Galore International Journal of Health Sciences and Research
[Indexed, Peer-Reviewed Journal]
Vol. 11; Issue: 3; July-Sept. 2026
Website: www.gijhsr.com
Review Article *P-ISSN: 2456-9321*

Exploring the Wound Healing and Tissue Regenerative Potential of *Murivenna Kerataila*: An Evidence-Based Pharmacological and Classical Review

Sugeena P

Assistant Professor, Department of Rasashastra and Bhaishajyakalpana,
Government Ayurveda College Kannur, Keralam, India

Corresponding Author: Sugeena P

DOI: https://doi.org/10.52403/gijhsr.20260336

ABSTRACT

Background: *Murivenna Kerataila* is a traditional polyherbal formulation originating from the *folklore* medical lineage of Kerala, widely prescribed for acute trauma, fractures, soft-tissue sprains, and non-healing ulcers (*Dushta Vrana*). Unlike standard classical formulations prepared in sesame oil, *Murivenna* employs a coconut oil (*Kerataila*) base and fresh plant juices (*Swarasa*).
Objective: This review evaluates the classical Ayurvedic pharmacodynamics and contemporary pharmacological mechanisms governing the wound-healing potential of *Murivenna*.
Methods: A comprehensive literature search across classical Ayurvedic texts and modern databases (PubMed, Scopus, Google Scholar, DHARA) was conducted to map the botanical, phytochemical, and biological properties of its constituent herbs.
Results: Phytochemical constituents such as karanjin, eugenol, acemannan, quercetin, and medium-chain fatty acids (lauric acid) exert synergistic anti-inflammatory (COX-2 and NF-κB inhibition), broad-spectrum antimicrobial, antioxidant, and pro-angiogenic activities. Experimental models demonstrate accelerated granulation tissue formation, elevated hydroxyproline deposition, rapid re-epithelialization, and improved wound contraction without pathological fibrosis. Clinical data from chronic ulcers and post-surgical anorectal wounds substantiate its local debriding (*Shodhana*) and tissue-regenerative (*Ropana*) efficacy.
Conclusion: *Murivenna Taila* represents a multi-targeted topical intervention that bridges classical *Shalya Tantra* wound healing principles with contemporary tissue repair mechanisms. Standardized physicochemical profiling and well-designed randomized controlled trials are required to establish its role in mainstream integrative wound care.

Keywords: Murivenna; Wound Healing; Vranaropana; Kerataila; Polyherbal Formulation; Integrative Medicine.

1. INTRODUCTION

Impaired cutaneous wound healing represents a major therapeutic challenge globally, complicated by rising incidences of diabetes mellitus, peripheral vascular insufficiency, and surgical site infections. Tissue repair involves four sequential, overlapping phases: hemostasis, inflammation, proliferation, and tissue

remodeling. In chronic non-healing wounds, prolonged inflammatory cascades, sustained oxidative stress, and microbial biofilms impede angiogenesis and extracellular matrix (ECM) synthesis.

In Ayurvedic literature (*Shalyatantra*), wound pathology is systematically categorized under *Vrana*, and management revolves around the *Shashti Upakrama* (sixty clinical procedures) described by *Acharya Sushruta*. While classic formulations rely predominantly on sesame oil (*Tila Taila*), regional traditions developed specific therapies suited to tropical pathology and local flora. *Murivenna* (derived from the Malayalam words *Muri* = wound and *Enna* = oil), codified in Kerala texts like *Yogagrantham*, is an established topical formulation for fractures, blunt trauma, burn management, and infected ulcers.

This review synthesizes the classical Ayurvedic logic, botanical profile, modern molecular pathways, and available preclinical and clinical evidence underlying the wound-healing properties of *Murivennakera taila*.

MATERIALS & METHODS

A comprehensive literature search across classical Ayurvedic texts and modern databases (PubMed, Scopus, Google Scholar, DHARA) was conducted to map the botanical, phytochemical, and biological properties of its constituent herbs.

