Role of Panchavalka Dugdha Ksheera Parisheka in Diabetic Peripheral Neuropathy – A Conceptual Study

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Abstract- Diabetic Peripheral Neuropathy (DPN) is one of the most common and debilitating complications of diabetes mellitus, manifesting as numbness, burning sensations, tingling, and neuropathic pain that often impair quality of life and increase the risk of ulceration and amputation. Modern therapeutic options provide only partial and symptomatic relief, without adequately addressing the underlying pathology of nerve damage. In Ayurveda, these clinical features closely resemble *Suptata* (numbness) and *Daha* (burning sensation), described as *Pūrvārūpa* and *Upadrava* of *Prameha*. The pathogenesis is attributed to vitiated *Vata* and *Pitta* doshas, leading to degenerative and inflammatory changes in peripheral nerves. The aim of this conceptual study is to evaluate the role of *Panchavalkala Dugdha Ksheera Parisheka* as a potential Ayurvedic intervention for DPN. *Panchavalkala*—a combination of five medicinal barks—possesses *Kaṣāya rasa* (astringent), *Śothahara* (anti-inflammatory), and *Raktaśodhaka* (blood-purifying) properties. When processed with milk (*Dugdha*), which is *Bṛṃhaṇa* (nourishing), *Madhura* (sweet), *Śīta* (cooling), and *Bālya* (strength-promoting), the formulation exerts synergistic benefits. The therapeutic mechanism involves pacification of aggravated *Vata* and *Pitta*, reduction of local inflammation and oxidative stress, improvement of microcirculation, tissue nourishment, and promotion of nerve regeneration. This article highlights that *Panchavalkala Dugdha Ksheera Parisheka* offers a holistic, safe, and promising approach for the management of DPN. Its multifaceted actions—ranging from anti-inflammatory and antioxidant effects to neuroprotective and rejuvenating properties—suggest significant potential as a complementary therapy alongside conventional management. Further clinical validation is warranted to establish its efficacy and expand its role in integrated diabetic care.

Keywords: **Panchavalkala, Dugdha Ksheera, Diabetic Peripheral Neuropathy, Ayurveda, Parisheka, Vata-Pitta pacification.**

1. INTRODUCTION

Diabetic Peripheral Neuropathy (DPN) is one of the most common and serious microvascular complications of diabetes mellitus, significantly contributing to morbidity and disability among Indian patients [1]. It is estimated that nearly one-third to half of long-standing diabetic individuals in India develop neuropathic complications, presenting as numbness, tingling, burning sensations, pain, and progressive sensory loss in the extremities [2]. These symptoms not only reduce the quality of life but also predispose patients to chronic non-healing ulcers, recurrent infections, and lower-limb amputations [3]. With the rising prevalence of diabetes in India, particularly in urban and semi-urban populations, the burden of DPN has become a major clinical and socioeconomic challenge.

Current management of DPN in modern medicine emphasizes glycemic control and symptomatic relief using analgesics, antidepressants, anticonvulsants, and physiotherapy. However, these treatments provide only partial relief and do not address the underlying pathology of nerve degeneration [4]. Moreover, long-term pharmacotherapy often leads to side effects, reduced compliance, and unsatisfactory outcomes in terms of nerve regeneration. This therapeutic gap highlights the need for complementary and integrative approaches, especially those rooted in India's traditional knowledge systems such as Ayurveda.

Ayurvedic texts describe conditions comparable to DPN under *Prameha*. Classical references note *Suptata* (numbness) and *Daha* (burning sensation) as *Pūrvārūpa* (premonitory signs) and *Upadrava* (complications) of *Prameha* [5]. The pathology involves derangement of *Vata* and *Pitta doshas*, wherein aggravated *Vata* leads to numbness, tingling,

and pain, while aggravated *Pitta* contributes to burning sensations. Panchakarma therapies, particularly *Parisheka* (pouring of medicated liquids), are recommended as external therapies that can pacify these doshas when administered in a controlled manner [6].

Panchavalkala Dugdha Ksheera Parisheka is highlighted as a promising intervention for neuropathic complications. Panchavalkala—comprising the barks of five trees including *Nyagrodha* (Ficus benghalensis), *Ashvattha* (Ficus religiosa), and *Parisha* (Thespesia populnea)—is known for its *Kaṣāya rasa* (astringent), *Śothahara* (anti-inflammatory), and *Raktaśodhaka* (blood-purifying) properties [7]. Milk (*Dugdha*) is described as *Bṛṃhaṇa* (nourishing), *Madhura* (sweet), *Śīta* (cooling), and *Bālya* (strength-promoting). The combination helps pacify *Vata-Pitta*, improve local circulation, reduce inflammation, and promote nerve regeneration [8]. Thus, exploring the role of Panchavalkala Dugdha Ksheera Parisheka in DPN provides a rational, safe, and holistic approach to an otherwise difficult-to-manage condition.

