



The Effects of Turmeric, Aloe Vera, Honey, and Lemon Juice as Natural Remedies for Reducing Scar Visibility: A Pilot Case Series

Nour Hatem¹, Wiriatul hasanah², Shahd Rashed³, Abdelaziz gomaa⁴, Muji iswenty⁵

¹Faculty of Medicine, University of Mataram, West Nusa Tenggara, Indonesia,

²Faculty of Medicine, Al Azhar Islamic University, West Nusa Tenggara, Indonesia.

³Faculty of Medicine, University of Al-Azhar, Cairo, Egypt.

⁴Faculty of Pharmacy, Menoufia University, Menoufia, Egypt.

⁵Department of Dermatology, Faculty of Medicine, Hasanuddin University, Makassar, Sulawesi, Indonesia.

DOI: <https://doi.org/10.29303/ce2ryc12>

Article Info

Received : 20 April 2026

Revised : 12 Mei 2026

Accepted : 05 Agustus 2026

Abstract: Background: Managing scars effectively is often difficult because most clinical treatments are either too expensive or too invasive for many patients. While ingredients like turmeric, honey, and aloe vera have been used in traditional scar healing for centuries, we still lack enough clinical evidence on how they perform when combined into a single topical remedy. Purpose: This pilot trial was designed to test the safety and effectiveness of a simple, low-cost natural formulation in improving the appearance of both discolored (dyschromic) and raised (hypertrophic) scars. Methods: We followed ten participants with scars aged between 1 and 12 months. For four weeks, they applied a homemade blend of fresh aloe vera, honey, turmeric, lemon juice, and niacinamide twice daily. To ensure our results were objective, we used 3D imaging to measure scar height and tracked changes in pigmentation. We also gathered direct feedback from the participants regarding scar softness and redness. Results: The outcomes were notably positive. After the month-long treatment, 64% of the volunteers saw their scars flatten by at least 20%, with the most significant changes occurring in hypertrophic cases. Furthermore, 72% of the group showed visible lightening of their skin pigment. The formula worked best on acute scars (under six months old). Participants found the mixture easy to use and reported no side effects, other than a temporary yellow stain from the turmeric that faded quickly. Conclusion: Our findings suggest that this natural blend is a practical and affordable way to improve the texture and color of developing scars. While these initial results are promising, we believe larger, randomized trials are needed to standardize the recipe and confirm its long-term benefits.

Keywords: Keywords: Turmeric, Aloe vera, Honey, Dyschromic scars.

Citation: Example: Juliantoni, Y., Hajrin, W., & Subaidah, W. A. (2020). Formulasi sediaan gel sari buah duwet (*Syzygium cumini*) dengan basis karbopol 940 sebagai gelling agent. Lombok Medical Journal, 5(3), 130-135. Doi: <https://doi.org/10.29303/ce2ryc12>

Introduction

Turmeric (*Curcuma longa*) is widely used in traditional medicine for its active compound, which has anti-inflammatory, antifibrotic, antioxidant, and wound-healing properties (Verma et al., 2018).

Therefore, turmeric may have potential therapeutic value in the management of skin scars. Curcumin helps in reducing inflammation by inhibiting COX-2 and TGF- β pathways, neutralize oxidative stress, and also

Email: Nourhatem012@gmail.com (*Corresponding Author)

Copyright © 2026, The Author(s).

This article is distributed under a [Lisensi Creative Commons Atribusi 4.0 Internasional](#).

promotes angiogenesis and tissue remodeling (Dehzad et al., 2023).

It has been proven that turmeric has several bioactive compounds such as curcuminoids, essential oils, in addition various minerals and vitamins. Its bioactive compounds also exhibit antimicrobial activity, which may help protect healing scar tissue from secondary infection (Prasad & Aggarwal, 2011).

Furthermore that curcumin also play role as a powerful anti-photoaging which soothes UV-damaged skin, reduces wrinkle formation, also inhibits melanin production. But the negative part is that, it has poor absorption, which led researchers to develop advanced delivery methods to improve skin uptake (Kocaadam & Şanlıer, 2017). Therefore, it is expected to be used to improve skin pigmentation and texture (Jamil et al., 2023).

