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Contents

Original Article

Role of Centanella Asiatica Powder Extract in Wound Healing	41
Marenika, Neljo Thomas, Ravi Kumar Chittoria	
Complications of Silicone Sheet Application in Scar Management	47
Chandavaram Bhanu Prakash, Ravi Kumar Chittoria, Jacob Antony Chakiath	
Role of Centella Extract in Donor Site Healing	53
Surya, Neljo Thomas, Ravi Kumar Chittoria	
Subject Index	57
Author Index	58
Guidelines for Authors	59

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Role of Centanella Asiatica Powder Extract in Wound Healing

Marenika¹, Neljo Thomas², Ravi Kumar Chittoria³

How to cite this article:

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Abstract

The effectiveness of Centanella asiatica for burn wounds. Promoting fibroblast proliferation and boosting collagen and intracellular fibronectin levels, as well as improving the tensile strength of newly created skin and decreasing the inflammatory phase of hypertrophic scar and keloids, are all part of the mechanism of action. Aim of study is to evaluate the effectiveness of Centanella asiatica powder in improving the wound healing.

Keyword: Centanellaasiatica, Wound healing, Post burns.

INTRODUCTION

Wound healing includes three phase inflammation, tissue formation, tissue which is a complicated and dynamic interaction process. surgical wound scars can range from asymptomatic to unsightly in appearance. Intralesional steroid injection, surgical excision, cryotherapy, irradiation, dermabrasion, pulse and carbon dioxide laser therapy are only a few of the well proven scar treatment available.¹ These treatment

have varying degree of efficacy and necessitate numerous sessions of therapy with cost of 900 INR. In our study we discuss role of Centanella Asiatica Powder Extract in Wound healing.

METHODS AND MATERIALS

The study was carried out in a tertiary care hospital in South India after receiving approval from departmental ethical committee. The patient was a 32-year-old male with a 10 years history of electrical burns, during which he acquired a non-healing back ulcer. On examination, the ulcer was located on the back, further to the right of the midline, and was oval in shape with everted edges. The patient got a CT Dorsolumbar scan to rule out osteomyelitis after the initial standard investigation. The back ulcer was excised and histology was performed to rule out any malignant a etiology.

The defect was 6cm broad and 10cm long after resection. Squamous cell cancer was confirmed on histopathology. Due to the presence of squamous

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cell carcinoma, a staging evaluation was performed, which ruled out regional and distant metastasis. After the defect was closed, radiotherapy was recommended to the spot. Because the surrounding tissue was unhealthy, the first stage operation was a delayed staged type 3 keystone flap. Based on vascularity and clinical judgement, the remaining delayed staged keystone flap or transposition

flap will be performed on the opposite side in the second staged. (Fig. 1) After the keystone flap, we planned for a transposition flap to cover the defect. Centanella asiatica powder extract application was done over wound (figure). After application of Centanella application 3 sitting per week for 1 month (Figure 9)

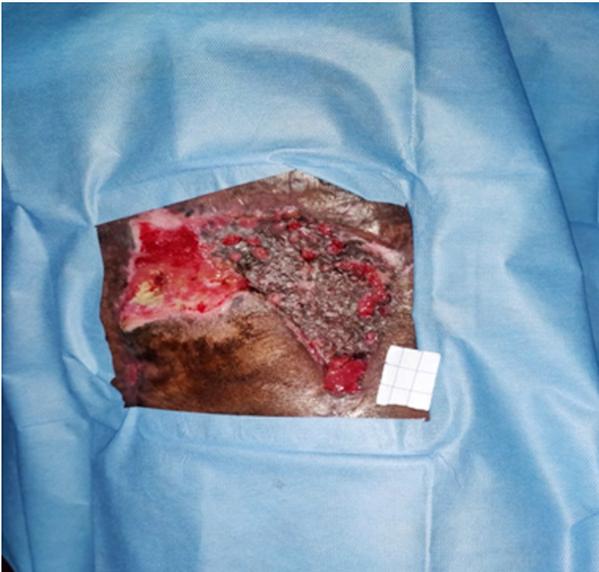


Fig. 1: Post flap wound size



Fig. 2: Application of centanella powder



Fig. 3: After application of Centanella Powder

RESULTS

After application of Centanella powder over period. In our study, by doing application wound healing we were able to successfully reduce the of size of wound. No adverse local or systemic effect noted with use of Centanella powder.

DISCUSSION

Due to its therapeutic characteristics, *C. asiatica* is widely used in South East Asian culture to treat lupus, leprosy, eczema, psoriasis, and varicose ulcers. This beneficial effect is accompanied by a faster wound contraction, which is likely due to the stimulation of fibronectin and collagen I synthesis as well as matrix remodelling. These two characteristics are typical of the wound healing process's proliferative stage. *C. asiatica* has also been found to be effective in the maintenance of connective tissue as well as the strengthening of weaker veins. As a result, it could be effective in the treatment of venous insufficiency and hypertensive microangiopathy.²

Improved tensile strength in in vivo research has previously showed increased collagen I production in wound healing. This rise could be owing to the pro-angiogenic effect of increased VEGF and FGF levels. Both growth factors are involved in the wound healing process, namely in the stages of haemostasis, proliferation, and repair, and so influence wound healing. VEGF also controls cell proliferation, differentiation, and migration during angiogenesis. This encourages the creation of new capillaries, allowing for better circulation to the wound site and hence the delivery of critical nutrients and oxygen. The increased expression of certain mediators, such as IL-1 and monocyte Chemoattractant Protein-1, causes VEGF to be stimulated (MCP-1).³

Wound contraction aids in the healing process. Collagen is a protein that aids in wound healing. The mechanism of action is to induce the synthesis of human collagen.¹ Centanella extract inhibits the tissue overgrowth.