2. Composition and Pharmaceutical Processing (*Sneha Kalpana*)

Murivenna is prepared strictly via the classical *Sneha Kalpana* (ayurvedic lipid extraction method), ensuring both lipid-soluble and water-soluble phytochemicals are extracted and stabilized into the lipid matrix.

Table 1: Composition and Pharmacognostical Profile of *Murivenna Taila*

Botanical Name	Sanskrit / Common Name	Family	Plant Part Used	Form in Formulation	Major Phytochemical Markers	Classical Action (Karma)
Pongamia pinnata (L.) Pierre	*Karanja*	Fabaceae	Leaves/Bark	*Swarasa* (Fresh juice)	Karanjin, Pongamol, Furanoflavones	*Krimighna*, *Vranashodhana*
Piper betle L.	*Tambula* / *Vettila*	Piperaceae	Leaves	*Swarasa*	Eugenol, Chavibetol, Hydroxychavicol	*Vedanasthapana*, *Shothahara*
Moringa oleifera Lam.	*Shigru*	Moringaceae	Leaves	*Swarasa*	Quercetin, Kaempferol, Isothiocyanates	*Shothahara*, *Vranaropana*
Aloe vera (L.) Burm.f.	*Ghritakumari*	Asphodelaceae	Leaf pulp/juice	*Swarasa*	Acemannan, Aloin, Polysaccharides	*Dahashamana*, *Twachya*
Erythrina variegata L.	*Paribhadra*	Fabaceae	Leaves	*Swarasa*	Pterocarpans (Erybraedin A–C), Isoflavones	*Vranaropana*, *Sandhaniya*
Allium cepa L.	*Palandu*	Amaryllidaceae	Bulb	*Swarasa*	Quercetin, Thiosulfinates, Organosulfurs	*Kandughna*, Anti-fibrotic
Spermacoce articularis L.f.	*Vasuka*	Rubiaceae	Whole plant	*Swarasa*	Ursolic acid, Borreriagenin, Flavones	*Sandhaniya*, *Asrajit*

Asparagus racemosus Willd.	*Shatavari*	Asparagaceae	Root	*Kalka* (Paste)	Shatavarins (I–IV), Steroidal saponins	*Balya*, *Dhatuvardhana*
Oryza sativa L.	*Tandulambu* / *Kanjika*	Poaceae	Decanted liquid	*Drava Dravya* (Liquid medium)	Ferulic acid, B-complex, Polysaccharides	*Pitta-shamana*, *Kledahara*
Cocos nucifera L.	*Kerataila* (Coconut oil)	Arecaceae	Kernel/Endosperm	*Sneha Dravya* (Oil base)	Lauric acid, Myristic acid, Monolaurin	*Snigdha*, *Ropana*, *Dahahrit*

3. Ayurvedic Pharmacodynamics (*Rasa Panchaka*)

The holistic therapeutic efficacy of *Murivenna* is explained through its balanced *Rasa Panchaka*:

- **Rasa (Taste):** Dominated by *Tikta* (Bitter), *Kashaya* (Astringent), and *Madhura* (Sweet). *Kashaya* rasa mediates *Stambhana* (hemostasis) and *Ropana* (healing), while *Tikta* rasa performs *Kledashoshana* (clearance of exudates and slough).
- **Guna (Qualities):** *Laghu* (Light), *Snigdha* (Unctuous), and *Sukshma* (Penetrating). The *Sukshma* property enables transdermal permeation into deeper musculoskeletal and fascial planes.
- **Virya (Potency):** *Anushna* (Non-heating) to *Sheeta* (Cooling). The coconut oil base buffers the pungent/heating tendencies of herbs like *Allium cepa* and *Moringa oleifera*, preventing tissue irritation.
- **Vipaka (Post-Digestive Effect):** *Katu* (Pungent) / *Madhura* (Sweet). But it is not applicable in case of a taila for external application.
- **Dosha Karma:** *Tridoshashamaka*, with primary affinity for alleviating vitiated *Vata* (relieving pain and dryness) and *Pitta-Rakta* (resolving inflammation, redness, and burning sensation).

