

Review article

In DUSHTAVRANA – The application of DARUHARIDRA (Berberis Aristata) and MADHU (Honey) w.r.t. culture sensitivity

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Abstract:

The history of medical science starts with the art and skill of wound management. Treatment of the wound is probably the first medical problem faced by human beings. The frequency of injuries is more common than any other disease.

Vrana should be protected from Doshadusti and from various micro-organisms, which may afflict the Vrana and delay the normal healing process or complicate it. So, for the early and uncomplicated healing of Vrana, treatment is necessary. The contamination of the wound due to various micro-organisms delayed the process of wound healing. Bleeding, pain, infection & cicatrization were and are the main complications of a wound which require immediate treatment.

*Dushta Vrana is an ulcer with profuse discharge and slough, where clearing slough and enabling drug to reach the healthy tissue is more important. Slough can be cleared by using surgical instruments or oxidizing agents where healthy granulation tissues may be damaged. The ancient classics of Ayurved have quoted several drugs useful in the cure of such diseases. One of them is **DARUHARIDRA** (Berberis aristata), well known for its shodhana, ropana and bactericidal properties. According to Charak Samhita, it also possesses properties such as arshoghna, kandughna and lekhneya. **dushtasrava(pus) and kapha, kledanashana**. Another drug is **MADHU** (Honey) with its properties of shodhana and ropana.*

Culture sensitivity especially of the srava/kleda for micro-organisms. This test will be conducted pre treatment so as to ascertain the specific action of trial drugs on various micro-organisms.

Keywords Infected wound, Daruharidra (Berberis aristata), Madhu (Honey), and Culture sensitivity.

Introduction

'Nowhere is the gap between basic research and clinical application more glaring than in the biology of wound healing'

Earl A. Peacock Jr. (1983)

There is no doubt that the art of surgery revolves around Vrana and its essence is uncomplicated healing. The society believes "Time is a Great Healer" but surgeons are dissidents in this respect, they need early and uncomplicated healing.

Sushrut – the Father of Indian surgery, while explaining the scope of Shalyatantra has mentioned Vrana Vinishchayartham in minute detail. Sushrut's management was more thorough than even conceived today. Today wound is said to have healed when epithelization is complete. But Sushrut would employ 'Vaikritapaham' measures (Su.Sut. 17/23, page no.91) which will bring back the normal colour, surface and even hair, (Su. Chi. 1/90-108, page no. 13-14) Even though healing of

Vrana is a natural process of the body, the Vrana should be protected from Doshadusti and from various micro-organisms, which may afflict it and delay the normal healing process. So, for the early and uncomplicated healing of Vrana, treatment is necessary. Bleeding and pain were and are the main complications of a wound which require immediate treatment. The fast life-style of society today, the intake of unhealthy diet such as fast food, alcohol, aerated drinks and un-nutritional diet are the causative factors of doshadusti in the human body leading to innumerable diseases and conditions. VRANA, one stage known as **DUSHTAVRANA** after its causative factors. Similarly, an AGHATAJ VRANA (traumatic injury) can also be converted into a **DUSHTAVRANA** due to various reasons. viz. Hetu sevan, improper hygiene etc. (Su.Sut. 22/7, page no. 123)

In healing of Vrana, local treatment is also important. Dushtavrana is a long standing ulcer with profuse discharge and slough, where clearing

slough and enabling drug to reach the healthy tissue is more important.

DARUHARIDRA (*Berberis aristata*) is well known for its shodhana, ropana and bactericidal properties thus in turn helping in vranashodhana and ropana with vedanashamana and shothaharana. The alkaloid *Berberine* possesses antibacterial and anti-inflammatory activities. The plant extract is also being used in herbal antiseptic cream.

Database on Medicinal plants used in Ayurveda, vol. 1 page 121 CCRAS.

MADHU (*Honey*) with its properties of shodhana and ropana. Madhu, an animal product is widely used in a number of diseases, ranging from mere cough to obesity. It has properties of madhur-kashaya rasa and sheeta virya and is laghu, ruksha, grahi, sukshma, chhedi, vrushya and hridya with its karma of srotovishodhana. It is also as **Vranashodhana, ropana** and saukumaryakaram. Kaiyadev Nighantu has elicited these attributes of **MADHU** in detail.

This study established the drug efficacy but did not specify the micro-organisms it counteracted. This instigated a detailed study involving culture sensitivity test to analyse specific drug action.

MATERIALS AND METHOD:

DARUHARIDRA (*Berberis aristata*) shall be purchased as bark authenticated powdered and standardized after purchase from the market.

MADHU (*Honey*) shall be standardized and used in the original form.

