

Role of Centanella Asiatica Powder Extract in Wound Healing

Marenika¹, Neljo Thomas², Ravi Kumar Chittoria³

How to cite this article:

Marenika, Neljo Thomas, Ravi Kumar Chittoria/Role of Centanella Asiatica Powder Extract in Wound Healing/JBB Journal of Biochemistry and Biophysics. 2021;6(2):41-44

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

Author's Affiliation: ^{1,2}Senior Resident, ³Professor, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605006, India.

Corresponding Author: Ravi Kumar Chittoria, Professor, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605006, India.

E-mail: drchittoria@gmail.com

Received: 20.06.2022

Accepted: 19.07.2022

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)

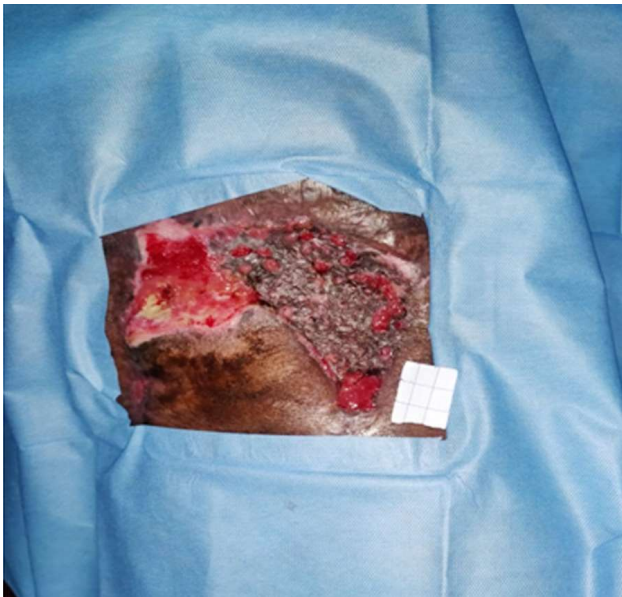


Fig. 1: Post flap wound size



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.

REFERENCES

1. Arribas-López, E., Zand, N., Ojo, O., Snowden, M. J., & Kochhar, T. (2022). A Systematic Review of the Effect of Centella asiatica on Wound Healing. *International Journal of Environmental Research and Public Health*, 19(6) *International Journal of Environmental Research and Public Health*, (2022), 19(6)
2. Bunman, S., Dumavibhat, N., Chatthanawaree, W., ntalaporn, S., Thuwachaosuan, T., & Thongchuan, C. (2017). Burn Wound Healing: Pathophysiology and Current Management of Burn Injury. *The Bangkok Medical Journal*, (2017), 91-98, 13(02)
3. Paocharoen, V. (2010). The Efficacy and Side Effects of Oral Centella asiatica extract for Wound Healing Promotion in Diabetic Wound Patients. *Asian Journal of Pharmaceutical and Clinical Research*, (2017), 69-74, 10(10)
4. Incandela, L., Cesarone, M. R., Cacchio, M., de Sanctis, M. T., Santavenere, C., D'Auro, M. G., Bucci, M., & Belcaro, G. (2001). Total triterpenic fraction of Centella asiatica in chronic venous insufficiency

and in high-perfusion microangiopathy *Angiology* (2001), 52 (10 SUPPL. 2)

5. Prakash, V., Jaiswal, N., & Srivastava, M. (2017). A review on medicinal properties of *Centella asiatica*.

Asian Journal of Pharmaceutical and Clinical Research 93 *Asian Journal of Pharmaceutical and Clinical Research*, (2017), 69-74, 10(10)