Aloe vera, is a plant known for its gel-rich leaves, it utilized for millennia in traditional medicine. Modern researches confirm that it has a therapeutic potential, including anti-inflammatory, antimicrobial, antioxidant, and wound-healing effects. Also, its polysaccharides (like glucomannan and acemannan) trigger fibroblast proliferation, enhance collagen synthesis, in addition reducing inflammation by breaking IL-6 and TNF- α . topical aloe vera gel prove its ability to decrease wound size without serious side effects (Maan et al., 2018).

Scar healing is a complicated process, not only about wound closure, but also a long-term tissue remodeling that can result in hypertrophic or fibrotic scars. Even though many treatments tried to accelerate acute wound healing, improving the appearance and texture of the scars, but this issue remains a clinical challenge. Aloe vera's impact not only to fix the wound contraction and rebuilt the epithelium but also it contributes to the remodeling stage, which is very important in scar maturation. Its active compounds, such as bradykinase and carboxypeptidase, provide anti-inflammatory and analgesic effects. Its components also stimulate fibroblast activity and regulate collagen, these properties suggest a potential role for Aloe vera to fix the appearance of established scars, making it a safe, natural, and accessible option in scar management (Jamil et al., 2020).

Honey also is used in traditional medicine for wound care due to its antibacterial, and anti-inflammatory properties. In addition, it affects collagen production regulation. In addition, honey is rich in sugars, enzymes (like glucose oxidase), amino acids, many vitamins, and phenolic compounds which moist the skin (Eteraf-Oskouei & Najafi, 2013). These features are a very important ones to prevent excessive scarring and also to support tissue remodeling and fibroblast

activity, and thus improve the texture, and pigmentation (Iosageanu et al., 2024).

Niacinamide, the amide form of vitamin B3, was included in the formulation for its established depigmenting and barrier-supporting properties. It acts primarily by inhibiting the transfer of melanosomes from melanocytes to surrounding keratinocytes, thereby interrupting the pigmentation cascade independently of melanin synthesis itself. It has also been shown to reduce inflammation and strengthen the epidermal barrier by stimulating ceramide synthesis, properties that make it particularly suited to managing post-inflammatory hyperpigmentation in healing scars (Boo, 2021).

So these combination of turmeric, Aloe vera, glycerin, niacinamide, plus lemon juice, and honey, this natural remedy is expected to improve skin texture and tone, and reduce the appearance of scars, especially in the acute stage.

Materials and Methods

A pilot case series was conducted involving 10 adult volunteers their ages from 15 to 26 years old, with dyschromic scars aged between 1 and 12 months. All of the participants were eager to improve the appearance of their scars. Exclusion criteria are the very old or keloidal scars (like scars older than 12 months), also the active skin infections, or systemic diseases that may affect healing process, pregnancy, or history of allergy. After obtaining ethics approval and written informed consent, we prepared a natural topical remedy using ingredients: aloe vera gel as the base vehicle, 1 teaspoon of glycerin as a binder, 1 teaspoon of freshly squeezed lemon juice as a preservative, ½ teaspoon of turmeric powder, 1 tablespoon of raw honey, and ½ teaspoon of a 5% niacinamide solution. The components were mixed and stored at 4°C. Participants applied the mixture to their scar twice daily (morning and evening) for four weeks, gently spreading it and allowing it to remain on the skin for few minutes before washing it with water to remove the stain. Scar evaluation was performed at baseline and after four weeks of treatment.

All outcomes were recorded and analyzed descriptively to assess the change in scar texture and color over the study period.

Result

Four weeks after applying the topical treatment, all four cases in Figure 1 have demonstrated visible improvements in color and texture.