4. Molecular and Cellular Mechanisms of Wound Healing

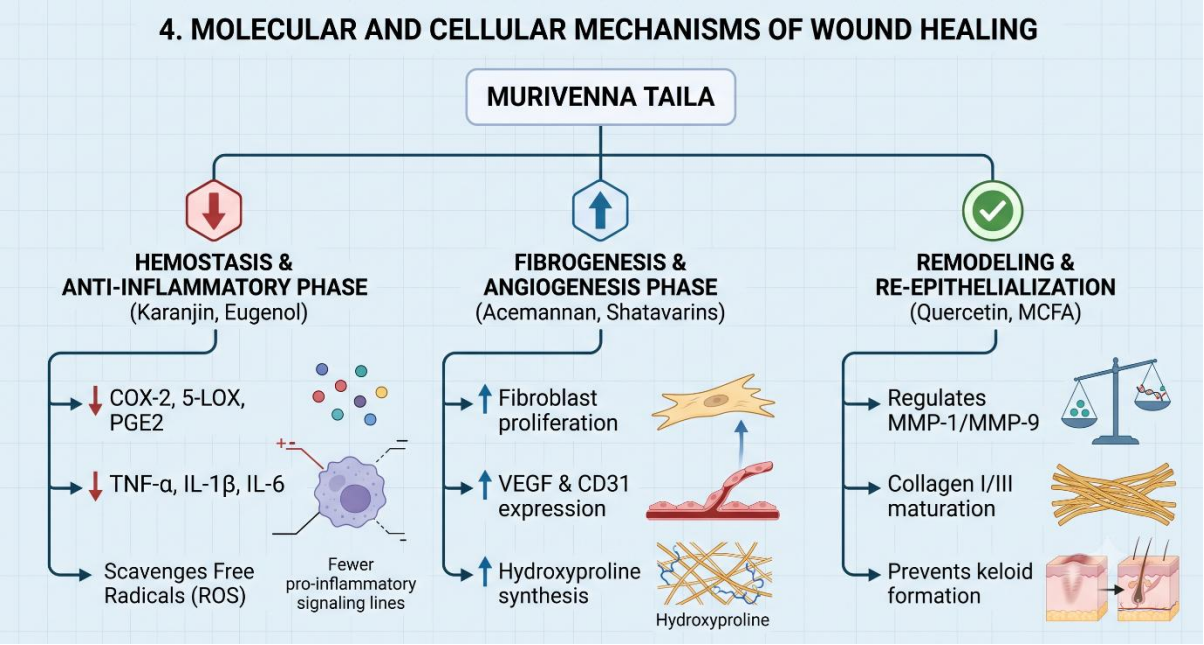

Figure 1: Multi-targeted biological cascades of *Murivenna kera taila* across the phases of cutaneous tissue repair.

4.1. Anti-inflammatory and Analgesic Pathways

Persistent inflammation impairs wound bed transition into the proliferative phase. Eugenol from *Piper betel* and karanjin from *Pongamia pinnata* attenuate the enzymatic activity of cyclooxygenase-2 (COX-2) and 5-lipoxygenase (5-LOX), lowering prostaglandin E2 (PGE-2) and leukotriene synthesis. Concurrently, isoflavonoids from *Erythrina variegata* and organosulfur derivatives from *Allium cepa* suppress nuclear translocation of Nuclear Factor kappa B (NF-KB), decreasing pro-inflammatory cytokines ($TNF-\alpha$, $IL-1\beta$, $IL-6$).