2. AIM OF THE STUDY

1. To conceptually evaluate the role of *Panchavalkala Dugdha Ksheera Parisheka* in the management of Diabetic Peripheral Neuropathy.
2. To integrate Ayurvedic principles with pharmacological insights and contemporary understanding of DPN.

3. REVIEW OF LITERATURE

3.1. Diabetic Peripheral Neuropathy (Modern View)

Diabetic Peripheral Neuropathy (DPN) represents one of the most frequent and disabling long-term complications of diabetes, arising from a complex interplay of metabolic and vascular mechanisms. Chronic hyperglycemia initiates a cascade of biochemical changes that disrupt nerve function. Excess glucose leads to the formation of advanced glycation end products (AGEs), which interfere with normal protein and lipid metabolism, inducing oxidative stress and structural damage to neurons [9]. Vascular insufficiency further exacerbates the condition, as microangiopathy impairs blood flow to peripheral nerves, reducing oxygen and nutrient supply essential for axonal repair and survival [3]. Inflammatory mediators are also elevated in diabetic states, contributing to progressive demyelination and degeneration of nerve fibers [10]. Additionally, impaired nerve regeneration due to metabolic toxicity hampers recovery, leading to chronic and irreversible neuropathic changes.

Clinically, DPN manifests with a spectrum of sensory and motor disturbances. Patients typically present with numbness, tingling, burning pain, cramps, and heightened sensitivity to touch, often in a stocking-glove distribution pattern beginning at the feet and ascending upward [2]. These symptoms are often more severe at night, disrupting sleep and daily functioning. In advanced stages, complications such as non-healing foot ulcers, infections, Charcot arthropathy, and lower-limb amputations may occur, highlighting the disease's socioeconomic and quality-of-life burden [11].

3.2. Ayurvedic Understanding

Ayurvedic literature provides a parallel explanation of neuropathic complications under the spectrum of *Prameha*, particularly *Madhumeha*. In classical texts, conditions such as *Suptata* (numbness) and *Daha* (burning sensation) are described as *Pūrvārūpa* and *Upadrava* of Prameha, which closely resemble clinical features of DPN [5]. The fundamental pathology is attributed to the vitiation of *Vata* and *Pitta doshas*. Aggravated *Vata*, especially *Vyana Vata*, disrupts nerve conduction, leading to numbness, tingling, and weakness, while deranged *Pitta* manifests as burning, pain, and inflammation in peripheral tissues [8].

The concept of *Avaranajanya Madhumeha* is particularly relevant in this context. Here, *Vata* is obstructed by vitiated *Kapha*, *Pitta*, and *Meda dhatu*, resulting in the aggravation of *Vata* and subsequent depletion of vital dhatus, including *Majja* (nerve tissue). This explains the progressive neurodegenerative changes seen in DPN [6]. From a therapeutic standpoint, Ayurveda emphasizes a twofold strategy—addressing the root disorder (*Pradhana Vyadhi*) and its complications (*Upadravas*).

Bahir Parimarjana Chikitsa (external therapies) is considered highly significant in this regard,

particularly for localized management of neuropathic pain, burning, and numbness. Procedures such as *Parisheka* (pouring of medicated liquids) and *Mridu Swedana* are prescribed for safe and effective pacification of aggravated doshas without aggravating the inherent dryness or burning tendency in diabetics [7]. Within this framework, *Panchavalkala Dugdha Ksheera Parisheka* offers a tailored approach that combines dosha pacification, local circulation enhancement, and tissue rejuvenation, thereby holding conceptual promise in mitigating DPN.

4. PANCHAKARMA & SWEDANA IN NEUROPATHY

Panchakarma forms the backbone of Ayurvedic therapeutic interventions, aiming not only to alleviate symptoms but also to restore the equilibrium of *doshas*. Among its modalities, *Swedana* (sudation therapy) has long been recognized for its role in relieving stiffness, improving circulation, and reducing pain in conditions involving nerve and musculoskeletal disorders [6]. By promoting local perspiration, *Swedana* enhances tissue metabolism, facilitates the removal of accumulated toxins, and improves the conduction of nerve impulses, thereby offering symptomatic relief in neuropathic conditions.