1. **Type of study :** Randomized clinical study.

2. Study Design:

- Special proforma of case paper has been designed and attached (Appendix-II).
- Consent will be taken prior to commencement of clinical trials.
- As per the prevalence of cases of dushtavrana in our hospital the sample size has been considered as 100.
- Each patient selected as per inclusion criteria will be subjected to culture sensitivity test of srava/ kleda of vrana.
- 50 patients will be studied in each group.
- Control group will be advised the local application of Povidon iodine ointment.

3. Inclusion criteria :

Patients suffering from anyone of the following categories but who do not require systemic anti-microbials will be included.

- Doshadushtijanya **DUSHTAVRANA**.
- Aghataja **DUSHTAVRANA**.
- Shastrakarmottar **DUSHTAVRANA**.
- Dagdha **DUSHTAVRANA** eg. Agnidagdha, rasaynik electrical etc.

- Allergic **DUSHTAVRANA** vrana

4. Exclusion criteria:

- Danshajanit **DUSHTAVRANA** eg. Shwan dansh, sarpadansh etc.
- Diabetic, lepromatic, tubercular wounds and immuno-compromised patients.

5. Dosage schedule-

Both trial drugs, Daruharidra and Madhu shall be combined in appropriate ratio i.e. 1:2 as per previous study taking into consideration the fact that this ratio made an easily applicable lepa and rendered good results in vranashodhan.

Local application of lepa will be done once daily to cover entire vrana and followed by dressing.

6. Duration of Study :

Selected patients will be observed till shuddha vrana lakshana are noted.

On an average, calculated on the basis of the efficacy of same drugs tested in a previous study this duration ranges from 1 to 2 weeks.

7. Parameters of Assessment:

1. Subjective parameters-

- Sushrutokta dushtavrana lakshan (**sau. saU. 22.7**)
- Site of wound.
- Size of wound
- Signs of inflammation.viz. rubor, calor, tumor, dolor, loss of function.
- Discharge/ exudates of wound.
- Gradations of parameters of assessment have been attached herewith . (ref. Annexure-III)

2. Objective Parameters-

- Photographs taken at regular intervals will be Used as objective standards. They will be analyzed using statistical parametric mapping software.
- Culture sensitivity especially of the srava / kleda for micro-organisms. This test will be conducted pre treatment so as to ascertain the specific action of trail drugs on various micro-organisms. The aqueous extract of Daruharidra with Madhu will be used for the same.

DISCUSSION:

On the basis of 'AGE', patients in 33-64 yrs. age group were maximum (50%) 32-64 yrs. is the mature age group. Here the dhatus of an individual would have reached a maturation phase. This age group Which showed maximum patients is the time period when growth of an individual is complete and the ageing process begins. Hence it may show a delay in the healing process. A majority of patients of both groups belonged to this category. 85% of the patients of group 'A' showed upshaya in lakshanas. This difference is noteworthy

in the prognosis of the condition. 17-32 yrs. age group(25%). This is the age group where a person is in the “working” / active phase of life.

17-32yrs. This is probably the age where in a person would be in the sports / student category of life, a more of “flirting with life” kind of phase. This also is the crucial career formation stage / platform, an attempt to do a bit more is the key for a bright future. Similarly 17- 32yrs is the age group of “neogenesis” being the best.

As per the ‘GENDER’, the maximum amount of cases seen were males (70%). Although no such rule exists, this is just an observation that the probable causes could be attributed to their occupations and habits thus making them more prone to the condition. Also an ignorance towards health by the females in our society could be an influencing factor. Females tend to ignore their physical and mental health status and also the disease conditions and present probably much later. The situation at this stage could be a more magnified one and one of more serious dimensions making its management a bit more complicated. 83.33% of male patients in group ‘A’ showed upshaya in lakshanas.

Observations made regarding *the ‘HETU’* as expected yielded agantuja hetu as the prime one. The labour class or the, “earn your bread daily” kind of class, in their daily schedules faced these traumas and overlooking of the condition till it crippled / hindered their daily routines was an additional aspect. This aspect showed a maximum number of agantuj hetu (57.5%) patients. Considering the current life style, food habits, addictions etc. the incidence of agantuj hetu is obvious. Accident was the most common of these hetus irrespective of age and sex. 88% of the patients of group ‘A’ showed upshaya in lakshanas.