4.2. Antimicrobial Action and Biofilm Disruption

Microbial colonization induces sustained tissue destruction. Medium-chain fatty acids (MCFAs), predominantly lauric acid in coconut oil, undergo enzymatic conversion to monolaurin, which disrupts lipid-bilayer envelopes of pathogenic bacteria. The extracts of *Pongamia pinnata*, *Moringa oleifera*, and *Piper betel* exhibit synergistic bactericidal efficacy against common wound pathogens (*Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli*) and inhibit quorum-sensing pathways responsible for biofilm persistence.

4.3. Fibroblast Proliferation and Angiogenesis

Acemannan, a long-chain polydispersed β-(1,4)-acetylated polymannose isolated from *Aloe vera*, interacts directly with macrophage surface receptors, triggering the secretion of Vascular Endothelial Growth Factor (VEGF), basic Fibroblast Growth Factor (bFGF), and Transforming Growth Factor-beta 1 (TGF-β1). Concurrently, steroidal saponins (shatavarins) from *Asparagus racemosus* support cell survival, stimulate cellular proliferation, and enhance total protein and hydroxyproline content, establishing a dense collagen framework.

4.4. Extracellular Matrix (ECM) Remodeling

During remodeling, immature Type III collagen is replaced by tensile Type I collagen. Quercetin and organosulfur complexes in *Allium cepa* modulate matrix metalloproteinases (MMP-2, MMP-9), preventing tissue degradation while mitigating excessive myofibroblast differentiation to inhibit hypertrophic scar formation.

5. Clinical Applications in Classical and Integrative Practice

Murivenna is applied topically through specific external treatment modalities (*Bahir-Parimarjana Chikitsa*):

1. **Pichu (Medicated Gauze Compress):** A sterile gauze pad saturated with lukewarm *Murivenna* is applied over clean ulcer beds, providing prolonged hydration and sustained bioactive diffusion.
2. **Parisheka / Dhara (Continuous Irrigation):** Gentle pouring of warm medicated oil over traumatic contusions, closed fractures, or clean granulating surfaces to alleviate pain and edema.
3. **Bandhana (Medicated Dressing):** Applied with compressive dressings over sprains, tendon injuries, and ligament strains to accelerate deep structural healing.

Table 2: Clinical Indications and Evidence Summary

Clinical Indication	Classical Ayurvedic Diagnosis	Recommended Mode of Application	Key Clinical Outcomes
Chronic / Diabetic Ulcers	*Dushta Vrana*	*Pichu* dressing daily / alternate days	Rapid slough debridement, induction of healthy red granulation, wound area reduction.
Acute Traumatic Wounds	*Sadyovrana*	Local instillation and sterile dressing	Prompt hemostasis, accelerated primary intention closure, minimal scar tissue.

Sprains & Closed Fractures	*Bhagna / Snayu Kshata*	*Pichu* / *Bandhana* with splinting	Rapid alleviation of pain (*Shula*) and inflammatory edema (*Shotha*).
First- & Second-Degree Burns	*Dagdhavrana*	Open application / Thin *Pichu*	Reduction of burning sensation (*Daha*), prevention of secondary bacterial infection.
Post-Operative Anorectal Wounds	*Gudagata Vrana*	Medicated packing / *Pichu*	Decreased post-defecation pain, minimal mucosal irritation, faster epithelialization.

DISCUSSION

The therapeutic advantages of *Murivenna* stem from its coconut oil base and botanical composition. While classical sesame oil is warming (*Ushna Virya*), coconut oil (*Kerataila*) provides a cooling, soothing matrix (*Sheeta Virya*) that does not irritate inflamed or ulcerated margins. The low molecular weight of medium-chain triglycerides facilitates efficient transdermal transport of lipid-soluble phytochemicals.

Despite widespread clinical use, translation into mainstream evidence-based protocols requires:

1. **Standardization:** Developing High-Performance Thin-Layer Chromatography (HPTLC) and LC-MS fingerprint assays using chemical markers (karanjin, eugenol, quercetin) according to Ayurvedic Pharmacopoeia of India (API) guidelines.
2. **Rigorous Clinical Trials:** Conducting multi-center, randomized controlled trials (RCTs) evaluating *Murivenna* against modern hydrocolloid or silver-impregnated dressings across standardized endpoints (e.g., Bates-Jensen Wound Assessment Tool, PUSH tool).
3. **Advanced Drug Delivery Formulations:** Investigating *Murivenna*-loaded hydrogels, nano-emulsions, or electrospun nanofibrous mats to enhance controlled drug delivery in exuding chronic wounds.