However, in the context of *Prameha* (diabetes mellitus), classical texts advise caution in the application of *Swedana*. Excessive or *ruksha sweda* (dry and intense fomentation) is contraindicated, as it may aggravate burning sensations (*daha*), increase tissue dryness, and accelerate degeneration of already compromised nerve structures [5]. Since patients with diabetic neuropathy often present with dryness, numbness, and hypersensitivity, inappropriate application of *Swedana* may worsen the symptoms rather than relieve them.

To address this, safer and gentler forms such as *Mridu Sweda* (mild sudation) and *Sthanik Sweda* (localized sudation) are recommended. These methods apply controlled heat or warmth to specific areas, thereby preventing systemic aggravation of *pitta* and excessive depletion of body tissues. They help improve localized blood circulation, reduce neuropathic pain, and maintain tissue integrity without causing undue stress to delicate nerve structures [8].

Among the localized sudation techniques, *Parisheka* (continuous pouring of medicated liquids over the affected area) holds special relevance in diabetic neuropathy. This procedure involves the gentle application of warm medicated decoctions, milk, or oils, which combine sudation with unctuous and cooling properties. *Parisheka* provides dual benefits: it stimulates peripheral circulation and simultaneously offers a soothing, nourishing effect on affected nerves. When performed with formulations such as *Panchavalkala Dugdha Ksheera*, *Parisheka* not only pacifies aggravated *Vata-Pitta* doshas but also alleviates burning, tingling, and numbness, making it a safe and effective Panchakarma approach in neuropathy management [7][12].

5. PANCHAVALKALA DUGDHA KSHEERA PARISHEKA

5.1 Composition

The therapeutic potency of Panchavalkala Dugdha Ksheera lies in its dual composition. The five sacred barks, collectively known as Panchavalkala, are renowned for their ability to reduce inflammation, purify blood, and promote wound healing, making them highly relevant in conditions involving nerve damage and microvascular complications. When combined with milk, which is inherently nourishing, cooling, and rejuvenating, the formulation acquires synergistic properties. Milk not only acts as a vehicle for drug delivery but also balances aggravated *Pitta* by its cooling effect and strengthens tissues by its *Bṛṃhaṇa* quality. This makes the formulation particularly suitable for neuropathic conditions like DPN, where both dosha pacification and tissue rejuvenation are essential [5][6].

Component	Description	Therapeutic Properties
Panchavalkala	Combination of five medicinal barks: *Nyagrodha* (Ficus benghalensis), *Ashvattha* (Ficus religiosa), *Udumbara* (Ficus	*Kaṣāya rasa* (astringent), *Śothahara* (anti-inflammatory), *Raktaśodhaka* (blood-purifying), *Ropana* (wound-healing), tissue-regenerative properties [7].

	racemosa), *Plaksha* (Ficus lacor), and *Parisha* (Thespesia populnea).	
Dugdha (Milk)	Cow's milk, used as a base for processing the Panchavalkala decoction.	*Bṛṃhaṇa* (nourishing), *Madhura* (sweet), *Śīta* (cooling), *Bālya* (strength-promoting), acts as a carrier for deeper tissue penetration [8].

5.2 Mechanism of Action (Conceptually)

Conceptually, Panchavalkala Dugdha Ksheera acts on multiple levels in the management of DPN. By pacifying aggravated *Vata* and *Pitta*, it addresses the root doshic imbalance underlying neuropathic symptoms. Its anti-inflammatory and antioxidant actions counteract chronic oxidative stress and neural inflammation, which are central to the pathology of DPN. The warm application through *Parisheka* ensures enhanced microcirculation, improving oxygen and nutrient supply to ischemic nerves. Furthermore, the formulation strengthens neural tissues through *Balya* and *Ropana* properties, thereby aiding regeneration and providing analgesia. The rejuvenative (*Rasayana*) effect revitalizes *Majja dhatu* and restores *Ojas*, offering long-term protection against progressive nerve damage. Thus, Panchavalkala Dugdha Ksheera Parisheka not only provides symptomatic relief but also targets deeper tissue repair and functional recovery.

