Review Article

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AYURVEDIC ERRHINES: AN INTEGRATIVE REVIEW OF CLASSICAL MEDICINAL PLANTS FROM THE BRIHATRAYI

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ABSTRACT

Shirovirechana (Errhine) or Nasya Karma is one of the Panchakarma procedures in which drugs are administered through nose the "gateway to the head" (Nasa hi shiraso dwaram), to expel the morbid doshas from the head and neck region. Numerous herbal drug options and formulations are described in Brihatrayi (Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya) for this purpose. This procedure is advised for both preventive and therapeutic benefits. This study aimed to compile, analyze and compare medicinal plants indicated for Shirovirechana in the three major classical treatises, along with their Ayurvedic properties and potential pharmacological correlates. Comparative and thematic analysis was performed. Seventy unique plants have been identified from the Brihatrayi, excluding synonyms. Most plants have Katu (pungent) or Tikta Rasa (bitter taste), Ushna Virya (hot potency), and Katu Vipaka (pungent metabolic effects), indicating pacifying actions on Kapha and Vata. Modern evidence supports anti-inflammatory, mucolytic, and neuroprotective potentials. Integration of classical Ayurvedic knowledge with modern research can support scientific validation of Nasya therapy for various Urdhwajatrugata (head and neck) disorders. Clinical trials on the single herbal drug are very limited. Although some clinical studies are available, there is still a lack of clinical evidence supporting the use of a single drug for Shirovirechana. Further pharmacological and clinical research of these plants is imperative.

Keywords: Shirovirechana, Nasya Karma, errhine, Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, medicinal plants.

INTRODUCTION

Shirovirechana, one of the core Panchakarma procedure, is designed for the elimination of vitiated Doshas from the head and neck region. Shirovirechana is cited as an essential therapy for purifying and rejuvenating the upper body. The nasal route (Nasya) serves as the "gateway to the head," enabling targeted drug action for disorders ranging from headaches to neurological and ENT afflictions.[1] The ancient texts highlight plant-based errhines as safe, effective, and versatile tools for both preventative and curative measures.

The description of Shirovirechana drugs exhibits notable consistency across Brihatrayi (Charaka Samhita, Sushruta Samhita, and Ashtanga Hrdaya), though certain variations are observed in their accounts. Even in Charaka Samhita, the description of Shirovirechana drugs is not confined to a single section, but it is distributed across Sutrasthana and Vimanasthana, with its mentions appearing in different chapters of Sutrasthana.

This review consolidates the plants recommended for Shirovirechana in Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, with non-herbal substances excluded from consideration. The Sanskrit names of these plants were matched with their corresponding botanical nomenclature using standard Ayurvedic pharmacognosy references. Additionally, details regarding their Rasa (taste), Guna (qualities), Virya (potency), Vipaka (post-digestive effect), and Karma (therapeutic action) were documented, along with the useful part(s) of the plant and information on their current availability. This study will aid researchers, clinicians, and academicians in both traditional practice and scientific exploration.

Classical perspective on Shirovirechana

Nasya is the procedure in which medicines are administered through nose. It is classified differently by various Acharyas; however, it is broadly categorized into three types: Virechana (expelling doshas), Brimhana (nourishing), and Shamana (palliative). It is indicated in a wide range of conditions, including chronic headaches, sinusitis (Peenasa), epilepsy (Apasmara), cervical spondylosis (Greeva Shoola), frozen shoulder (Apabahuka), stammering, and eye strain.

However, Nasya is contraindicated during pregnancy, menstruation, immediately after meals, and in cases of severe debility, acute indigestion, or febrile conditions. Depending on the condition and purpose, it is administered in various forms such as Taila, Ghrita, Swarasa, Kwatha, and Churna Avapeeda, making it a versatile and effective therapeutic procedure in Ayurvedic practice. Recent pharmacological research has validated that the type of extract and solvent influence phytochemical yield and therapeutic efficacy.[2,3]

Mode of Action of Shirovirechana Karma

The morbid doshas adhering to the head region will be eliminated through the administration of drugs through the nose, as per Acharya Charaka in Sidhisthana. Somewhat elaborated version of the mode of action available in Ashtanga Sangraha, that is, as the nose is the gateway to Shira, the drug administered through the nostrils, reaches the Sira Marma Shrigataka, which connects the Nasa Srota and spreads in Murdha (brain) and takes the route

from the eye, ear, throat, and other Siramugha (opening of the vessels), thereby removal of morbid dosha from supraclavicular region occurs (Diagram 1).[4]

