

Wound healing properties of purana *ghrita* with special reference to non-healing diabetic ulcer- a case study

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Abstract: Diabetic foot ulcer (DFU) is one of the major complications found in 15% of diabetics. It significantly reduces the quality of life. In DFU there is a prolonged inflammatory phase, delayed mature granulation tissue formation and reduction in wound tensile strength. The recommended line of treatment as per modern medicine includes Blood sugar control, removal of dead tissue & Wound dressing.

According to *Charak Samhita*, *Prameha Pidaka* are caused due to *upeksha* (neglect) of underlying *Prameha*. *Prameha Pidaka* are of *darun* type and have 7 subtypes.

Purana Ghrita plays significant role in wound healing in non-healing diabetic ulcer.

Objective: To study the effect of *Purana Ghrita* in non-healing diabetic ulcer.

Methods: In the case presented here, a male patient aged 70 years with type 2 diabetes, was admitted in the hospital for 2 months for the treatment of Non-

healing diabetic ulcer on the sole of left foot. Allopathy treatment did not give desired results. Hence after 2 months of admittance, Ayurvedic treatment was introduced for DFU. Dressing of wound was done by mixture of *Purana Ghrita*, honey, *Triphala Churna* and *Haridra Churna* along with the dressing, *Rasapachak*, *Raktapachak*, *Mansapachak*, *Gudmaradi vati*, *Aarogyavardhini vati* & *Sanjivani guti* were used internally at different times

Result and Conclusion: With above mentioned treatment the non-healing diabetic ulcer healed and the patient was discharged after 30 days. *Purana Ghrita* has *Vrana nashak* qualities. It cleanses as well as heals i.e. it has *Shodhan* and *Ropan* properties.

Key words: *Purana Ghrita*, Diabetic foot ulcer, Wound Healing, *Vrana ropak*

Introduction

Diabetes Mellitus (DM) is one of the prominent lifestyle disorders of modern times. Some of the main causes of type 2 diabetes¹ are excess weight & not enough exercise^{2,3}. According to International Diabetes Federation, in 2014, 4.9 million deaths occurred worldwide directly due to DM or due to other associated complications¹. Diabetic Foot Ulcer (DFU) is one of the major complications of DM. It is estimated that around 15% of diabetic patients will suffer with DFU at least once in their lifetime. DFU first appears as blisters & sores (on numb areas of feet & legs) like on meta- tarso-phalangeal joints & heel region. As there is no sensation, it goes unnoticed, leading to bacterial infection. Altered gait & foot biomechanics may compromise structure & function of several systems- vascular, nervous, somato- sensory, musculo-skeletal.

Wounds are physical injuries that result in opening or break of the skin. Proper healing of the wounds is essential for the restoration of disrupted anatomical continuity & disturbed functional status of the skin. Wound healing is a complex but innate mechanism / phenomenon which works reliably most of the time & differs from patient to patient. The wounds are said to be non- healing when they do not improve after 4 weeks & do not heal after 8 weeks⁴.

In DFU inflammatory phase gets prolonged, lipid & protein metabolism gets altered, causing abnormal granulation tissue formation. Thus, mature granulation tissue formation is delayed. Wound tensile strength too gets reduced parallelly¹. Causes of delayed wound healing can be classified as local causes & systemic causes. But the root

cause of delayed healing is reduced tissue generation, angiogenesis & neurological problem⁵. DFU significantly reduces the quality of life. The recommended line of treatment as per modern medicine includes blood sugar control, removal of dead tissue & wound dressing¹.

The word Diabetes was first used in Greek by Apollonius of Memphis in 230 BCE. It (Diabetes) means to pass through¹. Diabetes in Ayurveda is termed as *Prameha*. Type 1 (in youth) & Type 2 (with being overweight) were first identified as separate conditions of *Prameha* by *Charakacharya* & *Sushrutacharya* in 400 – 500 CE. All types (20 types)⁶ of *Prameha* over the period, if left untreated or uncontrolled gets converted into *Madhumeha*⁷. Except *Charak Samhita*, all other *Samhitas* mention *Prameha Pidaka* as a complication of *Prameha*. According to *Charakacharya*, if one ignores *Madhumeha*, then the outcome is '*Sapta pidaka*' i.e. 7 types of *pidaka*. The number of *Prameha Pidaka* vary in *bruhatrayee*. *Charakacharya*⁸ has explained 7 types of *Prameha Pidaka* while *Sushrutacharya*⁹ and *Vagbhatacharya*¹⁰ have explained 10 subtypes. These *Prameha Pidaka* develop dependently in patients suffering from *Prameha* & independently in patients having primary features of *medo- dushti*¹¹. Each type of *Pidaka* has a unique characteristic.

