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Comprehensive Review On Murivenna Oil: An Ayurvedic Polyherbal Formu Lation

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Abstract: Murivenna oil is a traditional polyherbal formulation from Kerala, blending ancient Ayurvedic practices with modern pharmaceutical science. This review details its composition, which consists of nine key botanical ingredients, including Pongamia pinnata and Aloe vera, prepared in a coconut oil base. The exploration includes historical accounts, pharmacological insights, and contemporary phytochemical studies that affirm Murivenna's effectiveness in wound healing, anti-inflammatory activities, antimicrobial properties, and tissue regeneration. Following the guidelines of the Ayurvedic Pharmacopoeia of India, the formulation is standardized and subjected to rigorous quality control measures. This research highlights the therapeutic potential of Murivenna as a cost-effective and biocompatible option in managing wound care across dermatology, orthopaedics, and post-surgical contexts, thereby integrating traditional Ayurvedic approaches into evidence-based medical practices.

Keywords: Murivenna oil, Ayurveda, wound healing, phytochemical standardization, pharmacological activities, polyherbal formulation

I. INTRODUCTION

Ayurveda, recognized as the most ancient continuously practiced medical system, has its origins in the Vedic civilization of the Indian subcontinent, dating back over 5,000 years[1]. The term "Ayurveda" is derived from Sanskrit, combining "Ayu" (life) and "Veda" (knowledge), which translates to the "Science of Life"[2]. This extensive system developed from the integration of two ancient Hindu philosophical schools—Nyaya (which focuses on systematic logic and reasoning) and Vaisheshika (which emphasizes perception and logical inference)—that together established the theoretical underpinnings of Ayurvedic medical practice[3].

History and Traditional Role of Murivenna Oil

Etymology, Origins, and Cultural Significance

Murivenna, recognized as a classical taila (medicated oil) formulation, has profound historical significance within the South Indian Ayurvedic tradition, especially in the advanced medical system of Kerala[4]. The term is derived from two components of the Malayalam language: "Muri" (which translates to wound or traumatic injury) and "Venna" (which means oil or lipid medium)[5]. This linguistic origin clearly indicates the primary therapeutic purpose of the formulation and its cultural significance in traditional healing practices[6].

Historical records trace Murivenna's roots to ancient Tamil Marma medical texts, highlighting its rich heritage spanning thousands of years. Classical literature documents more than 150 variations of Murivenna, showcasing its ongoing evolutionary refinement and adaptation for specific clinical uses. This extensive empirical support has led to Murivenna being honoured with the title of "Anubhuta Yoga"—a formulation validated through numerous successful clinical applications recorded over generations [7].

Seventeenth-century texts offer substantial evidence of Murivenna's use in battlefield medicine, particularly at the renowned Guruvayoor temple complex, where it was utilized therapeutically for elephant mahouts (keepers) who suffered traumatic injuries from tusks. This historical evidence emphasizes the formulation's acknowledged effectiveness in treating acute traumatic injuries and in preventing secondary complications such as infections and excessive inflammation.[8]

II. PHARMACEUTICAL COMPOSITION AND BOTANICAL CONSTITUENTS

Primary Herbal Ingredients

The conventional Murivenna formulation consists of nine key herbal ingredients that are meticulously prepared in a refined coconut oil base, adhering to established standardization principles. The standard formulation, as detailed in extensive research conducted by Hepsibah et al. (1993), include the plant composition for Murivenna oil [09][10]:

Base Oil Selection: Coconut Oil (Narikela Taila)

The formulation exhibits several important pharmacological properties. It possesses natural cooling attributes that help to balance the Pitta dosha, while its antimicrobial effects are effective against a broad spectrum of pathogenic organisms.

The preparation has demonstrated proven efficacy in burn healing and wound regeneration. Moreover, due to its Sūkṣma (penetrating) quality, it facilitates the deep delivery of therapeutic agents into underlying tissues. It also provides nourishment to damaged skin, connective tissues, bones, and muscles, thereby promoting holistic tissue recovery.

In terms of doshic balance, the formulation promotes an increase in Kapha dosha while simultaneously harmonizing both Pitta and Vata doshas. This balance establishes an optimal thermal condition conducive to managing inflammation and promoting internal equilibrium.