ERRHINE DRUGS OF CHARAKA SAMHITA

Apamarga is the first drug of choice advised for Sirovirechana in Charaka Samhitha, so it is reiterated multiple times in the Samhitha. Next to this, the roots of Shweta (*Clitoria ternatea* L.) and Jyotishmati (*Celastrus paniculatus* Willd) are the best choice of medicine for errhine therapy. Charaka gives prime importance to Shirovirechna among Panchakarma because it is mentioned first in the chapter dealing with medicines of Panchakarma. Twenty-three drugs are listed there having the potential to eliminate the vitiating Doshas from the head, along with mitigating the Gourava (heaviness), Shirasoola (pain of the head), Pinasa (rhinitis), Ardhavabhedaka (hemicrania), Krimi (infections), Apasmara (epilepsy), Ghrananasha (anosmia), Pramoha (fainting), etc. In addition to these, a group of 10 drugs that facilitate Shirovirechan Karma are mentioned in the fourth chapter. Furthermore, in the Vimanasthana, Shirovirechana drugs are categorized based on the plant part used, where a total of 56 drugs are listed. Despite the fact that Sutrasthana and Vimanasthana address Shirovirechana Dravyas, Acharya Charaka provides a detailed description of Shirovirechana in Sidhisthana.[5]

COMPARATIVE ANALYSIS ACROSS TEXTS

Charaka mentions 57 herbal drugs for Shirovirechana Karma. Sushruta includes additional herbs such as Karavir, Bimbi, Talispatra, Meshashringi, Matulungi, Sala, Tala and Laksha for Shirovirechana. The herb Sala is also referenced in the Ashtanga Hridaya, but no other medicine is recognized as having a distinctive contribution to Shirovirechana. Daruharidra, Brhati, Pritvika, and Eladwaya are mentioned by Charaka and Vagbhata, but not by Sushruta. Vidanga, Apamarga, Pippali, Maricha, Shunti, Shirisha, Sigru, and Madhuk are the common drugs mentioned by Acharyas for Shirovirechan Karma.[6,7]

PHYTOCHEMICAL PROFILE OF SHIROVIRECHANA MEDICINAL PLANTS

Apamarga (*Achyranthes aspera* Linn.)
Apamarga contains a variety of phytoconstituents, including steroids such as β-sitosterol and stigmasterol, alkaloids like betaine, ecdysterone, ecdysone, and achyranthine, flavonoids such as quercetin, rutin, kaempferol, and apigenin, glycosides, saponins, and phenolic compounds. It demonstrates notable pharmacological actions such as anti-allergic, anti-inflammatory, and antimicrobial effects.[8] Traditionally, Apamarga has been used in the treatment of allergic rhinitis and tinnitus through Nasya (nasal administration).[9] Experimental studies have further validated its efficacy by confirming its antihistaminic activity and the ability to stabilize mast cells, supporting its role in managing allergic conditions.

Jyotishmati (*Celastrus paniculatus* Willd)
Jyotishmati is rich in bioactive phytoconstituents such as celastrine, paniculatine, alkaloids, polyphenols, flavonoids, and sesquiterpenes. It is known for its neuroprotective, memory-enhancing, and anti-inflammatory properties.[10] Clinically, Jyotishmati has been used to improve memory and cognitive function, with its efficacy supported by traditional usage and emerging scientific evidence. Preclinical studies have validated its neuroprotective potential, particularly in models of Alzheimer's disease and epilepsy, highlighting its promise in the management of neurodegenerative and cognitive disorders.[11]

Maricha (*Piper nigrum* Linn.)
Maricha contains key phytoconstituents such as piperine, various alkaloids, flavonoids, and essential oils. It exhibits anti-inflammatory and mucolytic properties and is particularly recognized for its role as a bioenhancer. Clinically, Maricha has been widely used in the management of respiratory disorders. Piperine, its principal active compound, has been extensively studied for its ability to enhance the bioavailability of co-administered drugs, making it a valuable adjunct in therapeutic formulations.[12,13]

Pippali (*Piper longum* Linn.)
Pippali also contains important phytoconstituents such as piperine, alkaloids, and essential oils. It is known for its bronchodilator, immunomodulatory, and neuroprotective properties.[14] Traditionally used in respiratory and neurological disorders, Pippali supports respiratory function and enhances immune response. Its bioactive compounds, particularly piperine, contribute to its therapeutic potential in both acute and chronic conditions.