Table 2. Conceptual Mechanism of Action of Panchavalkala Dugdha Ksheera in DPN

Mechanism	Ayurvedic Principle	Therapeutic Outcome in DPN
Pacification of Vata–Pitta	*Snigdha* (unctuous) and *Śīta* (cooling) properties balance aggravated *Vata* and *Pitta* [6].	Reduces pain, tingling, numbness, and burning sensations.
Anti-inflammatory & Antioxidant Effects	*Kaṣāya rasa* of Panchavalkala barks and antioxidant effect of milk protect tissues from oxidative stress [13].	Minimizes nerve inflammation and prevents degenerative changes.
Improved Microcirculation	Warm *Parisheka* enhances local circulation, reduces vascular stiffness, and improves nutrient delivery [12].	Restores nerve metabolism and supports repair.
Tissue Regeneration & Analgesia	*Ropana* (healing) and *Balya* (strengthening) effects of Panchavalkala with nourishing milk.	Promotes neuronal regeneration and provides analgesic comfort.
Rejuvenation (Rasayana Effect)	Replenishes *Majja dhatu* and *Ojas* through combined action of herbs and milk [5].	Enhances vitality, supports long-term neuroprotection.

5.3. Method of Preparation of Panchavalkala Dugdha Kashaya

The preparation of *Panchavalkala Dugdha Kashaya* follows Ayurvedic *Kwatha Kalpana*. After selecting and powdering the five barks, the decoction is boiled and reduced to concentrate its active phytochemicals. Once filtered, equal amounts of cow's milk are added to impart nourishing and cooling properties. This blend is gently warmed before application as *Parisheka*. The method ensures therapeutic synergy—anti-inflammatory and blood-purifying effects from Panchavalkala, and rejuvenative action from milk—making it suitable for pacifying *Vata-Pitta* imbalance and supporting nerve regeneration in diabetic neuropathy.

Table 3. Method of Preparation

Step	Process	Details	Reference
1. Selection of Raw Material	Collect Panchavalkala (five barks: *Nyagrodha, Ashvattha, Udumbara, Plaksha, Parisha*).	Ensure barks are clean, dried, and free from contamination.	[7]
2. Preparation of Churna (Coarse Powder)	Grind dried barks into coarse powder.	Standard procedure in *Kwatha Kalpana*.	[6]
3. Decoction Preparation (Kashaya)	Boil coarse powder in 16 parts water; reduce to one-fourth.	Classical decoction method.	[5]
4. Filtration	Strain the decoction through a clean muslin cloth.	Ensures clarity and purity.	[8]
5. Addition of Milk (Dugdha)	Mix equal parts of cow's milk with filtered decoction.	Enhances *Bṛṃhaṇa* and *Śīta* qualities.	[7]
6. Final Preparation	Warm gently before use.	Used in *Parisheka* for DPN relief.	[12]

6. DISCUSSION

The integration of Ayurvedic principles with modern biomedical insights offers a holistic perspective for addressing Diabetic Peripheral Neuropathy (DPN). Modern pathology attributes DPN to hyperglycemia-induced oxidative stress, vascular insufficiency, and impaired neuronal repair, while Ayurveda describes it as a complication of *Prameha*, with *Suptata* (numbness) and *Daha* (burning) caused by *Vata* and *Pitta* vitiation [5]. Thus, the two frameworks converge in identifying inflammation, degeneration, and microcirculatory defects as central to disease progression.

Conventional pharmacological treatments—such as analgesics and anticonvulsants—primarily provide symptomatic relief but fail to halt or reverse neuropathy. Moreover, their long-term use is often limited by side effects and patient non-compliance. In contrast, *Panchavalkala Dugdha Ksheera Parisheka* offers a complementary approach that combines anti-inflammatory and antioxidant properties with dosha pacification and tissue rejuvenation. This dual action suggests a comparative advantage over purely symptomatic management [7].

As a localized external therapy, *Parisheka* is non-invasive, culturally acceptable, and cost-effective. It improves microcirculation, alleviates neuropathic pain, and provides a soothing effect without systemic side effects, making it a promising complementary therapy in the Indian context [12]. However, while classical references and preliminary insights are encouraging, systematic clinical trials are needed to validate its safety and efficacy in broader populations.

7. CONCLUSION

Panchavalkala Dugdha Ksheera Parisheka represents a promising Ayurvedic approach for the management of Diabetic Peripheral Neuropathy. By integrating the anti-inflammatory and blood-purifying properties of Panchavalkala with the nourishing and cooling qualities of milk, this therapy addresses both the symptomatic and pathological aspects of neuropathy. Its actions include pacifying aggravated *Vata* and *Pitta*, improving microcirculation, reducing oxidative stress, and promoting tissue regeneration. Unlike conventional treatments that primarily provide symptomatic relief, this modality emphasizes long-term neuroprotection and rejuvenation. As a safe, localized, and holistic therapy, Panchavalkala Dugdha Ksheera Parisheka holds significant potential as a complementary intervention in diabetic care. Further clinical studies are necessary to establish its efficacy and facilitate integration into evidence-based healthcare.

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