Structurally, the formulation maintains excellent stability across a wide range of temperatures and enhances the bioavailability of incorporated herbal constituents. Additionally, its favorable preservation characteristics contribute to prolonged therapeutic efficacy and product integrity.[11]:

III. PLANT PROFILE AND PHYTOCHEMISTRY

TABLE 1 : PLANT PROFILE

Botanical Name[12]	**Common Name**[13]	**Key Compounds**	**Pharmacological Activities**
Pongamia pinnata (L.) Pierre (Bark extract 384 g)	Karanja (Indian Beech)	Karanjin (0.2-0.8%), pongamol, genistein (2.1 mg/g), daidzein (1.8 mg/g), furanoflavonoids, prenylated flavonoids, gallic acid (6.70 mg/100g), ferulic acid (2.17 mg/100g), oleic acid (44-71%), linoleic acid (10-17%), essential oils[14,15]	Anti-inflammatory (COX/LOX inhibition), hepatoprotective, antimicrobial (MIC 22-36 mg/mL), wound healing (collagen synthesis 1.5-2.0 fold), antidiabetic, cardioprotective, anthelmintic, antimalarial (70-80% efficacy vs *Plasmodium*)[16][17]
Piper betle L. (Fresh leaf material 384g)	Tambula (Betel Leaf)	Eugenol (70-90% of oil), chavicol (5-15%), safrole (2-5%), cineole (1-3%), methyleugenol, arecaidine (0.05-0.15%), guvacoline (0.02-0.08%), chavicine (0.01-0.05%), hydroxychavicol, chavibetol[18][19]	Antimicrobial (MIC 125-500 µg/mL, 16-26 mm inhibition zones), antioxidant (DPPH IC50: 25-50 µg/mL), anti-inflammatory (TNF-α: 40-50%, NF-κB inhibition), gastroprotective (anti-*H. pylori* MIC 62.5-125 µg/mL), cytotoxic (IC50: 35-55 µg/mL)[20][21]
Erythrina indica Lam (Leaf extracts 384 g)	Paribhadra (Coral Tree)	Genistein (2.1 mg/g), daidzein (1.8 mg/g), pterocarpans (erybraedin A/B/C), isoflavanones, 3,9-dihydroxy-10-γ,γ-dimethylallyl-6a,11a-dehydropterocarpan (MRSA MIC 0.78 mg/L), erythroidine alkaloid (0.05-0.15%), essential oils (α-pinene 18%, β-pinene 12%, limonene 8%)[22][23]	Anti-inflammatory (TNF-α: 45-55%, edema: 60-70%), antimicrobial (pterocarpans MIC 0.78-6.25 mg/L vs MRSA/VRSA), analgesic (nociceptor desensitization), muscle relaxant (erythroidine effects), hepatoprotective, wound healing (collagen synthesis, anti-hypertrophic

			scarring), bone strengthening (osteoblast activation)[24][25]
Allium cepa (Bulb preparations 384g)	Onion	Organosulfur compounds (alliin, allicin), flavonoids (quercetin), saponins, vitamins, minerals[26][27]	Anti-inflammatory, antimicrobial, antidiabetic, antioxidant, wound healing[28][29]
Aloe vera (L.) Burm.f. (Fresh leaf pulp 384 g)	Kumari (True Aloe)	Acemannan polysaccharide, β-linked mannose units, lysine (0.8%), threonine (0.6%), valine (0.4%), aloin A/B (15-30%), aloe-emodin (8-15%), aloetic acid (5-10%), aloesin (0.3-0.8%), aloeresin A (0.2-0.5%), catalase (8-12 U/mg), cellulase (2-5 U/mg)[30][31]	Polysaccharides (acemannan), anthraquinone glycosides (aloin), essential amino acids, enzymes (catalase, cellulase, carboxypeptidase), vitamins (A, C, E, B-complex),Wound healing (fibroblast proliferation EC50: 10-15 µg/mL, collagen synthesis 1.8-2.5 fold), anti-inflammatory (TNF-α: 40-50%), immunomodulation (IL-2, IFN-γ upregulation), hypoglycemic (15-25% glucose tolerance improvement), antimicrobial (MIC 50-250 µg/mL), anticancer (IC50: 20-40 µg/mL), hepatoprotective[32][33]
Moringa oleifera Lam. (Fresh leaf material 384g)	Shigru (Drumstick)	Glucomoringin (major glucosinolate), quercetin (4.8 mg/g), kaempferol (2.1 mg/g), chlorogenic acid (1.2 mg/g), protein (25-30%), minerals (Ca 2000 mg/100g, Fe 28 mg/100g, K 1560 mg/100g), vitamins (A 16,500 IU/100g, C 220 mg/100g)[34][35]	Anti-inflammatory (TNF-α: 50-60% reduction, NF-κB suppression, edema: 65-75%), antimicrobial (MIC 12.5-50 µg/mL), hepatoprotective (Phase I/II enzyme enhancement), wound healing (collagen synthesis 1.8-2.3 fold, keratinocyte activation), tissue regeneration (epithelialization acceleration), hypergranu lation reduction[36][37]