Shigru (*Moringa oleifera* Lam.)
Shigru is rich in diverse phytoconstituents, including niaziminin, polyphenols, flavonoids, vitamins, and isothiocyanates. It exhibits potent anti-inflammatory, antioxidant, and antimicrobial properties.[15] These bioactive compounds contribute to Shigru's broad therapeutic potential, supporting its traditional use in managing inflammatory conditions, oxidative stress, and infections.

Mode of action of Shirovirechana drugs
Shirovirechana Karma is primarily intended for the removal of the Kapha Dosha from Urdwajatru (supraclavicular region), the seat of Kapha Dosha. According to Samanyavishesha Siddhanta (the principle of sameness and antagonism), to eliminate Kapha Dosha, it is crucial to select medications with the opposite property. The majority of the plants recommended in Brihatrayi for Shirovirechan include Katu Vipaka (pungent metabolic effects), Ushna Virya (hot potency), Tikshna (sharp) in Guna (attribute), Laghu (light), Ruksha (dryness), and Tikta (bitter), Katu (pungent), Kashya (astringent) in Rasa (taste) (Table 2).[16,17] Aromatic drugs primarily stimulate the Nasavaha Srotas or Gandhavaha Srotas (olfactory pathway), enhancing olfactory perceptions. Substances with Ushna (hot) and Tikshna (sharp) attributes facilitate Visyanthana (spreading), Dravikarana (liquefaction), and Chedana (cutting through barriers). In contrast, medications that taste sweet have nourishing or anabolic qualities, which are useful for diseases having Vata dominance. These characteristics will aid in the removal of accumulated doshas from the upper part of the body and the deep penetration of medications into even the microchannels. Vagbhata advised to give these medicines in the form of Kalka (paste), Kwatha (decoction), or Swarasa (extract) along with Madhu (honey), Saindhava (rock salt), Asava (alcoholic preparation), etc.

Phytochemical screening of plants used for Nasya reveals the presence of important bioactive compounds: alkaloids, flavonoids, saponins, tannins, terpenoids, phenolic compounds, cardiac glycosides, and steroids. These constituents are responsible for the anti-inflammatory, anti-allergic, neuroprotective, and antimicrobial actions underlying their therapeutic use in Shirovirechana.

Clinical studies and evidence
There are very few clinical trials of Nasya with Shirovirechana medications; the only ones that exist are case reports or small-scale investigations. The symptoms of chronic sinusitis improved moderately to significantly in 30 patients treated with

Shirovirechan medications of Vagbhata, according to a clinical investigation.[18] In clinical research comparing Nasya and Jala Neti for allergic rhinitis, Vacha Taila Nasya significantly improved the condition in patients.[19] Significant improvement in Kaphajashirasoola is observed in a clinical study with Trikatu Taila.[20] A randomized controlled trial of Apamarga Nasya for allergic rhinitis showed significant symptomatic improvement and reduction in eosinophil count.[9] Still, there is a lack of clinical evidence supporting the use of a single drug of Shirovirechana administered via errhine routes; no individual drug has yet been the subject of dedicated clinical trials in this context.