CONCLUSION

Murivenna kera taila is a rational, multi-targeted polyherbal formulation that integrates traditional Ayurvedic wound-healing wisdom with contemporary regenerative biology. Its anti-inflammatory, antimicrobial, pro-angiogenic, and collagen-modulating actions make it a viable, cost-effective candidate for integrative wound-healing regimens.

Declaration by Authors

Ethical Approval: Not applicable
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Sivarajan VV, Balachandran I. *Ayurvedic drugs and their plant sources*. New Delhi: Oxford & IBH Publishing Co.; 1994. 570 p.
2. Nishteswar K, Vidyanath R. *Sahasrayogam: text with English translation*. Varanasi: Chowkhamba Sanskrit Series Office; 2006. 540 p.
3. Sushruta. *Sushruta Samhita*. English translation by Srikantha Murthy KR. Vol. 2, Chikitsa Sthana. Reprint ed. Varanasi: Chaukhambha Orientalia; 2012.
4. Hepsibah PT, Rosamma MP, Prasad NB, Kumar PS. Standardisation of murivenna and hemajeevanti taila. Anc Sci Life. 1993;12(3-4):428-34.
5. Keerthy P, Patil SS. A clinical study to evaluate the efficacy of Murivenna application on episiotomy wound. *J Ayurveda Integr Med Sci*. 2020;5(5):65-71. doi:10.21760/jaims. v5i05.1022.
6. Chithra P, Sajithlal GB, Chandrakasan G. Influence of Aloe vera on collagen characteristics in healing of dermal wounds in rats. *Mol Cell Biochem*. 1998;181(1-2):71-76. doi:10.1023/A:1006813510959.
7. Dwivedi D, Dwivedi M, Malviya S, Singh V. Evaluation of wound healing, anti-microbial and antioxidant potential of *Pongamia pinnata* in Wistar rats. *J Tradit Complement Med*. 2017;7(1):79-85. doi: 10.1016/j.jtcme.2015.12.002.

8. Lien LT, Tho NT, Ha DM, Hang PL, Nghia PT, Thang ND. Influence of phytochemicals in *Piper betle* Linn leaf extract on wound healing. *Burns Trauma*. 2015; 3:23. doi:10.1186/s41038-015-0023-7.
9. Rathi BS, Bodhankar SL, Baheti AM. Evaluation of aqueous leaves extract of *Moringa oleifera* Linn for wound healing in albino rats. *Indian J Exp Biol*. 2006;44(11):898-901.
10. Kumar MS, Kirubanandan S, Sripriya R, Sehgal PK. Triphala promotes healing of infected full-thickness dermal wound. *J Surg Res*. 2008;144(1):94-101. doi: 10.1016/j.jss.2007.02.049.
11. Nevin KG, Rajamohan T. Effect of topical application of virgin coconut oil on skin components and antioxidant status during dermal wound healing in young rats. *Skin Pharmacol Physiol*. 2010;23(6):290-297. doi:10.1159/000313516.
12. Bai Y, Niu Y, Qin S, Ma G. A new biomaterial derived from *Aloe vera*—acemannan from basic studies to clinical application. *Pharmaceutics*. 2023;15(7):1913. doi:10.3390/pharmaceutics15071913.

How to cite this article: Sugeena P. Exploring the wound healing and tissue regenerative potential of *Murivenna Kerataila*: an evidence-based pharmacological and classical review. *Gal Int J Health Sci Res*. 2026; 11(3): 336-341. *DOI: https://doi.org/10.52403/gijhsr.20260336*

******