Borreria hispida (L.) K.Schum. (Whole plant extract 384g)	Vasuka (Hispid Buttonweed)	Iridoid glycosides (0.3-0.8%): aucubin, catalpol, borreriagenin alkaloid (0.05-0.15%), quercetin (1.2 mg/g), kaempferol (0.8 mg/g), oleanolic acid, ursolic acid, saponins (0.5-1.2%)[38][39]	Antibacterial (MIC 50-100 µg/mL, cell wall synthesis inhibition), anti-inflammatory (TNF-α: 40-50%, edema: 55-65%), antimalarial (antiplasmodial activity vs *P. falciparum*, *P. vivax*), antipyretic (hypothalamic temperature regulation), skin disease treatment (antifungal, anti-inflammatory)[40][41]
Asparagus racemosus Willd. (Rhizome material (144g))	Shatavari (Hundred Roots)	Shatavarins I-IV (Shatavarin IV major - 0.3-0.8% dry weight), asparagamine A alkaloid (0.05-0.15%), β-sitosterol (120-150 mg/g), stigmasterol (50-80 mg/g), quercetin (1.5 mg/g), rutin (2.1 mg/g), polysaccharides (0.5-1.2%)[42][43]	Immunomodulatory (macrophage activation, IgG/IgM increase 40-60%, NK cell stimulation), galactogogue (lactation 25-35% increase), adaptogenic (HPA axis modulation, cortisol normalization), anticancer (IC50: 15-40 µg/mL, apoptosis induction, G2/M arrest), wound healing (collagen synthesis, Dahahara effect), GI support (gastritis/ulcer healing, prebiotic effects)[44][45]
Cocos nucifera L. (Coconut oil (768ml))	Narikela (Coconut)	Lauric acid (45-52% - major), myristic acid (13-19%), palmitic acid (7-10%), oleic acid (6-10%), linoleic acid (1-2%), monolaurin (0.5-2%), tocopherols (vitamin E 5-10 mg/kg), polyphenols (gallic acid, caffeic acid - 0.1-0.3%), β-sitosterol (100-200 mg/kg)[46][47]	Antimicrobial (lauric acid/monolaurin: *S. aureus* MIC 25-50 µg/mL, *E. coli* MIC 50-100 µg/mL, *Candida* MIC 100-200 µg/mL), cooling (Pitta-shamaka), burn-healing[48]

IV. TRADITIONAL PREPARATION METHODOLOGY

Fundamental Principles: Kalka, Taila, Drava

The pharmaceutical process for Ayurvedic oil preparation (Taila Kalpana) encompasses three essential components, each critical to optimal formulation[49]:

- **Kalka (Herbal Paste):** Fresh herbs meticulously ground into paste using mortar and pestle. For dried herbs, pulverization into fine powder followed by water addition to create paste consistency. In Murivenna preparation, Kalka is derived from Shatavari roots and leaves.
- **Taila (Base Oil):** Primary extraction medium for active compounds. Common options include Sesame oil, Mustard oil, or Coconut oil. Murivenna employs Coconut oil (Kerataila/Cocos nucifera) as base.
- **Drava (Liquids):** Various liquid extracts imparting water-soluble therapeutic properties. Include water, milk, Kashaya (herbal decoctions), or fresh juice extracts. Murivenna incorporates fresh juice extracts from Aloe vera, Moringa, Betel leaf, Erythrina, Karanja, Allium cepa, and Borreria, plus Tandulambu (fermented rice liquid).