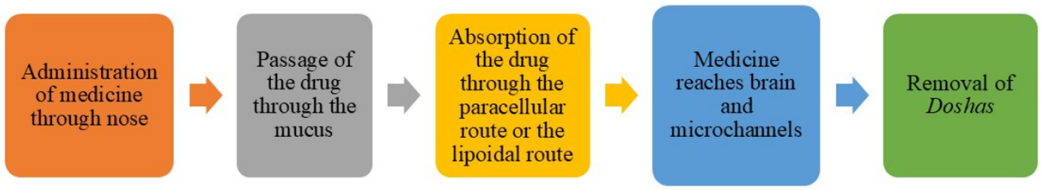

Diagram 1

Table 1: Shirovirechana drugs of Brihattrayi

Samhitha	Reference	Shirovirechana drugs
Charaka Samhita	**Cha.Su.1/ 79 and 85, 2/3, 4/27, 25/40, Cha.Vi.8/151**	Shweta, Jyotishmati, Pratyakpushpa, Pippali, Maricha, Vidanga, Sigru, Sarshapa, Tumburu, Ajaji, Ajagandha, Peelu, Ela, Harenuka, Prtvika, Surasa, Kudheraka, Phanijjaka, Sireesh, Lashuna, Haridra, Daruharidra, Nagaram, Kshavaka, Mahasweta, Sumugh, Gandira, Kaalamalaka, Parnaasa, Mulaka, Tarkari, Arka, Alarka, Kushtha, Nagadanti, Vacha, Gavakshi, Gandirapushpi, Vriscikali, Vayastha, Ativisha, Lodra, Madana, Saptaparna, Nimba, Devadaru, Agaru, Sarala, Sallaki, Jingini, Asana, Hingu, Tejovati, Varanga, Ingudi, Brhati, Kantakarika
Sushrut Samhita	**Su.Su.39/6**	Pippali, Vidanga, Apamarga, Sigru, Sidharthaka, Sireesh, Maricha, Karavir, Bimbi, Girikarnika, Kinihi, Vacha, Jyotishmati, Karanja, Arka, Alarka, Lahsun, Ativisha, Shringavera, Talisapatra, Tamala patra, Surasa, Ajraka, Ingudi, Medhrashringi, Matulungi, Murangi, Peelu, Jati, Sala, Tala, Madhuka, Laksha, Hingu,
Ashtanga Hrdaya	**A.Hr.Su 15/4**	Vidanga, Apamarga, Trikatu, Daruharidra, Rala, Sireesha, Brhati, Sigru, Madhuka Sara, Eladwaya and Hingupatri

Table 2: Properties Shirovirechana drugs

Sanskrit name	Botanical name and habit	Rasa Panchak	Useful part	IUCN status
Vidanga	*Embelia ribes* Burm. Shrub	Katu, Kashyaya Rasa Laghu, Ruksha, Teekshna Ushna Virya Katu Vipaka Krimighana Kaphavatashamaka	Fruit	Not evaluated
Apamarga	*Achyranthes aspera* Linn. Herb	Katu, Tikta Rasa Laghu, Ruksha, Teekshna Ushna Virya Katu Vipaka Kapha Vata Shamaka	Fruit	Least concern
Sunthi	*Zingiber officinale* Roxb. Herb	Madhur Katu(Adrak) Rasa Laghu, Snigdha (Sunthi) Guru, Ruksha Tikshna (Aadraka) Ushna Virya Madhur Katu(Adrak) Vipaka Vatakaphashamaka	Rhizome	Data deficient
Maricha	*Piper nigrum* Linn. Climber	Katu Rasa Laghu, Teekshna Ushna Virya Katu Vipaka Vatakaphashamaka	Fruit	Data deficient
Pippali	*Piper longum* Linn. Climber	Katu Rasa Laghu, Snigdha, Tikshna Anushna-Sheeta Virya Madhura Vipaka Pittashamaka	Fruit	Least concern
Daruharidra	*Berberis arisata* DC Shrub	Tikta, Kashyaya Rasa Laghu, Ruksha Ushna Virya Katu Vipaka Kaphapittashamak	Root, stem, kanda	Least concern
Rala	*Shorea robusta* Gaertn	Kashyaya, Madhur Rasa	Exudate	Least concern