Burns cause a dysregulated inflammatory and stress response in the host, which is characterised by increased levels of cytokines, chemokines, and acute phase proteins. Following the inflammatory reaction, several cytokines and growth factors help

restore vascular perfusion and promote wound healing by activating keratinocytes and fibroblasts. Wound remodelling is the next stage of healing, during which collagen and elastin are deposited and fibroblasts are continue transformed into myofibroblasts.²

Inhibit inflammation, induce collagen production, increase angiogenesis, induce vasodilation, and reduce wound oxidative stress to aid wound healing. Furthermore, extracts of *C. asiatica* have been shown to influence cellular growth and proliferation in injured tissues. New tissue growth replaces damaged tissue in an optimum wound healing situation, resulting in functional or cosmetic degradation. Endothelial growth factor, fibroblast growth factor, and vascular endothelial growth factor may all be involved in the wound healing activity of *C. asiatica* extracts.³⁻⁵

CONCLUSION

In our study treatment with *C. asiatica* may improve wound healing by increasing angiogenesis and decreasing inflammation. Moreover, when PGE2 and other inflammatory chemicals are lowered, this anti-inflammatory impact may result in less swelling, redness, and pain in the wound region.

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Complications of Silicone Sheet Application in Scar Management

Chandavaram Bhanu Prakash¹, Ravi Kumar Chittoria², Jacob Antony Chakiath³

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Abstract

Plastic surgeons play a major role in prevention of occurrence of unsightly scars, as well as management of the scars that have already occurred. Recent guidelines suggest the use of silicone therapy as a non invasive first line prophylactic for the prevention and management of both keloid and hypertrophic scars. In this article we would like to describe our experience with the use of silicone sheet for scar management.

Keyword: Silicone Sheet, Scar

INTRODUCTION

Scarring can have many consequences like, unpleasant physical impairments, aesthetic issues, and psychological and social troubles. There is a wide range of scarring which can be either a simple mature linear scar or can be a abnormal raised and hypertrophic scar or a troublesome keloid.¹ Plastic surgeons play a major role in prevention of occurrence of unsightly scars, as

well as management of the scars that have already occurred. Many option invasive and non invasive are available for the management of scars, the choice of which is based on the surgeon preference and suitability of the technique for a particular scar. Recent guidelines suggest the use of silicone therapy as a non invasive first line prophylactic for the prevention and management of both keloid and hypertrophic scars.² In this article we would like to describe our experience with the use of silicone sheet for scar management.

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MATERIALS AND METHODS

This was done in a tertiary care hospital in south part of India after receiving approval from departmental ethics committee. The subject is a 40 yrs old male with post necrotising soft tissue infection of right leg and foot. Initially he was managed for necrotizing fasciitis (Figure 1) and after that scar management was started. Silicon sheet was applied for scar management. Observing

day by day will help us to know any complications with silicon sheet (Figure 2). On third day of



Fig. 1: Healed wound with scarring

application of silicon sheet, we have observed maceration (Figure 3) of skin at wound area.



Fig. 2: Application of Silicone Gel Sheet dressing for Scar



Fig. 3: Maceration seen after silicon sheet application

- Step 1 : Make wound free of infection.
- Step 2 : Wound management up to granulation tissue cover completely.
- Step 3 : Apply silicone sheet
- Step 4 : Look for complications.

RESULTS

After that we have removed the dressing and treated with antibiotics and regular dressing (figure 4). Therefore maceration of skin can be considered as a side effect of silicon sheet dressing.



Fig. 4: Complete Healing of Maceration after removal of silicone sheet.

DISCUSSION

Scar management is an important step in management of wound. Topical silicone therapy is commonly used to treat hypertrophic scars and keloids, as well as to prevent the formation of aberrant scarring. Silicone gel sheeting (SGS) has been shown to be useful in scar control, however it does have certain drawbacks. SGS cannot be used on some regions of the body.⁴ Sheetting is impracticable for large regions or near joints, and it is difficult to use on the face or other areas where the curves or motility of the skin make adequate contact and coverage problematic. Scars are to be repaired as they can give ugly appearance and sometimes restriction of daily activities. So it is better to know about new techniques and complications associated with them. Silicone gel sheets (SGS) transmit half as much moisture vapour as bare skin. Moisture accumulated in the stratum corneum of the skin as a result of this impact, leading to the conclusion that the stratum corneum can behave as a water reservoir in their study.⁵

Silicone sheet application has been seen as an upcoming technique in treating scars. So we should study about the complications associated with it. After the application of silicon sheet dressing we have observed the skin maceration after 2 days. Then it was resolved with antibiotic dose and regular dressings.