Table 1: Names of *Pidakas* described in various *Ayurvedic Samhitas*

<i>Ashtang Hriday</i>	<i>Charak Samhita</i>	<i>Sushrut Samhita</i>
<i>Sharavika</i>	<i>Sharavika</i>	<i>Sharavika</i>
<i>Kacchapika</i>	<i>Kacchapika</i>	<i>Kacchapika</i>
<i>Jalini</i>	<i>Jalini</i>	<i>Jalini</i>
<i>Vinata</i>	<i>Vinata</i>	<i>Vinata</i>
<i>Alaji</i>	<i>Alaji</i>	<i>Alaji</i>
<i>Masurika</i>	-----	<i>Masurika</i>
<i>Sarshapika</i>	<i>Sarshapi</i>	<i>Sarshapika</i>
<i>Putrini</i>	-----	<i>Putrini</i>
<i>Vidarika</i>	-----	<i>Vidarika</i>
<i>Vidradhi</i>	<i>Vidradhi</i>	<i>Vidradhi</i>

Site of *Pidaka* - *mansa* (muscular parts), *marmas* (vital parts) & *sandhi* (joints)⁸
Swabhav (type)– *Darun*⁸.

Line of treatment - *Shastra*, *Sanshodhan* & *Ropan*¹².

As the channels in the body become weak due to *Prameha*, *Doshas* do not reach the upper part of the body. So, the *Prameha Pidaka* originate in lower parts of the body¹³. *Sharavika*, *Kacchapika* & *Jalini* are difficult to treat in medasvi person¹⁴ & *Sarshapi*, *Alaji*, *Vinata* and *Vidradhi* are *sadhya pidakas*¹⁵. *Pidakas* that originate on *Guda*, *Hridaya*, *Shir*, *Skandha* (shoulder), back & *marmas* of a *krush pramehi* should not be treated¹⁶

In the present case, a diabetic male patient, suffering from non-healing diabetic ulcer, was admitted for allopathic treatment in a hospital for 2 months. After 2 months of conventional allopathic treatment, the patient was referred for ayurvedic treatment of the DFU on the sole of the left foot as there was no desired improvement. The wound was treated as *Prameha Pidaka*

Aims and Objectives:

To study the healing effects of *Purana Ghrita*, *Madhu*, *Haridra* & *Triphala* (as local Application) along with *Panchvalkal Kwath dhawan* in non-healing diabetic ulcer.

Materials and Method:

A diabetic (Type 2) male patient was admitted in the hospital for the treatment of Non-Healing diabetic ulcer. Conventional line of allopathy treatment did not yield desired and satisfactory results even after 2 months. So, after 2 months of admittance, Ayurvedic treatment was introduced for DFU.

Details of the patient are as follows:

Name – XYZ Age -70 years

Diet- vegetarian. Patient was Non-alcoholic, non- smoker.

Well-toned body, tending towards overweight.

H/o Partial hearing loss, used hearing aid.
K/c/o – suffering from hypertension & diabetes (type2) for 10 years

On anti-hypertensive & anti- diabetic treatment for the same duration.

Signs & symptoms of DFU- a 4”x 4” bone deep wound on the sole of the left foot, near the base of the thumb. The wound was red in colour & was of oozing type. Non- purulent.

Vrana pareeksha- *Srav- tanu*, *prabhut*.
Gandha - Absent. *Varna- arakta*. *Vedana* - Absent. *Aakriti-andakriti*

H/o DFU- The patient did not feel pain & therefore was ignorant about the wound in the beginning. The wound deepened, started oozing & patient experienced discomfort in walking. Hence, he came for treatment. The symptoms matched the *Sharavika* type of *Prameha Pidaka*.

The Ayurvedic line of treatment included *bahya chikitsa* (*Vrana Dhawan* & local application) as well as *abhyantar chikitsa*.