	Tree	Ruksha Sheeta Virya Katu Vipaka Pittakaphashamak		
Shirish	*Albizia lebbeck* Benth. Tree	Kashyaya, Tikta, Madhur Laghu, Ruksha, Teekshna Ishada Ushna Virya Katu Vipaka Tridoshashamaka	Seeds, Fruit	Least concern
Brihati	*Solanum indicum* Linn. Shrub	Katu, Tikta Rasa Laghu, Ruksha, Teekshna Ushna Virya Katu Vipaka Vatakapha Shamak	Seeds	Least concern
Shigru	*Moringa oleifera* Lam. Tree	Katu, Tikta Rasa Laghu, Ruksha, Teekshna Ushna Virya Katu Vipaka Vatakaphashamaka	Seeds,Fruit	Least concern
Madhuka	*Madhuca indica* J. F. Gmel. Tree	Madhur, Kashyaya Rasa Guru, Snighda Sheeta Virya Madhur Vipaka Vatapittashamaka	Resin	Least concern
Ela Sukshma	*Elettaria cardamomum* Maton Herb	Katu, Madhur Rasa Laghu, Ruksha Sheeta Virya Madhur Tridoshahara	Seeds	Not evaluated
Ela Badi	*Amomum sabulatum* Roxb. Herb	Katu Laghu, Ruksha Ushna Virya Katu Vatavardhaka	Seed	Data deficient
Sarshap	*Brassica campestris* Linn. Herb	Katu, Tikta Tikshna, Ruksha(Shaka), Snigdha(Taila, Beeja) Ushna Virya Katu Kaphavata Nashaka	Fruit	Not evaluated
Karvir	*Nerium indicum* Mill. Shrub	Katu, Tikta Laghu, Ruksha, Tiksha Sheeta Virya Katu Kaphavatashamaka	Root	Least concern
Bimbi	*Coccinia indica* W. and A. Climber	Tikta Laghu, Ruksha, Teekshna Ushna Virya Katu Kaphapittashamaka	Root	Not evaluated
Girikarnika	*Clitoria ternatea* L. Climber	Katu, Tikta, Kashyaya Laghu, Ruksha Sheeta Virya Katu Tridoshahara	Root	-
Kinhi	*Albizzia procera Benth.* Tree	Katu Rasa Ruksha Ushna Virya Katu Vipaka Kaphanashaka	Root	Least concern
Vacha	*Acorus calamus* Linn. Herb	Katu,Tikta Laghu, Tikshna Ushna Katu Medhya	Root	Least concern
Jyotishmati	*Celastrus panniculatus* Willd. Climbing shrub	Katu, Tikta Tikshna Ushna Katu Medhya	Root	-
Karanja	*Pongamia pinnata* (L.) Pierre. Tree	Tikta, Katu, Kashyaya Laghu, Tikshna Ushna Virya Katu Vipaka Vata Kapha Shamaka	Root	Least concern

Arka	*Calotropis procera* (Ait) R. Shrub	Katu, Tikta Laghu, Ruksha, Teekshna Ushna Virya Katu Vipaka Vatakaphashamaka	Root	Least concern
Alarka	*Calotropis gigantea* (Linn) R. Br. Ex Ait. Shrub	Laghu	Root	Not evaluated
Lahsun	*Allium sativum* Linn. Herb	All Except Amla Rasa Snigdha, Tikshna, Picchila, Guru, Sara Ushna Virya Katu Vata Kapha Shamaka	Kanda	Not evaluated
Ativisha	*Aconitum heterophylum* Wall. Herb	Tikta, Katu Laghu, Ruksha Ushna Virya Katu Vipaka Tridoshashamaka	Kanda	Endangered
Talish Patra	*Abies webbiana* Lindle. Tree	Tikta, Madhur Laghu, Tikshna Ushna Virya Katu Vatakapha Shamaka	Leaf	Near threatened (IMPAAT)
Tamala Patra	*Cinnamomum tamala* (Buch.- Hum.) T.Nees & Eberm Small tree	Katu, Tikta, Madhur Laghu, Ruksha, Teekshna Ushna Virya Katu Kaphavatashamaka	Leaf	Least concern
Tulsi	*Ocimum sanctum* Linn Herb	Katu, Tikta Laghu, Ruksha Ushna Virya Katu Krimighana Vatakaphashamaka	Leaf	Near endangered
Ingudi	*Balanites aegyptiaca* (Linn.) Delile Tree	Tikta, Katu Laghu, Snigdha Ushna Virya Katu Krimighana Vatakapha Shamaka	Bark	Least concern
Medhashringi	*Gymnema sylvestre* R Br. Climber	Kashyaya, Tikta Laghu, Ruksha Ushna Virya Katu Vatakapha Shamaka	Bark	Not evaluated
Matulungi	*Citrus medica* Linn. Shrub	Madhur Laaghu, Snigdha Sheeta Virya Madhur Vatapittashamak	Flower	Least concern
Peelu	*Salvadora persica* L. Large shrub – small tree	Tikta, Madhur Laghu, Snigdha, Tikshna Ushna Virya Katu Vatakaphashamak	Flower, Fruit	Least concern
Jati	*Jasminum sambac* (L.) Aiton. Shrub	Tikta, Kashyaya Laghu, Snigdha, Mridu Ushna Virya Katu Kaphapitta Shamaka	Flower	Not evaluated
Tad Vriksha	*Borassus flabellifer* Linn. Palame Tree	Madhur Laghu Sheeta Virya Madhur Vatapitta Nashaka	Sara	Least concern
Laksha	*Laccifer lacca* Insect	Kashyaya Laghu, Snigdha Sheeta Virya Kaphapittahara	Niryas	-
Hingu	*Feruka asafoetida* Linn. Herb	Katu Laghu, Snighda, Teekshna Ushna Virya Katu Kaphavatashamaka	Niryas	Data deficient