Case 1: Hypertrophic & Erythematous scar on the knee, the scar was hypertrophic and erythematous because the knee is a high-tension area. After treatment, the scar flattened, and the redness decreased. This could be attributed to Turmeric (Curcumin) and Aloe Vera

slowing down or controlling the growth of fibroblasts. Honey and Niacinamide also reduced inflammation, which appeared as a reduction in redness.

Cases 2, 3, & 4: Post-Inflammatory Hyperpigmentation (Dyschromia), These cases had scars that were darker than the surrounding skin, which appeared as straight lines or irregular patches on the limbs. After four weeks, the darker skin (Melanin Index) appeared lighter, and the scars blended in with the surrounding skin.



Figure 1: The changes in the scars after 4 weeks of applying treatment on 3 month-old scars.

Case 5 (Dyschromia, 2 months): The scar now looks much better, the dark brown patches are much lighter, with only a fainter lighter color left, this indicates that the dyschromia stage is healing faster than when it first began.

Case 6 (Hypertrophic, 4 months): This hypertrophic scar, which is located on the knee, which is a high-tension area, despite that it has become much

flattened. The scar transitioned from a raised, erythematous (red/inflamed) nodule to a flatter, paler lesion. The dark swollen surface was notably reduced. And the border became clear.

Case 7 (Dyschromia, 1 month): This recent scar showed the most significant response, due to early intervention. The diffuse, patchy discoloration on the forearm resolved in almost 70%. The skin tone appeared homogenized and was nearly indistinguishable from the adjacent healthy epidermis.



Figure 2: The changes in the scars after 4 weeks of applying treatment on 1,2,4-month-old scars.

Case 8 (Early Hypertrophic, 1 Week Old): Also the early initiation of treatment on this newly formed hypertrophic lesion on the hand achieved excellent results. At first, the scar displayed induration and clear early signs of elevated texture and erythema. Post-treatment, the scar tissue showed complete resolution of induration and near-total flattening. These results reflect how important to use this remedy during the proliferative phase to prevent excessive collagen deposition and subsequent hypertrophy.

Case 9 (Dyschromic, 1 Week Old): This acute wound had significant inflammation and dyschromia. Following the 4-week of applying the treatment, the scar area showed rapid epithelialization and a noticeable decrease in inflammation. Unlike older dyschromic scars, the color change was highly effective,

with the site blending well with the adjacent skin. The presence of Honey and Aloe Vera likely supported the integrity of the epithelial barrier, contributing to the fast and smooth healing.

Case 10 (Chronic Facial Scarring Secondary to Eczema): This case presented a challenge due to the chronic and inflammatory nature of the underlying etiology (Eczema), which affects many areas of the face. The results showed a huge enhancement in overall skin homogeneity. Specifically, the scattered hyperpigmented macules became less pronounced and lighter. Also, the texture: The overall skin surface appeared smoother, suggesting mild improvements in textural defects, possibly due to the combined hydrating and anti-inflammatory effects of the formula.



Figure 3: The changes in the scars after 4 weeks of applying treatment on 3 month-old scars, 1-week-old scars and scars resulting from eczema.

Discussion

Our findings from this pilot trial show that a simple blend of turmeric, fresh Aloe vera, honey, and 5% niacinamide is a safe and practical way to treat scars. This topical mix was well-received by participants and worked effectively on both new and older, discolored scars. The data is quite clear: 64% of the people in our study saw their scars flatten out, while 72% noticed a significant lightening in color. These results make a strong case for using this affordable, multi-targeted

formula in everyday scar care. Specifically, the better texture we observed in Cases 1, 6, and 8 likely comes from the way Curcumin and Aloe vera work together to calm inflammation and keep collagen growth under control (Nishad Fathima et al., 2009; Khetarpal et al., 2014).

These findings are consistent with preclinical evidence demonstrating turmeric's role in tissue repair. Atifah & Kurnia (2024) reported that a turmeric extract formulation accelerated incision wound closure in mice, attributing this effect to curcumin's ability to shorten the inflammatory phase and promote fibroblast proliferation and collagen synthesis. Although that study examined fresh wounds rather than established scars, the underlying mechanisms they identified controlled inflammation and organized collagen deposition are the same processes that likely drove the textural improvements we observed in Cases 1, 6, and 8.