Considering the “Sthana” it was seen that the maximum number of patients of Group ‘A’ showed vranotpatti in lower limb (65%) followed by other regions (30%)

Lower limb conditions were a majority of the cases found. Occupation could be a contributory fact here. These cases are expected to heal slower (a classical thought) owing to compromised vascularity. Also the hygiene point of view shows that lower limbs are a place where less attention is paid as compared to the other body parts. These could play role in the results seen. The lower limb is more prone to vranotpatti but has less vascularity. Thereby increasing the chances of chronicity. 95% of patients of group ‘A’ showed Vranashodhan in spite of above aspects.

On the basis of Doshadushti maximum number of patients of Gr.A presented with a ‘pittaraktaja doshadushti (50%) followed by ‘sannipataja’ (35%). The involved doshas showed a definitive “Pittaraktaja” predominance. Agantuja cause is the responsible factor. Also “ip%tahto

naast pak:” is the fact highlighted here. No dushti without process of pak / inflammation and ip%t and r@t is a must as an important factor here. The samprapti of DushtaVrana involves twak, rakta, mansa and meda. It’s maximum number of patients with pitta-rakta doshadushti as seen in group ‘A’ presented an upshaya in lakshanas which may be attributed to the tikta, kashaya rasa – dosha pachak, raktashodhak, prasadaka and lekhaneya properties of the trial group.

The chronic wounds with an age of 0-4 weeks formed a bulk of cases in both the groups. Those cases which had been operated for an abscess and that resulted in infected wounds, those trauma cases presenting as infected ones were the core ones here. These had to be the ones where a cleaning of wounds with minimum trauma inflicted to the granulations was necessary, resulting in faster cleaning/granulation so that further ‘vaikruiaphma’ measures became simpler. Noteworthy in this group were those cases having an onset of 4 months / more (mentionable are two cases with a h/o 1 year plus). These were the cases where a routine/ orthodox line of management yielded no/poor results there by proving to be an unsatisfactory measure. This was a condition worth boasting, because the results seen were marked and the photos attached prove my point. From the ‘Chronicity’ aspect of the Vrana the treatment group recorded a maximum number of patients in the group A (0 day - 4 wks) 65% followed by (1 m – 3m) 15%. Besides this 33.33% patients with dushtaVrana of age more than one month and 10% above one year age of wound were included in group ‘A’ they showed an upshaya in lakshanas within 5-7 days in spite their chronicity (100%). These patients had not shown any response to other previous treatment.

An important contribution worth mentioning is these cases with *associated conditions* like Diabetes mellitus, Hansen’s, Osteomyelitis, Australia Ag+ve, cases. These are thankless cases documented to be compromised and showing poor results. These were intentionally included in the study in an attempt to challenge the drug effect to the limits to study its role under adverse situations. A common belief is that honey is not to be used in diabetic cases for both internal and external use by modern science. We trusted the texts and decided to take on the belief. This was basically, since it was an external application, and secondly the thought was backed up by strong references from the texts. It was found that the local application of Daruharidra + Madhu yielded excellent results (100%) within 7-10 days.

Although burn wounds was initially supposed to be excluded from the thesis (probably fearing the gravity of the situation), as the work progressed and confidence regarding the drug effect was on a rise, a few burns wound cases was

attempted to experiment upon. It paid off (photo proving again).

100% results were also observed in the above mentioned cases of associated conditions viz. Hansen's disease, TAO, Hbs Ag, burns. Especially in the patient suffering from TAO excellent vranshodhan was observed within 7days despite its chronicity of over 7 yrs. Taking into consideration the 'Associated Conditions' a maximum number of patients showed no other conditions associated with the disease – 65% followed by DM – 10%. In group 'A' of the total 20 patients observed, 2 patients (10%) were suffering from DM, one patient (5%) each from DM + Hbs Ag, Hansen's disease, TAO, Osteomyelitis & burns. Group 'B' on the other hand had one patient (5%) each of DM and Hansen's disease.

All patients with from both groups were subjected to a prescribed set of investigations, just routine ones which were a self explanatory need.

After an attempt to analyze the obtained facts, the results obtained need to be evaluated because research deals with not only a data collection but a scientific rational and symptomatic approach to analyze, dissect and evaluate the results obtained and thus conclude a baseline statement.

After a sincere 10 days effort and work regarding each case, the seen conditions pertaining to a few parameters was recorded for evaluation. Changes seen in the 'VRANA' regarding Srava, Varna, Gandha, Ushma (locally), Araktata, Vedana as well as swaroop (appearance) were recorded symptomatically and factors leading to the changes are here by evaluated.

But before that a bit of revision of the properties of the drug combination viz. Daruharidra + madhu.

Daruharidra possesses Laghu, Ruksha and Vishada Gunas, is tikta, kashaya, Rasatmak, Ushna Veerya and Katu Vipaki.