Lodhra	*Symplocos racemosa* Roxb. Tree	Kashyaya Laghu, Ruksha Sheeta Virya Katu Kaphapiitashamaka	Flower	Least concern
Nimb	*Azadirachta indica* A Juss Tree	Tikta, Kashyaya Laghu Sheeta Virya Katu Vatapittashamaka	Flower	Least concern
Saptaparna	*Alstonia scholaris* R. Br. Tree	Tikta, Kashyaya Laghu, Snigdha Ushna Virya Katu Tridosha Shamaka	Flower	Least concern
Madanphal	*Randia spinosa* Poir. Shrub – small tree	Kashyaya, Madhur, Tikta, Katu Laghu, Ruksha Ushna Virya Katu Kaphavatashamaka	Flower	Not evaluated
Kustha	*Saussurea lappa* C.B. Clarke Herb	Tikta, Katu, Madhur Laghu, Ruksha, Teekshna Ushna Virya Katu Kaphavatashama	Root	Critically endangered
Asana	*Pterocarpus marsupium* Roxb. Tree	Kashyaya, Tikta Laghu, Ruksha Sheeta Virya Katu Kaphapittashamaka	Niryas	Near threatened
Tumburu	*Zanthoxylum armatum* DC. Shrub-small tree	Katu, Tikta Laghu, Ruksha, Teekshna Ushna Virya Katu Kaphavatashamaka	Fruit	Least concern
Ajaji	*Cuminum cyminum* L. Herb	Katu Laghu, Ruksha Ushna Virya Katu Kaphavata Shamaka	Fruit	Not evaluated
Ajagandha	*Thymus serphyllum* L. Herb	Katu Rasa Ushna Virya	Fruit	Least concern
Harenuka	*Pisum sativum* L. Herbaceous climber	Madhur Ruksha Sheeta Virya Madhur Kapha Pittashamak	Fruit	Not evaluated
Kudheraka	Ocimum species		Leaf	-
Phanjika	*Origanum majorana* L. Herb	Katu, Tikta Ruksha, Laghu, Tikshna Ushna Virya Katu Kaphavata Shamaka	Leaf	-
Haridra	*Curcuma longa* Linn. Herb	Tikta, Katu Laghu, Ruksha Ushna Virya Katu Kaphavatashamaka	Leaf, Kanda	Data deficient
Kshvaka	*Centipeda orbicularis* Lour. Herb Compositae	Katu Tikshna Ushna Virya Vatakaphanashak	Leaf	Least concern
Sumugh	Tulsi bheda		Leaf	-
Gandira	Tulsi bheda		Leaf	-
Mulaka	*Raphnus sativus* Linn. Herb	Katu, Tikta Laghu Ushna Virya Katu Tridosha Shamaka	Kanda	-
Tarkari	*Premna mucronata* Roxb. Shrub- small tree	Tikta, Katu, Kashyaya, Madhur Ruksha, Laghu Ushna Virya Katu	Leaf	Not evaluated