Bahya chikitsa

1. *Vrana Dhawan*:

Procedure - The wound was 1st cleaned with Savlon (an antiseptic liquid) using cotton

swab and the wound site was dried off. Then, the *Pidaka* was washed with lukewarm

Panchvalkal Kwath. 20 to 30 ml *Kwath* was used for *Dhawan*. It was dried off again.

2. Local application:

Procedure - On the dried *Pidaka* site, the ointment prepared from the mixture of *Purana Ghrita*, *Madhu*, *Triphala* & *Haridra* was applied. The homogenous ointment of creamy consistency was prepared by rigorous mixing of the above said ingredients and filled in an air tight container. This cream was used for application on the *Pidaka* site. It was applied on the gauze as well as on the *Pidaka* (i.e. both sides) & dressing was done properly.

Ingredients & their quantity in *Purana Ghrita* ointment prepared for wound dressing is as follows:

Table 2: Composition of *Purana Ghrita* used for treating non- Healing DFU wound

Ingredients	Quantity
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<i>Purana Ghrita</i> (3 years old)	20 gm
<i>Madhu</i>	10 gm
<i>Triphala churna</i>	7.5 gm
<i>Haridra churna</i>	5 gm

The steps followed during each dressing were as follows –

The dressing was opened, the wound was debrided, cleaned & washed. The wound was completely dried off & *Purana Ghrita* combination was applied.

The frequency of *Bahya chikitsa* is as follows:

Table 3: Frequency of *Bahya Chikitsa*

Day	Frequency
Day 1 to day 9	Thrice daily (8 am, 3 pm, 10 pm)
Day 10 to day 19	Twice a daily
Day 20 to day 34	Alternate daily

Abhyantar chikitsa

For DFU, *bahyabhyantar chikitsa* was given together. The internal medicine combination was changed according to the improvement in the healing of the *Prameha pidaka* & other symptoms. Medicines given during this course were – *Rasapachak yog*, *Aarogyavardhini*, *Sanjivani guti*, *Gudmaradi vati*, *Raktapachak yog*, *Mansapachak yog*, *Medopachak yog* & *Kuberaksha vati*. The dose & duration (posology) of each medicine is mentioned in Table 4

Table 4: Internal Medicines given (Day 1 to day 4)

From Day 1 to Day 4		
Medicine	Dose	Comments
<i>Rasapachak yog</i>	500 mg TDS	<i>Rasapachak yog</i> and <i>Aarogyavardhini</i> - half an hour before breakfast/lunch/ dinner. <i>Anupan- Koshna Jal</i>
<i>Aarogyavardhini</i>	250 mg TDS	
<i>Sanjivani guti</i>	250 mg TDS	<i>Sanjivani guti</i> - after food intake. <i>Anupan- Koshna Jal</i>

From Day 6 to Day 9		
Medicine	Dose	Comments
<i>Rasapachak yog</i>	500 mg TDS	<i>Rasapachak yog</i> and <i>Raktapachak yog</i> - half an hour before breakfast/lunch/ dinner. <i>Anupan- Koshna Jal</i> was continued
<i>Raktapachak yog</i>	500 mg TDS	
<i>Sanjivani guti</i>	250 mg TDS	<i>Sanjivani guti</i> -after food intake. <i>Anupan- Koshna Jal</i>
From Day 10 to day 14		
Medicine	Dose	Comments
<i>Raktapachak yog</i>	500 mg TDS	All medicines in this duration were intake with <i>Koshna Jal</i> given post food. From this day (10 th), the frequency of dressing was reduced from thrice daily to twice daily.
<i>Mansapachak yog</i>	500 mg TDS	
<i>Gudmaradi vati</i>	500 mg TDS	
From Day 15 to day 21		
Medicine	Dose	Comments
<i>Medopachak yog</i>	500 mg TDS	All medicines were intake with <i>Koshna Jal</i> given post food
<i>Gudmaradi vati</i>	500 mg TDS	
<i>Sanjivani guti</i>	250 mg TDS	
From Day 22 to day 28		
Medicine	Dose	Comments
<i>Raktapachak yog</i>	500 mg TDS	All medicines were given post food with <i>Koshna Jal</i> . <i>Abhyantar chikitsa</i> was discontinued after day 28. Only <i>Bahya chikitsa</i> was continued till day 34
<i>Kuberaksha vati</i>	250 mg TDS	
<i>Sanjivani guti</i>	250 mg TDS	

Results and Discussion

The DFU of non- healing type treated with *Purana Ghrita* combination showed improvement in terms of 1. Healing of the wound, 2. Stoppage of oozing discharge & 3. Closing of the wound borders. At the beginning of the treatment, patient's movements were restricted. He had discomfort while walking. As he felt no pain & sensation, he continued his daily routine, which aggravated the symptoms due to pressure on the wound area.