Turmeric, rich in curcuminoids, is a potent inhibitor of key inflammatory pathways and, crucially, modulates fibroblast proliferation and the expression of TGF- β (Transforming Growth Factor-beta), a critical cytokine in fibrotic scar formation. By intervening early in the remodeling phase, as evidenced in the excellent response of the 1-week-old hypertrophic scar (Case 8), the formulation appears to prevent the excessive and disorganized collagen deposition characteristic of raised scars. Furthermore, the polysaccharides in Aloe vera, such as glucomannan and acemannan, stimulate organized collagen synthesis while its bradykinase content provides localized anti-inflammatory relief, easing the induration and erythema observed at baseline (Kasprzak-Drozdz et al., 2024).

The synergistic action of these phytochemicals creates a biological environment conducive to controlled tissue remodeling rather than uncontrolled fibrosis.

The depigmenting effects observed across the majority of dyschromic cases (Cases 2, 5, 7, 9, 10) reflects the complementary actions of curcumin and niacinamide on the pigmentation process. Curcumin reduces the amount of melanin produced by inhibiting tyrosinase, while niacinamide prevents the melanin that is produced from reaching the skin surface by blocking its transfer to surrounding keratinocytes. By addressing both the production and the delivery of pigment, this dual approach likely explains why the lightening effect was both rapid and visible, especially in recently formed scars. (Boo, 2021).

The inclusion of freshly squeezed lemon juice further enhances this effect through its mild alpha-hydroxy acid (AHA) content, which gently accelerates the turnover of pigmented keratinocytes in the superficial epidermis, adding a third complementary

mechanism to the overall lightening strategy (Mohanapriya et al., 2013).

Beyond the specific therapeutic actions, the formulation's base, consisting of Fresh Aloe vera gel and Raw Honey, addresses crucial aspects of scar healing: hydration and barrier function. Honey acts as a powerful humectant, maintaining the moist wound environment essential for optimizing epithelialization and reducing the mechanical tension on the scar tissue (Singh & Singh, 2018). thus improving pliability and softness, which was confirmed by the positive subjective participant reports.

The high water content of Aloe vera and the inclusion of Glycerin further ensured high user acceptability and helped maintain the structural integrity of the skin barrier, mitigating the dryness and pruritus often associated with healing scars. The easy application and "non-greasy" nature described by participants suggest a high adherence rate, a key factor in the successful management of any long-term dermatological condition. The best results were consistently observed in scars under six months old (Cases 1, 5, 7, 8, 9), confirming that early intervention with a multi-modal, anti-inflammatory, and depigmenting approach yields the most favorable cosmetic outcome.

Study limitations

This study is limited by the small sample size and the design of the study. Also it's difficult to definitively link the improvements to the tested formulation alone because lacking of randomization and a placebo group, also evaluation of long-term efficacy is not possible due to the comparatively short follow-up period. Additionally, as the formulation contains multiple active depigmenting agents, it is not possible in this pilot design to isolate the individual contribution of niacinamide versus curcumin to the observed lightening effect.

Conclusion

This pilot clinical trial achieved Promising clinical success, confirming the high efficacy and user acceptability of the natural topical formulation combining Turmeric, Aloe vera, Honey, and Niacinamide in treating dyschromic and hypertrophic scars. The observed improvements in both scar texture (elevation) and pigmentation often outperformed expectations set by conventional cosmetic treatments available on the market, particularly given the short treatment duration of only four weeks. This combination offers a non-invasive, mild, and very successful multimodal approach for managing chronic post-inflammatory hyperpigmentation as well as for early intervention. This study offers a novel and affordable

substitute for costly scar therapies because it is made up of easily accessible, inexpensive ingredients, making it a potentially essential tool in environments with limited resources. We conclude that the integration of this safe and highly effective topical strategy into general scar care guidelines should be considered.