The traditional theoretical ratio establishes 1 part Kalka : 4 parts Taila : 16 parts Drava. For oils intended for regular therapeutic use, a more practical ratio of 1 : 10 : 20 is frequently employed[50]

Comprehensive Preparation Process

The detailed preparation of Murivenna follows a series of methodical steps to optimize the extraction and stabilization of therapeutic compounds from the herbal ingredients. First, all raw herbs are thoroughly cleaned to eliminate impurities. Fresh juices are then carefully extracted from ingredients like onion bulbs and Aloe vera leaves, while Shatavari roots and leaves are finely ground to create a consistent herbal paste called Kalka. A specified amount of coconut oil is poured into a wide-mouthed boiler, and all prepared herbal components—such as the fresh juices, Kalka, and Tandulambu (fermented rice liquid)—are added to the oil to start the traditional Taila paka process. The mixture is gently heated with constant or intermittent stirring to ensure even heat distribution and prevent sticking or burning. The process continues until all water content is fully removed from the herbal extracts, with the important safety guideline that the oil should not be preheated before adding liquids to avoid dangerous water–oil vapor reactions.

Completion of the heating stage is recognized through distinct organoleptic and physical endpoints, including the development of a characteristic herbal aroma, the ability to roll the residual paste into a wick-like mass, the absence of sizzling when a small portion of paste is ignited (indicating absence of residual moisture), the onset of frothing in the oil, and clear phase separation between the oil and the solid residue. Once these indicators are observed, the hot medicated oil is promptly filtered to remove solid herbal remnants and is then transferred into clean, inert glass containers for storage in a cool, dry environment, with the understanding that, because cou conut oil is used as the base, the formulation may solidify below approximately 24°C and therefore requires gentle warming before clinical application. In traditional practice, certain classical variants extend the process over multiple days, in which Kashaya (herbal decoctions) are first prepared separately and later combined with the oil and paste

for further heating, and more than 150 such permutations have been documented, leading to recognition of Murivenna as an Anubhuta Yoga (time-tested empirical formulation) with acceptable natural variation in color, fragrance, and minor sediment load due to its minimally refined nature.[51]

V. CONCLUSION

Murivenna oil exemplifies the remarkable integration of ancient medical wisdom with contemporary scientific validation. This traditional Ayurvedic polyherbal formulation, refined over centuries of empirical practice and known as "Anubhuta Yoga," demonstrates a sophisticated understanding of pharmaceutical principles inherent in traditional Indian medical systems.

The comprehensive review synthesizes historical documentation, classical pharmacological theories, modern phytochemical evaluations, and evidence-based therapeutic applications. Nine botanically distinct plant components collaborate to produce synergistic therapeutic effects, such as wound healing, anti-inflammatory actions, antimicrobial properties, and tissue regeneration through various well-defined molecular pathways. Rigorous standardization protocols that comply with the Ayurvedic Pharmacopoeia of India guidelines, alongside advanced chromatographic profiling and physico-chemical assessments, establish objective quality benchmarks that guarantee consistency across production batches and therapeutic efficacy. Contemporary research supports traditional claims while revealing intricate polypharmacological properties that enhance clinical effectiveness in diverse wound management contexts. The exceptional safety profile, bolstered by extensive documentation of topical applications, the absence of significant systemic toxicity, and minimal adverse reactions, positions Murivenna as a valuable, cost-effective, and biocompatible therapeutic option. Beyond its pharmaceutical efficacy, Murivenna represents a bridge between ancient healing traditions and modern evidence-based medicine, demonstrating that carefully preserved and scientifically validated traditional formulations retain substantial therapeutic relevance.

Future research directions that emphasise mechanistic insights, enhancement of bioavailability, and integration into contemporary healthcare systems have the potential to expand clinical applications and yield broader public health benefits. As traditional medical practices increasingly integrate with contemporary biomedical approaches, products like Murivenna oil exemplify the scientific validation of conventional therapies, while still upholding their core philosophical tenets.

This comprehensive review substantiates Murivenna oil's position as a reliable, scientifically backed therapeutic agent that deserves additional investigation, clinical use, and worldwide recognition as an important contribution to the global pharmacopoeia for wound management and skin treatment. dermatological treatment.

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