

## Diabetic Wound Treated With Herbal Paste of *Securinega Leucopyrus* (Willd.) Muell - Case Report

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**Abstract:** In Indian system of medicine many medicinal plants were described for wound healing which are used in day to day practice by Ayurveda practionars and traditional healers. The shrub, *Securinega leucopyrus* is a desert climatic plant found in Sri Lanka and Indian sub-continent also called as 'Spinous fluggea' in English. This plant is being used in Sri Lanka by traditional vaidyas for the healing of fresh and infected wounds. In this case report, a male diabetic patient aged 61 years was presented with a non-healing chronic wound on his left lower leg since two and half months. Patient was known case of type -2 diabetes mellitus, with two times open heart surgery. So in this case the wound was treated with local application of single herb powder of *Securinega leucopyrus* (willd.) Muell mixed with sesame oil daily once up to complete wound healing. Significant reduction in the wound, slough, swelling and discoloration with granulation at base of the wound was observed within short duration. The wound healed completely by topical application of *S. leucopyrus* within 15 days. This case demonstrated that *S. leucopyrus* paste has potential to heal the diabetic wound.

**Keywords** Ayurveda; Diabetic Wound; *Securinega Leucopyrus*; Sesame Oil

### 1. Introduction

*Securinega leucopyrus* (Willd.) Muell is common in scrub jungles, limited to India, Srilanka and Burma. Armed shrubs, 1 -2 mts tall, and branchlets ending in thorns. Leaves elliptic, obtuse or emarginate, Flowers 1 -2mm across greenish yellow in axillary fascicles. Fruits 3-6mm across, globose, white, 3 valved seeds trigonous, brown [1] (Figure 1). This is a common weed found all over Sri Lanka although it's a desert climatic plant. Application of *S. leucopyrus* (Katupila in Srilanka /Humari in Gujarat) is a commonly used plant in the management of acute and chronic types of wounds in Sri Lankan folklore medicine [2]. The *Katupila* possesses *Kashaya, Tikta Rasas; Lagu, Ruksha, Tikshna gunas; Ushna veerya and Katu vipaka*. Sesame oil (used with *Katupila*) has *Vrana Shodhan* (wound cleaning), and *Vrana Dahanashaka* (pain relief) properties. The fresh leaf always used in the form of paste for the treatments as a single or in combination with other herbs.

Sushruta has described sixty measures for wound management in topical as well as systematic use. In treatment of *Vrana*, Sushruta mentioned the *Madhumahajanya Vrana* (diabetic wound) is asadhya (very difficult to heal) [3]. There are so many research works have been carried out for the management of chronic and non- healing wounds but still it is a big confront for the medical professionals to deal diabetic wounds [4]. In elderly diabetic

patient age degeneration, impaired immunity, hormonal imbalances are common causes to worsen the wound. So diabetic patients have impaired wound healing and are more prone to infection. In search of an effective herbal preparation *Katupila* paste (*Securinega leucopyrus*) tried in this case and showed effective in healing of diabetic wound.



**Figure 1:** *Securinega leucopyrus* plant with fruits



**Figure 2:** Wound status on first consultation

## 2. Case History

A 61 years old man having long term with type-2 diabetes mellitus consulted to outpatient department of Ayurved hospital. Patient was married, having two children, nonalcoholic and had family history of diabetes mellitus. Patient has extensive history of diabetes mellitus (DM) since last 30 years, diabetic neuropathy with mild numbness in lower extremities, two time angioplasty (placing balloon and stent), two time open heart surgery (CABG - Coronary Angio Bypass Graft). Patient also had past history of multiple boils at lower leg and taken treatment form modern medicines for one month. A medication being taken by patient was tab. Metformin 500 mg two times a day before meal but taken irregular. The fasting blood sugar was 247 mg/dl and postprandial blood sugar 297 mg/dl at the time of first consultation in surgical OPD.

Patient was suffering from non-healing wound at left lower leg since two and half months. Patient was examined for wound and observed that oval shaped wound at anterior tibia of left leg measuring 3x2 cm. Wound surface was blackish and surrounding skin was red with exudates, minimal odor and swelling (Figure 2). The swab culture of pus showed the presence of staphylococcus aureus. So this case study was planned with aim to evaluate the clinical effect of local application of *S. leucopyrus* powder mixed with sesame oil.

### 3. Progress and Follow Up

The patient commenced the treatment from day first with local application of *S. leucopyrus* leaves powder mixed with sesame oil daily as outpatient department (Figure 3). Patient's medical history was noted and recorded in the research proforma. The wound was measured and photographed by three days interval. Assessment and progress of wound was noted daily up to complete wound healing. On first consultation wound was blackish with exudates, red coloration of surrounding skin and peripheral swelling. On third day swelling was reduced, black and necrosed tissues were sloughed out and wound became clean (*Shudha avashtha*) (Figure 4). The vein was taken off for bypass surgery (coronary artery graft) from the left leg so venous drainage for that site might be inadequate. On seventh day the base of wound was well vascularised with filling of wound base (Figure 5). On tenth day granulation with pigmentation and wound margins were contracted with reduced wound diameter which was 1x1cm (Figure 6). Second swab cultural was done and found negative for staphylococcus aureus which confirmed the eradication of infection from wound. On fifteenth day wound healed completely with minimum scar and normal color of the surrounding skin (Figure 7).



**Figure 3:** Application of *S. leucopyrus* powder mixed with sesame oil



**Figure 4:** Wound status on third day after treatment



**Figure 5:** Wound status on seventh day after treatment



**Figure 6:** Wound status on tenth day after treatment



**Figure 7:** Complete wound healing on 15 day after treatment

#### 4. Discussion

The healing process becomes diminished in chronic wounds due to reduced tissue regeneration, angiogenesis and neurological problem [5]. Sushruta (An ancient Indian surgeon and father of surgery) described 60 measures for management of wounds. Herbal paste one of them is described for deep seated and complicated wounds [6]. *S. leucopyrus* is herbal plant used by tribal and traditional practitioner in Sri Lanka and India for wound care. In vitro antimicrobial study also highlighted that *S. leucopyrus* had good antimicrobial property [7]. The pharmacognostical study *S. leucopyrus* leaves powder reveals that the presence of calcium oxalate crystals, large amount of tannin and oil helpful in the treatment of cuts and wounds [8]. In Indian system of medicine

sesame oil is useful in swelling and healing of chronic wounds if used with herbal drugs [9]. Both these drugs have helped in wound healing and to maintain the normal skin color. Tannin present in *S. leucopyrus* is accelerating the wound healing [10]. The vein was taken off for bypass surgery (coronary artery graft) from the left leg so venous drainage for that site might be inadequate. But the plant *S. leucopyrus* showed better neovascularisation at the base of wound which was shown effective in previous two case study particularly in diabetic wound and infected wound [11-12]. Patient was not taking the metformin regularly as prescribed by physician so the blood sugar after wound healing was raised which was fasting blood sugar 203 mg/dl and postprandial blood sugar 287mg/dl. Hence it can be said that wound healed with *S. leucopyrus* leaves powder mixed with sesame oil even though the blood sugar was raised.

## 5. Conclusion

This single case study showed encouraging results in diabetic wound healing with *S. leucopyrus* leaves powder mixed with sesame oil and need to be studied in more number of patients.

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