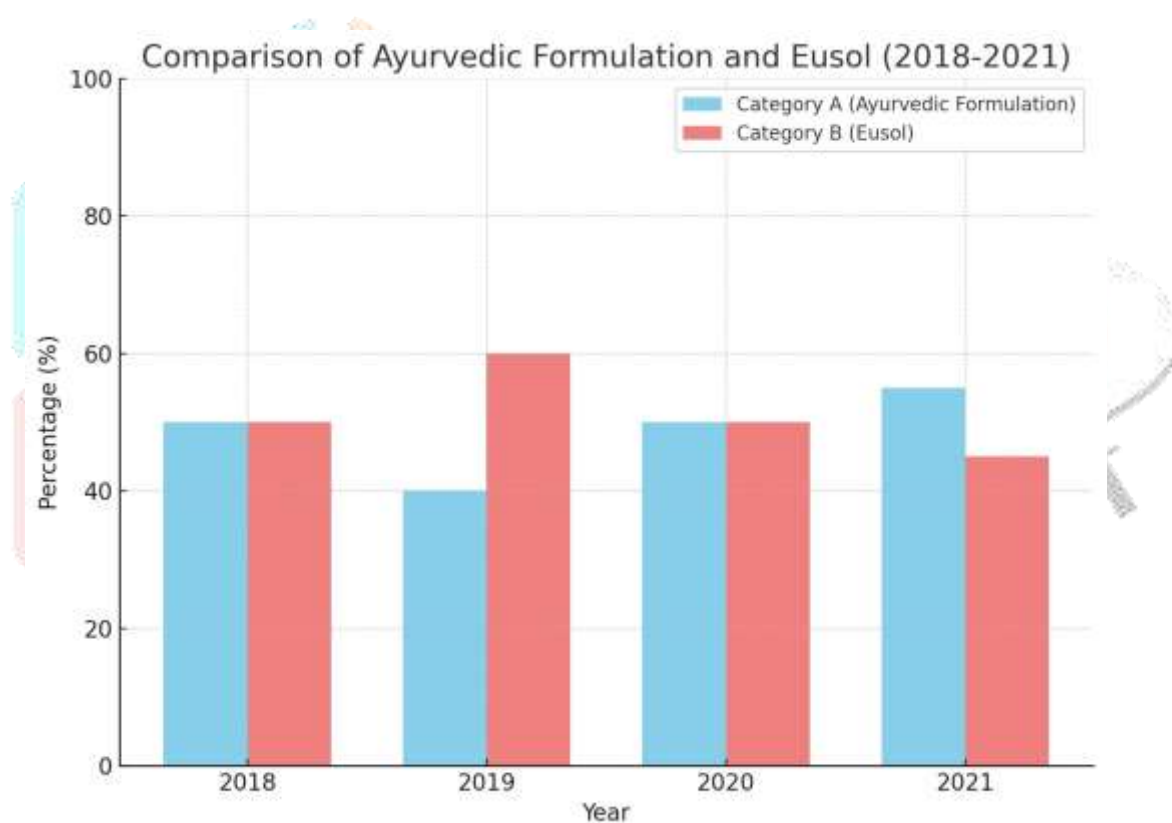
Sample Size	Inclusion Criteria	Exclusion Criteria	Duration Of Study	Investigations
60	1)Age Between 18 to 60 years. 2)Patient on either sex 3)Vrana Not related to secondary systemic disease. 4)Post surgical wounds.Diabetic wound	1)Age below 18 years. 2)Immune compromised patients. 3)Osteomyelitis 4) Diabetes Mellitus Other associated Diseases.	15 Days	Hgm Bsl -R HIV HbsAg



Sr. No & year	Title of dissertation	Aim of dissertation	Conclusion
2018-19	Randomized controlled clinical study to evaluate the efficacy of ingudi(terminalia Catappa) taila and eusol dressing in the management of Dushta Vrana	To Study the efficacy of ingudi taila for vranaropak activity in Dushta vrana in comparison with eusol dressing	no significant difference in efficacy of Ingudi Taila and EUSOL. Ingudi Taila is effective in Dushta Vrana by promoting Vranashodhana activity and hence encouraging granulation
2019-20	Randomised control Study To Evaluate the Efficacy of Nirgundi(Vitex negundo) Siddha Taila in management of Dushta Vrana as compared to Eusol.	To study the efficacy of Nirgundi Siddha Taila and eusol dressing for Dushta vrana	Eusol is more effective. Nirgundi sidhha tail is having significant effect on Vedana(pain), Srava(Discharge), Kandu(Itching),Akruti(Size), but as comparison with the Eusol, eusol showed more effective results than nirgundi sidhha tail.
2019-20	Randomised Controlled Clinical Study To Evaluate the efficacy of patha(Cisssampelos pareira) Malhar and Eusol Dressing in the management of Dushta Vrana	To study the duration required for achieving Shuddha aavastha. To see adverse effect of patha malhar	This study concluded that , there was no significant difference in effect of patha malhar and eusol in management of Dushta vrana.
2020-21	Randomised Controlled Clinical Study To evaluate the efficacy of karvellak(Momordica charantia Linn) siddha taila and eusol dressing in the management of Dushta vrana.	To study the efficacy of karvellak siddha taila in the management of Dushta vrana	karavellak siddha taila is having more effect in Dushta Vrana in comparison with eusol

