

## Role of Aloe Vera in Scald Burns

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### Abstract

Aloe vera is well known for the cost effect positive actions it has on the skin, with a very minimal risk profile. The anti-inflammatory, wound healing & anti-ageing effects of aloe vera on the skin have been extensively studied & discussed. Similar effects may be demonstrated & observed on burn wounds. We tested the aloe vera gel on a patient with scald burns & observed the progression of the wound. Unsurprisingly, we observed that wound healing was considerably enhanced by the aloe vera gel application

**Keywords:** Aloe vera; Burns; Scald burns; Management; Wound healing.

## INTRODUCTION

Scald injuries are described as burns to living tissue from hot liquids. Despite the ubiquitous nature, a complete understanding of the management of scald is not yet available. Classically it is managed with regular anti bacterial/ collagen dressings in addition to antibiotics, fluids & analgesics. Aloe vera has been used to treat wounds since time immemorial. The broad spectrum of action of aloe vera can be attributed to numerous components existing in the gel, about 75 of them which include

enzymes, vitamins, minerals & amino acids. It is also found to contain lignin, saponins & salicylic acids.<sup>1</sup> The pain & anti-inflammatory action can be attributed to the presence of prostaglandin and bradykinin-hydrolyzing enzymes, carboxypeptidase and bradykinase. Additionally, mannose-6-phosphate, promotes epithelialization and tissue organization, also induces fibroblast proliferation, activates collagen deposition,<sup>2</sup> and accelerates wound healing. However, its clinical evidence is still unclear. Hence this case report, we demonstrate the efficacy of aloe vera in scald burn healing.

## MATERIALS AND METHODS

This study was conducted in the Department of Plastic Surgery in a tertiary care centre in South India after obtaining the departmental ethical committee approval. Informed written consent was taken from the patient. 30 year old male Patient had scald burn injury wherein he accidentally poured boiling hot water over his head and presented next day with chief complaints of severely painful scalds of head, face, & neck.

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(Fig. 1) Patient was admitted with the above symptoms and managed according to WHO burn protocol. He underwent Hydro-jet assisted

debridement, regenerative therapies in the wound. We applied aloe vera gel over the burn wound from day 1 and during every dressing change.



Fig. 1: Scald burn wound at admission

(Fig. 2) Aloe vera is available in gel based preparation and costs around 100 Indian rupees per

100 g gel. Aloe Vera is widely and easily available gel in Indian markets.



Fig. 2: Application of aloe vera gel over burn scald wounds.

## RESULTS

Patient burn wounds healed completely by day

14. (Fig. 3) No adverse effects noted with aloe vera. Wounds healed with less scarring. Patient discharged successfully.



Fig. 3: Healed burn wound at day 14

## DISCUSSION

Aloe vera has been proven to suppress thromboxane, an inhibitor of wound healing, enhance wound healing, and decrease inflammation in both in vitro and in vivo experiments. The gel's magnesium lactate can stop histamine from being produced, which stops skin irritation and itching.<sup>9</sup> Additionally, it improves the production of cytokines and the immune system. Through the suppression of IL-6 and IL-8, the reduction of leukocyte adhesion, the elevation of IL-10, and the lowering of TNF alpha, aloe vera effectively prevents inflammatory reactions. Due to the molecule glucomannan's abundance in polysaccharides like mannose, it has regenerating capabilities.<sup>3</sup> Glucomannan boosts the activation and proliferation of fibroblast growth factor receptors, which in turn raises the production of collagen. Topical application of Aloe vera to prevent ulcers and enhance the healing process of dermal injuries (e.g., burns, frostbite, skin infections, surgical wounds, inflammation, herpes ulcers, diabetic foot ulcers, pressure sores, and chronic wounds) has been reported. Burn wounds were the subject of the majority of investigations. The traditional treatment for burns is aloe vera. Burn wound healing was examined in five studies. Aloe vera outperformed silver sulfadiazine 1% ointment, petroleum jelly gauze dressing, and framycetin cream in these studies. Additionally, it sped up healing, avoided wound infection, and stopped itching and redness.<sup>4</sup> In these investigations, first- and second-degree burn wounds responded better to aloe vera treatment than burn lesions of other

degrees. Aloe vera, it has been found, can speed up the recovery of first and second degree burns by 9 days. Aloe vera was used on post-operative wounds such as episiotomy, cesarean section, skin biopsy, hemorrhoidectomy, gynecologic laparotomy surgery, and graft. In these studies, the use of Aloe vera gel and cream reduced the pain and recovery time compared to other conventional treatments.<sup>5</sup> Aloe vera was used for healing of cracked nipples in 2 studies and it reduced the pain and discharge in the area. Aloe vera has been effective in chronic wounds such as pressure ulcers, diabetic ulcers,<sup>6</sup> chronic anal fissure wounds, chronic wounds caused by accidents, psoriasis, and genital herpes. Aloe vera was more effective compared to saline gauze dressing, phenytoin, and current treatments. Aloe vera reduced the pain, bleeding, and recovery time in chronic wounds. Aloe vera has also been effective in the prevention of ulcers. Mucopolysaccharides along with amino acids and zinc available in Aloe vera can lead to skin integrity, moisture retention, erythema reduction, and helps to prevent skin ulcers. Due to anti-inflammatory, increased immune activity, anti-bacterial and anti-viral effects, and decreased histamine activity properties of Aloe vera, it accelerates the healing process of burn wounds. The outcome of the present review study shows that Aloe vera is unanimously considered as the ideal dressing.<sup>7</sup> Most studies have been performed on grade 1 and 2 ulcers and there are limited studies on grade 3 ulcers. The latter could be due to full thickness skin loss in grade 3 wounds and possible onset of wound infection. Aloe vera (as a gel or cream) can be effective to treat chronic

wounds such as psoriasis lesions (twice a day for 4-8 weeks), pressure ulcers (1-3 months), venous, diabetic and herpes ulcers and chronic anal fissure (2-3 weeks). Aloe vera as a wound cover would keep the wound area moist and allows optimal migration of fibroblasts and epidermal. Aloe vera (1 to 100 mg/kg) can improve wound healing.

## CONCLUSION

Aloe vera and its constituents have qualities that make it possible to preserve the integrity and moisture of skin. Aloe vera is far more efficient and less expensive than the other treatments that are now accessible in terms of the quality and speed of wound healing. Aloe vera plays a vital role in healing of burns wound with the added advantages like minimal adverse effects, affordable, easily available and clinically proven. It is locally available in all Indian homes and can be grown at homes. Therefore, we thoroughly recommend use of aloe vera gel in management of scale burns. No negative effects noted with aloe vera.

*Conflicts of interest:* None

*Authors' contributions:* All authors made contributions to the article

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