		Kaphavata Shamak		
Nagdanti	*Croton oblongifolius* Roxb. Tree Euphorbiaceae	Katu Guru, Teekshna Ushna Virya Katu Kaphapittashamaka	Root	-
Gavakshi	*Cirullus colocynthis* Schrad. Herbaceous climber	Tikta Laghu, Ruksha, Tikshna Ushna Virya Katu Kaphapittahara	Root	Not evaluated(india flora online)
Gandirpushpi	Not found		Root	-
Devadaru	*Cedrus deodara* (Roxb) Loud Tree	Tikta Laghu, Snigdha Ushna Virya Katu Kaphavatahsamaka	Niryas	Least concern
Agaru	*Aquilaria agallocha* Roxb. Tree	Katu, Tikta Laghu, Ruksha, Tikshna Ushna Virya Katu Kaphavatashamaka	Niryas	Critically endangered
Sarala	*Pinus roxburghii* Sargent. Tree	Katu, Tikta, Madhur Laghu, Teekshna, Snigdha Ushna Virya Katu Kaphavatashamaka	Niryas	Least concern
Shallaki	*Boswellia serrata* Roxb. Tree	Kashyaya, Tikta, Madhur Laghu, Ruksha Ushna Virya Katu Kaphapittashamaka	Niryas	Least concern
Jhingni	*Lannea coromandelica* (Houtt.) Merr. Tree	Madhur, Kashyaya, Katu Ushna Virya Vatashamaka	Niryas	Least concern
Tejovati	*Zanthoxylum armatum* DC. Shrub to small tree	Katu, Tikta Laghu, Ruksha, Tikshna Ushna Virya Katu Kaphavatashamaka, Pittavardhaka	Twak	Least concern
Varanga	*Cinnamomum verum* J.S.Presl. Tree	Katu, Tiktha, Madhura Ruksha, Laghu, Teekshna Ushna Virya Katu Vatakaphashamak	Twak	-
Kantkari	*Solanum surattense* Burm. Herb	Katu, Tikta Laghu, Ruksha, Teekshna Ushna Virya Katu Kaphavatashamaka	Twak	Not evaluated
Kala Amlaka	-			-
Parnasa	Ocimum species Herb			-
Vrichikali	*Tragia involucrate* L. Herb	Katu, Tikta, Madhur, Kashyaya Laghu, Snigdha Sheeta Virya Katu Pittakapaha Shamaka	Root, leaves, whole plant	-
Vayastha (Brahmi)	*Bacopa monnieri* (L.) Wettst. Herb	Tikta, Kashyaya Laghu Sheeta Virya Madhur Tridosha Shamaka	Whole plant	Least concern
Prithvika	*Nigella sativa* Linn. Herb	Katu, Tikta Laghu, Ruksha Ushna Virya Katu Vatakapha Shamaka	Seed, seed oil	-

DISCUSSION

Following an extensive literature review, we found that most herbal medications are commonly mentioned in the Brihatrayi, with many synonyms used to describe the same plant, even within the same Samhita (Table 1). For instance, in the context of Shirovirechana medicines, Apamarga appears in the names of Pratyakpuspi and Avakpushpi in the Charaka Samhita. Aparajita is represented by Shweta and Girikarnika, while Shunti is represented by Nagaram and Shringavera. Following the exclusion of synonyms, 70 unique herbal drugs related to Shirovirechana were documented from the Brihatrayi (Table 2). Among these, half of the drugs are Katu Tiktha Rasa dominant, more than 75% of drugs are Katu Vipaka, and the majority are Ushna Virya and Kaphavata Shamak.

A classification of the 70 medications identified for Shirovirechana therapy, as outlined in the Brihatrayi, according to plant habit, showed that 26 (37.1%) of the drugs are trees, 21 (30%) are herbs, and 11 (15.7%) are shrubs, and some are climbers. That is a higher reliance on tree-based and herbaceous plants in Shirovirechana formulations.

The majority of these medicinal plants are classified as Least Concern by the IUCN, which highlights their relative abundance and potential for long-term usage in therapeutic settings. IUCN status of a similar portion of drugs has not been evaluated till the date. The classification of Kushta and Agaru as critically endangered is significant, highlighting the immediate necessity for conservation efforts and prudent utilization. Ativisha is considered as endangered, its use must be carefully regulated. Asana and Talispatra are both classified as near threatened, and Ocimum sanctum L. is getting close to being classed as endangered. In order to guarantee both effectiveness and sustainability, these classifications highlight how crucial it is to incorporate ecological consciousness into traditional medical practices.

CONCLUSION

Brihatrayi mentions 70 Shirovirechana drugs in all, although there is currently a dearth of conclusive, high-quality clinical trial data, either for individual drugs or for combinations of drugs. The current availability of these drugs indicates that most are readily accessible.

Future research should focus on standardizing extraction and preparation techniques to ensure clinical uniformity, as well as developing advanced nasal delivery systems to enhance therapeutic outcomes. Additionally, human clinical trials are necessary to investigate the underlying molecular pathways.

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