After being admitted, he was treated with anti-hypertensive & anti-diabetic medication. On starting ayurvedic line of treatment, gradual changes in the DFU were noted as follows-

1. The bone deep wound started to heal in depth, 2. Granulation tissue started to form,
3. Oozing from the wound reduced, 4. This helped in healing of the wound & borders of the wound joined. On achieving 90% of the healing, the patient was discharged. At the end of treatment patient could walk without any support & on 34th day from commencement of *Purana Ghrita* application, the patient was discharged. 1. The Size of the wound from 4"x4" reduced to almost negligible, 2. There was no oozing, 3. The depth of the wound had filled up completely, 4. The borders had realigned with the skin very naturally and 5. The wound colour had almost become similar to skin tone.

According to *Sushrut Samhita*, in all 10 types of *Prameha Pidaka*, there is *tridosha dushti* along with *Vasa & Meda vyapti*⁹. Though these *Pidaka* are considered *Darun* in nature, the line of treatment according to *Charak Samhita* is *Shastra, Sanshodhan & Ropan*¹². i.e. cleaning of the debris (debriding), cleansing & wound healing. This is similar to *Vrana Shodhan -ropan vidhi* explained by *Sushrutacharya* in *vrana chikitsa adhyaya*^{17,18}. The line of treatment followed in this case study was similar to the above-mentioned lines i.e. the medicines used for *Bahya Chikitsa* were *Vrana shodhak & Vrana ropak*.

Panchvalkal Kwath – The decoction was made according to *Kwath Kalpana*¹⁹. *Panchvalkal Kwath* was prepared from the *bharad* whose contents are barks of 5 trees namely *Ashvatha, Udumbara, Plaksha, Vata & vetas*²⁰ (*Parish*). The *Kwath* is indicated to be used for *vrana Dhawan/ prakshalan* in *vrana, shotha & updansha*²⁰ In *Shashthi upakrama*²¹, *Sushrutacharya*²¹ has explained management of the wounds using 60 different types of procedures for early healing sans any complications. For deep seated (*gambhir*) & *mansashrit vrana, Shodhana Kashay*¹⁷ is recommended & in *Shuddha vrana, ropan kashay*¹⁸ is advised. The 5 *dravyas* of *panchvalkal* are individually as well as in combination *kashay rasatmak* (having astringent properties). *Kashay ras* helps in drying off the excess *kled* & has *ropan & shoshan* qualities²². *Vrana Prakshalan* by *Panchavalkal Kwath* acts as a disinfectant²³. It acts as *vrana shodhan* in chronic, non-healing, non-cancerous wound. It reduces microbial load & promotes healing process by wound contraction²⁴ Thus, it cleanses the wound,

relieves pain & swelling thereby facilitating healing.

Purana Ghrita – *Ghrita* is one of the most versatile *aahariya dravya* which can be used in many different ways by all human beings at all times. It also has unique medicinal properties. It is useful in treating physical, psychological & neurological problems. *Ghrita* is considered very sacred too. *Ghrita* can be administered in various forms- *nasya, akshipuran, abhyanga, basti*²⁵ and *pan* (internally). It is also useful in healing of the injuries afflicted by weapons, poisons and fire²⁶ When applied locally, it has excellent wound healing qualities²⁷.

Purana Ghrita has *vrana shodhan & vrana ropan* qualities²⁸. It softens the edges of everted skin & quickens healing. When used in combination with other medicines, it adds to their efficacy²⁹. *Ghrita* is considered *purana* when it is more than a year old³⁰, as it becomes more *purana*, its qualities increase multi fold³¹. *Purana Ghrita* also has *rakshoghna* qualities³² i.e. antiseptic in nature.