CONCLUSION

Skin maceration has observed with application of silicone dressing. It was resolved with antibiotics and regular dressings. Skin maceration can be considered as a complication of silicone sheet dressing.

Conflicts of interest: None

Declarations: None

Financial Disclosure: None

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Role of Centella Extract in Donor Site Healing

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Abstract

Currently, several medicinal plants have been integrated into the health care system to aid in wound healing. Centella asiatica has been used in traditional medicine because of its ability to heal wounds and prevent scarring. This article is about the role of Centella asiatica in donor site healing.

Keywords: Centella asiatica, Donor site healing, Gene expressions, Scar, asiaticoside, madecassoside

INTRODUCTION

Wound healing process occurs with almost all medical treatments. Natural substances contained in herbs and plants have properties that assist in and enhance the wound healing process with its antioxidant, anti-inflammatory and antibacterial properties.^{1,2} The graft donor site is a superficial partial thickness wound in which there is loss of epidermis and part of the dermis.

Epithelialization is the natural act of healing dermal tissue resulting in minimal or no scarring.⁵ In most cases, scars occur if the depth reaches the dermis layer. When hypertrophic scar or keloid develops, it may induce itching, pain and even scar contracture.³ A lot of agents have been used to improve scars such as onion extract, resveratrol in grape's skin, curcumin and centella. The role of Centella asiatica in donor site healing is due to its anti oxidant and anti inflammatory and collagen remodelling property.⁶

PREPARATION

Centella asiatica, also commonly known as Gotu kola, is a small plant that belong to the family Apiaceae.⁴ The Centella asiatica is prepared by being extracted with 70% alcohol in cream preparation. It is formulated from 7% w/w Centella extract 100 gram, combined with Centella extract 7g., cetyl alcohol 15g., stearyl alcohol 12g., mineral oil 5g., cetomacrogol-1,000 3g., propylene glycol

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1g., paraben concentrate 1.5g, and water refill for total of 100g for the whole combination. The Centella extract comprised asiaticoside 5.12% and madecassoside 5.1% which has the wound healing property.

MECHANISM

The active compounds of *C. asiatica* responsible for donor site healing are pentacyclic triterpenes, including asiaticoside and madecassoside. In vitro studies demonstrated that asiaticoside decreases fibroblast proliferation in a dose-related manner and reduces the expression of both TGF- β I and TGF- β II at the transcriptional and translational level.¹⁰ Asiaticoside also slows down scar formation by increasing the activity process of SMAD 7 which is a negative regulator of TGF- β signalling.¹¹ The other active composition, madecassoside acts by inhibiting the migration of fibroblasts.¹² Both active chemical substances promote *C. asiatica* to induce fibroblast proliferation and collagen synthesis. It

involves the improvement of the tensile strength of newly formed skin and maturation of the scar by the production of type I collagen.⁷

APPLICATIONS

It is mostly often used for wound healing, treating mental fatigue, bronchitis, asthma, dysentery, kidney trouble, urethritis, antiallergic and anticancer purposes and even for blood pressure. It is rarely used for memory improvement with not much use. Use of Centellase for 4-8 weeks seems to improve blood circulation and reduce swelling in people with varicose veins.

ADVANTAGES

It has low adherence to the wound bed (Figure1). It doesn't have skin irritating potential and has no effects on serum biochemical profile when applied dermally. There is limited or no scar formation.^{8,9}



Fig. 1: Application of Centella asiatica on donor site

DISADVANTAGES

It cant be used in conditions like damage to skin caused by radiation therapy. It is safe when used for up to 10 weeks. It might cause itchiness and redness if used for longer period. Contact dermatitis^{13,14} can occur sometimes. It also might cause liver damage. Especially, people who already have a liver disease should avoid using centella asiatica since it might make liver problems worse.

CONCLUSION

The effect of Centella cream on scar development of the donor site of the split- thickness skin grafts may be attainable in terms of better pigmentation. By means of objective measurements and longer follow-up times, Centella cream may prove to be an alternative to prevent the formation of hypertrophic scar.

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Subject Index

TITLE

PAGE NO

Characteristic of Flaviviridae and Diseases Caused by Viruses in this Family: A Briefing	9
Complications of Silicone Sheet Application in Scar Management	47
Impact of Willpower on Health in Humans	21
Role of Centanella Asiatica Powder Extract in Wound Healing	41
Role of Centella Extract in Donor Site Healing	53
Semen Analysis as a Tool to Assess Infertility among Males	15



Author Index

Name	Page No	Name	Page No
Chandavaram Bhanu Prakash	47	Ravi Kumar Chittoria	41
Deepika D Manwatkar	15	Ravi Kumar Chittoria	47
Jacob Antony Chakiath	47	Ravi Kumar Chittoria	53
Jyotsana Singh	21	Sachin C Narwadiya	15
Marenika	41	Sachin C Narwadiya	21
Moon Moon Satpathy	9	Sonam Sarita Bal	9
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