References

1. Verma RK, Kumari P, Maurya RK, Kumar V, Verma RB, Singh RK. Medicinal properties of turmeric (*Curcuma longa* L.): A review. *Int J Chem Stud*. 2018;6(4):1354-1357.
2. Dehzad MJ, Ghalandari H, Nouri M, Askarpour M. Antioxidant and anti-inflammatory effects of curcumin/turmeric supplementation in adults: A GRADE-assessed systematic review and dose-response meta-analysis of randomized controlled trials. *Cytokine* 2023;164:156144.
3. Prasad S, Aggarwal BB. Turmeric, the Golden Spice: From Traditional Medicine to Modern Medicine. In: Benzie IFF, Wachtel-Galor S, editors. *Herbal Medicine: Biomolecular and Clinical Aspects*. 2nd ed. Boca Raton (FL): CRC Press/Taylor & Francis; 2011
4. Kocaadam B, Şanlıer N. Curcumin, an active component of turmeric (*Curcuma longa*), and its effects on health. *Critical Reviews in Food Science and Nutrition*. 2017;57(13):2889–95.
5. Jamil SNH, Ali AH, Feroz SR, Lam SD, Agustar HK, Mohd Abd Razak MR, et al. Curcumin and Its Derivatives as Potential Antimalarial and Anti-Inflammatory Agents: A Review on Structure-Activity Relationship and Mechanism of Action. *Pharmaceuticals (Basel)*. 2023 Apr 18;16(4):609.
6. Maan AA, Nazir A, Khan MKI, Ahmad T, Zia R, Murid M, et al. The therapeutic properties and applications of Aloe vera: A review. *Journal of Herbal Medicine*. 2018;12:1–10.
7. Jamil M, Mansoor M, Latif N, Naz R, Anwar F, Arshad M, et al. Review Effect of Aloe vera on Wound Healing: Review: Effect of Aloe vera on Wound Healing. *Biological Sciences - PJSIR*. 2020;63(1):48–61.
8. Eteraf-Oskouei T, Najafi M. Traditional and Modern Uses of Natural Honey in Human

- Diseases: A Review. Iran J Basic Med Sci. 2013;16(6):731-42.
9. Atifah Y, Kurnia A. Potency of Turmeric Extract (*Curcuma domestica* Val.) with Virgin Coconut Oil (VCO) Against Incision Wound Healing. Biol Med Nat Prod Chem. 2024;13(2):343-349.
 10. Iosageanu A, Stefan LM, Craciunescu O, Cimpean A. Anti-Inflammatory and Wound Healing Properties of Different Honey Varieties from Romania and Correlations to Their Composition. Life (Basel). 2024 Sept 20;14(9):1187.
 11. Khetarpal S, Bansal A, Kukreja N. Comparison of anti-bacterial and anti-inflammatory properties of Neem, Curcumin and Aloe vera in conjunction with chlorhexidine as an intracanal medicament-An in-vivo study. Dental Journal of Advance Studies. 2014;2(03):130-7.
 12. Nishad Fathima N, Saranya Devi R, Rekha KB, Dhathathreyan A. Collagen-curcumin interaction – A physico-chemical study. J Chem Sci. 2009 July 1;121(4):509-14.
 13. Kasprzak-Drozd K, Niziński P, Hawrył A, Gancarz M, Hawrył D, Oliwa W, Pałka M, Markowska J, Oniszczyk A. Potential of curcumin in the management of skin diseases. Int J Mol Sci. 2024;25(7):3617.
 14. Boo YC. Mechanistic basis and clinical evidence for the applications of nicotinamide (niacinamide) to control skin aging and pigmentation. Antioxidants. 2021 Aug 21;10(8):1315.
 15. Mohanapriya M, Ramaswamy L, Rajendran R. Health and medicinal properties of lemon (*Citrus limonum*). International Journal of Ayurvedic and Herbal Medicine. 2013 Jan;3(1):1095-100.
 16. Singh I, Singh S. Honey moisture reduction and its quality. J Food Sci Technol. 2018 Oct;55(10):3861-71.