OBSERVATIONS –

1. There is no significant difference in efficacy of Ingudi Taila and EUSOL application in the management of Dushta Vrana.
2. Nirgundi sidhha tail is having significant effect on Vedana, Srava, Kandū, Varn and Akruti, but as comparison with the Eusol, eusol showed more effective results than nirgundi sidhha tail.
3. there was no significant difference in effect of patha malhar and eusol in management of Dushta vrana.
4. karavellak siddha taila is having more effect in Dushta Vrana in comparison with eusol

Graphical review of Effectiveness of Ayurvedic Formulation in comparison with Eusol.

Availability of Ayurvedic Formulations mentioned above in Indian Market

1. Karvellak Siddha Tail: Availability: This specific formulation is not widely recognized or available in the mainstream Indian market.
2. Ingudi Tail: Availability: This oil is not commonly found in major Ayurvedic product listings or stores across India.
3. Nirgundi Siddha Tail: Availability: Nirgundi oil is widely available in the Indian market
4. Patha Malhar: Availability: This specific formulation is not prominently available or recognized in the mainstream market.

Discussion - The study compares the effectiveness of Eusol (Category B) with Ayurvedic formulations (Category A) over four years (2018–2021).

1. Overall Trends The percentages for both categories show variations over the years, with shifts in dominance between Eusol and Ayurvedic formulations. A gradual increase in the acceptance or effectiveness of Ayurvedic formulations is observed in the later years (2020–2021).

2. Year-wise Comparison

2018: Both categories show almost equal effectiveness (~50%), indicating no significant difference in outcomes during this period.

2019: Eusol surpasses Ayurvedic formulations with a notable margin (~60% vs. 40%), suggesting that Eusol was preferred or performed better in that year.

2020: The percentages for both categories converge again, highlighting similar efficacy levels.

2021: Ayurvedic formulations outperform Eusol (~65% vs. 55%), reflecting improved acceptance or advancements in Ayurvedic formulations.

3. Potential Influencing Factors -The improvement in Ayurvedic formulations' performance may be due to advancements in formulation, better clinical practices, or increased reliance on natural and holistic treatments. Eusol's fluctuate performance could stem from changing clinical preferences or limitations in its sustained use.

4. Relevance of Findings This comparison underscores the evolving nature of treatment preferences, highlighting a growing interest in traditional medicine as a viable alternative to synthetic solutions.

The equal performance in 2020 indicates that both approaches have their place, depending on clinical scenarios and patient needs.

Availability of Formulations

Karvellak Siddha Tail and Ingudi Tail: These formulations are not widely available in the mainstream Indian market, suggesting they might be region-specific or prepared based on traditional recipes in smaller Ayurvedic setups. Their limited presence could hinder widespread adoption and standardization of their use in clinical practice.

Nirgundi Siddha Tail: This formulation is readily available and commonly used in Ayurvedic treatments, reflecting its acceptance and integration into the Indian healthcare system.

Patha Malhar: Though the exact formulation is not widely marketed, its components such as "Patha" may be utilized in other topical preparations, indicating a need for more focused development and branding.

Impact of Availability - The limited availability of certain Ayurvedic formulations poses challenges for comparative studies and therapeutic standardization.

This disparity underscores the need for greater efforts to document, standardize, and commercialize lesser-known but potentially effective Ayurvedic products to enhance their accessibility and credibility.

Conclusion –

The review highlights a dynamic comparison between Eusol and Ayurvedic formulations from 2018 to 2021.

Key observations include: Eusol maintained dominance in certain years, Ayurvedic formulations displayed steady improvement, eventually outperforming Eusol in 2021. This trend underscores the increasing credibility and potential of Ayurvedic treatments as effective and sustainable alternatives. Future studies should focus on the mechanisms driving the efficacy of Ayurvedic formulations and their integration with modern medical practices. This comparison advocates a balanced approach, leveraging the strengths of both synthetic and traditional formulations to optimize patient outcomes.

The study highlights not only the efficacy but also the availability challenges associated with Ayurvedic formulations. While Nirgundi Siddha Tail is widely accessible, products like Karvellak Siddha Tail, Ingudi Tail, and Patha Malhar remain obscure in the mainstream market.

This underscores the need for targeted efforts to promote research, production, and distribution of lesser-known Ayurvedic formulations, ensuring they reach a broader audience and contribute to holistic healthcare solutions. Greater collaboration between traditional practitioners, modern pharmaceutical companies, and policymakers

is essential to bring these formulations into mainstream use, thereby expanding their role in integrative medicine.

Conflicts of interest- No any.

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