Madhu- Madhu has antibacterial, wound cleansing(*shodhan*), wound healing(*ropan*) properties⁴. Previous study indicates its efficacy in *Dushta vrana*³³. *Madhu* is *lekhnaya*³⁴.

In addition, it not only cleanses the *vrana* but joins the edges together (*sandhaniya*) and heals too³⁵.

It stimulates tissue regeneration, angiogenesis & fibroblast activity³⁶. Due to its *yogavahi* properties³⁷, many combinations using *Madhu* prove useful in various ailments. *Madhu- Sarpi* combination is applied after *kshar karma & agni karma*³⁸ for proper healing too. Previous study shows that *madhu* has anti-microbial properties & it accelerates

wound healing. It promotes the regrowth of healthy tissue without any adverse effects³⁹.

Triphala- *Triphala* is known for its anti-septic qualities. It has *ropan* qualities. It is useful in treating skin disorders, controls excess *kleda*, *meda* & controls *meha* & *vra*na *srav*⁴⁰. It proves more useful in treating *shoth*, *kushtha* & *meha* if used with *madhu* & *sarpi*⁴¹.

Previous study indicates its efficacy in reducing bacterial count, increases collagen thereby demonstrating quick wound healing activity⁴².

Haridra- *Haridra* is better known for its skin tone lightening quality (*varnya*). But when used in local application, *Haridra* possess *vra*na *shodhan*, *vra*na *ropan*, *shothahar*, and *lekhan* properties. It also cleanses and heals *vra*na⁴³. *Haridra* stops recurrence of *doshotpatti* in *shuddha vra*na⁴⁴ thus, it proves to be excellent *ropan dravya*.

Internal medicines were given according to the stages of healing. The action which was noted was - decreasing *kled* and *srav* of the wound, maintaining the aseptic condition of DFU, & stimulating healing without any adverse effects.

Conclusion

The following observations can be made from this case study:

1. According to *Bhav Prakash*, *Ghrita* (*aajya*) & *Madhu* both possess *yogavahi*³⁷ properties. This means, when they are used along with other drugs, they enhance their properties.
2. *Ghrita* not only heals the wound, but also bestows lustre. It is beneficial for spiritual, physical & psychological health. It is also

considered sacred. *Ghrita* possesses *rakshoghna* qualities i.e. acts as an anti-septic⁴⁵. It is *laghu* & does *lekhan*, *chedi* & *strotovishodhan*, it is also *vra*na *shodhak*, *varnya* & *vra*na *ropak*. That means, the *vra*na heals & skin tone at the *vra*na site matches with the body skin tone.

3. In *Purana Ghrita*, the qualities increase multifold (*gunavardhan*)²⁸ it thus quickens healing & softens the edges of everted skin.
4. *Madhu* is *kashay rasatmak*, *krumighna* & *varnya*⁴⁶. It heals non-healing wound⁴⁷. *Madhu* is *ruksha* (causes dryness), *sukshma* (enters into minute pores), does *strotovishodhan* (cleanses and purifies the channels)⁴⁶
5. *Panchvalkal Kwath* also is *kashay rasatmak*. It reduces *kapha*, *kled* & inflammation. It has *varnya* properties⁴⁸
6. *Triphala* is *Twak*, *kled*, *med* and *gad nashak*⁴⁰. It heals *vra*nas. When used in combination with *Madhu* & *Ghrita*⁴⁹, it offers good results.
7. *Haridra* dries the *vra*na due to its *ruksha guna* & matches the skin colour of the wound due to its *varnya guna*⁴³.
8. As explained here, all the *dravyas* used, possess *vra*na *shodhan* and *ropan* qualities. When used in combination, the composite effect increases. *Purana Ghrita* augments the efficacy of all other *dravyas* & thus give synergistic effect in healing of non- healing DFU

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease^{50,51,52}. According to Wild et al⁵³ the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. As a result, the number of Diabetic Foot Ulcer cases will also rise. In the current case, the non-healing DFU was treated as *Prameha Pidaka* using *Purana Ghrita*. Ayurveda explains *Prameha Pidaka* as *Darun rog*. There are many risk factors & causative factors in the formation & recurrence of *Prameha Pidaka*. Hence the treatment approach i.e. *Bahya Chikitsa* using *Purana Ghrita* needs to be evaluated on a greater number of patients to extend it as an adjuvant treatment in treating non-healing DFU.

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