A few worth mentioning are:

Tikta, Kashaya Rasa, Ushna Virya, Katu Vipak of Daruharidra properties like chedana, lekhana, shodhana, kapha-pitta nashana, visha nashana, vedanashamana, twak-doshahara make it quite effective in conditions like meha, twak dosha, Dushta- Vrana and kushtha (skin disorders).

Madhu has Madhur, Kashaya rasa, Katu Vipaka, Sheeta Veerya and is Laghu, Ruksha, Sookshma and Yogvahi. Its prominent karma includes lekhana, shodhana, prasadana, ropana, and tridosha-nashana. It is effective in meha and is Vrana shodhana besides having a vishanashana effect.

Speaking about DushtaVrana, the considerable factors are Srava, Varna, Gandha, Ushma, Araktata, Vedana and swaroop (appearance) which shows a change as the avastha changes from that of a Dushta to Shuddha Vrana.

A systematic analysis of the two showed the prime contents to be berberine, proteins, volatile oils, vit. B and C etc. the wound cleansing properties of berberine has always been a point of interest to one and all. The role of Vit.C in granulation formation is a documented one.

Honey contains glucose oxidase an enzyme which produces hydrogen peroxide, a known antiseptic. The produced amount is very low helps an antiseptic effect to be achieved without the damaging effect of the H₂O₂ used otherwise. Honey has been proved to be effective against a host of organism esp. staphylococcus aureus. Honey is especially useful against the multidrug resistant strain of organisms.

Honey (topical) has been used since antiquity to enhance wound healing and numerous other conditions. It is a strong disinfectant, antibacterial, antibiotic and very rich in amino-acids. There is a study in infants with large open wounds (where conventional drugs failed to work) that showed magnificent results on recovering fully, both wounds and infections.

Abstracts of work done by Drs. Priest and Priest (British Naturopathic and Physiomedicalist Schools) 1982 show the antiseptic; general tonic; laxative; mucous membrane tonic; skin and mucous membrane ulcers; venous circulatory tonic, wide reputation as an "herbal antibiotic," based on scientific research and the clinical use of constituent berberine. When goldenseal is used topically, put directly onto an infected wound or ulcer, the berberine or other alkaloids may have such an effect on the microorganisms in the wound.

Organisms killed or controlled by berberine sulfate in vitro

Bacteria

Bacillus cerus, B. subtilis, Corynebacterium diphtheria, Enterobacter aerogenes, Erwinia carotavora, Escherichia coli, Klebsiella sp; K. Pneumoniae, Mycobacterium tuberculosis, Proteus sp. Pseudomonas mangiferae, Salmonella paratyphi, S. typhimurium, Shigella boydii, Staphylococcus aureus, Streptococcus pyrogenes, Vibrio cholerae, Xanthomonas citri.

The control drug- Povidone-Iodine exhibits a broad range of microbicida activity against bacteria, fungi, protozoa, and viruses. Free iodine, slowly liberated from the povidone-iodine (PVP-I) complex in solution, kills eukaryotic or prokaryotic cells through iodination of lipids and oxidation of cytoplasmic and membrane

compounds. These properties are responsible for the reduction of symptoms in the control group.

However, there are few disadvantages of the abovesaid drug povidone-iodine eg. Skin irritation, rarely severe allergic manifestation (rash; hives; itching; difficulty breathing; tightness in the chest; swelling of the mouth, face, lips, or tongue).

CONCLUSION:

the lakshanas of Srava, Varna, Gandha, Ushma, Araktata and Vedana showed significant reduction in gradation within the stipulated time period, on treatment with the trial drug. This significance was found to be more remarkable in the Treatment group than the Control group.

After all the above discussions it can be inferred that the trial drug Daruharidra + Madhu is clinically and statistically proven to be an absolutely useful drug in the management of DushtaVrana.

It should be stressed upon & stated that this drug should not be reserved for multi drug

resistant strains and as a last remedy but employed as a prime & important drug to be started with an continued till wound heals completely.

It would be rather selfish / unfortunate to look down upon this drug as something coming out of an alternative branch of medicine but rather use this **gift of nature for the benefit of mankind.**

Taking goldenseal or berberine internally will not directly kill or inhibit bacteria or other infectious agents in most of these conditions, unless coming in direct contact with the infected tissue

Organisms killed or controlled by berberine

the antiseptic; general tonic; laxative; mucous membrane tonic; skin and mucous membrane ulcers; venous circulatory tonic, wide reputation as an “herbal antibiotic,” based on scientific research and the clinical use of constituent berberine. When goldenseal is used topically, put directly onto an infected wound or ulcer, the berberine or other alkaloids may have such an effect on the microorganisms in the wound.

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