



Regional and Cultural Variations in Traditional Indian Medicinal Practices and Their Modern Relevance

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Abstract

Since India's enormous and varied terrain, a wide variety of traditional medical practices that are firmly anchored in its ecological and cultural surroundings have emerged. Through a geographical and cultural lens, this chapter explores the fundamental systems of Indian traditional medicine, such as *Ayurveda*, *Siddha*, *Unani*, *Sowa-Rigpa*, *Rasashastra*, and a variety of tribal and folk healing methods. From the biodiverse Northeast to the Himalayan North, every region of India has its own distinct healing practices that are influenced by regional plants, customs, and environmental knowledge. These practices are frequently transmitted orally and are used by community-based healers. The chapter illustrates the breadth of the Indian knowledge system and its applicability to the country's current healthcare requirements by charting these regional variances. Particularly in rural locations, these approaches provide preventive, accessible, and reasonably priced healthcare treatments. They also fit nicely with worldwide trends in ecological living, natural medicine, and wellness. Growing institutional and governmental backing, such that provided by the AYUSH movement, has rekindled interest in recording, confirming, and incorporating traditional customs into modern healthcare systems. This chapter makes the case that a healthier, more independent, and culturally rich "Bharat" can be greatly enhanced by acknowledging and reviving local medical expertise.

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1. Introduction

The foundation of India's cultural legacy is a holistic outlook that balances health, spirituality, and the environment. Within the larger context of Indian Knowledge Systems (IKS), this legacy's extensive heritage of healing practices is among its most striking features. Traditional Indian medicine presents a complex tapestry of age-old expertise, ranging from the oral traditions of tribal and folk healers to the codified systems of *Ayurveda*, *Siddha*, and *Unani*. This knowledge is not universal; rather, it is greatly influenced by the biodiversity, climate, geography, and culture of various parts of the nation. Every region of India has produced its own distinct collection of healing ideas, substances, and medical procedures. Strong alpine plants are valued for their restorative qualities in the Himalayan regions, while plant-infused and oil-based therapies are popular along the South's shore. Tribes that live in forests and depend on their close interaction with nature for health and healing have knowledge that is preserved in Central India. These differences reflect centuries of scientific knowledge and cultural adaptation to local habitats, making them more than just regional peculiarities. These traditional methods provide sustainable, cost-effective, and culturally relevant alternatives to the traditional medical system in contemporary India, where environmental stressors, lifestyle disorders, and growing healthcare expenses pose challenges. Their importance is further highlighted by the rising interest in natural and preventive healthcare around the world.

By exploring their origins, uses, and continuous contributions to the health and well-being of contemporary India, this chapter seeks to understand the regional and cultural variances in traditional Indian medical practices. Understanding and upholding these many customs allows us to respect our history while also utilizing them to meaningfully address current health issues.

2. Traditional Indian Medicine: A Cultural Map

The varied topography, ecosystems, and cultural ethos of the subcontinent are reflected in the vast regional and cultural diversity seen in traditional Indian medical procedures. As demonstrated by the historical texts *Charaka Samhita* and *Sushruta Samhita*, Ayurveda, which has its roots mostly in the Northern and Indo-Gangetic plains, places a strong emphasis on the Tridosha theory and holistic health (NCBS, 2023). Ayurveda developed distinctive regional forms in the southern states, especially Kerala, including Panchakarma treatments, and Kashayam, a traditional Ayurvedic decoction like *Patola Katurohinyadi Kashayam* has been reported to effectively restore liver function in patients with Alcoholic Fatty Liver Disease (AFLD) by significantly reducing elevated liver enzyme levels, indicating improved hepatic health (Pawar *et al.*, 2015). On the other hand, one of the oldest traditional medical systems in southern India, especially in Tamil Nadu, is the *Siddha* system. Siddha, which emphasizes the teachings of *Siddhars* and the utilization of natural resources for treatment, is still a crucial healthcare modality despite the influence of contemporary medicine (Karunamoorthi *et al.*, 2012). The effectiveness of *Siddha* medicine in managing chronic skin conditions such as vitiligo and psoriasis, particularly where conventional treatments often fail due to limited efficacy or adverse side effects (Jaganathan *et al.*, 2024; Shalini *et al.*, 2024). In India, efforts are underway to validate and improve the effectiveness of ancient knowledge techniques by combining them with contemporary scientific methodologies. With roots in ancient Greek and Arab customs, the Unani medical system takes a holistic approach to health, emphasizing the harmony of the body's humors and the individual's temperament, or *mizaj*. Hippocrates'



theories served as the foundation for *Unani* medicine, which was refined by Arab scholars and prospered in the Indian subcontinent, especially during the Mughal Empire, until declining under British rule (Safee & Imlaque, 2023) (Sengupta *et al.*, 2016). According to Ahmad *et al.* (2024), *Unani* practitioners treat a variety of illnesses with natural treatments and regimens, including mental health conditions like depression that they link to imbalances in body humors. A traditional Tibetan medical practice with almost 2,500 years of history, the Amchi system, also called *Sowa-Rigpa*, is mostly used in the Himalayan regions, such as Ladakh, Himachal Pradesh, and portions of Central Asia (Gurmet, 2004). This approach emphasizes the role of ignorance in human suffering and the quest of *Nirvana* as a therapeutic aim, and it is closely linked to Buddhist philosophy (Potbhare *et al.*, 2022). Using a range of medicinal plants, metals, and animal parts, *Sowa-Rigpa* takes a holistic approach to treatment, heavily depending on local biodiversity (Adhikari *et al.*, 2017). Modernization and globalization, however, pose problems for the system, resulting in a loss of practitioners and traditional knowledge; in recent decades, the Amchi population has reportedly decreased by (45%) (Dominik, 2023; Targe *et al.*, 2022). About (60%) of people in Ladakh still depend on *Sowa-Rigpa* for their local healthcare, despite these difficulties (Adhikari *et al.*, 2017). Its survival may depend on improving support for practitioners and integrating this system with contemporary healthcare (Targe *et al.*, 2022). The possibility of fusing traditional knowledge with modern science to create novel treatment techniques is highlighted by conferences such as Phytocongress (Sastra University, 2016). Additionally, the recording of Local Health Traditions (LHTs) in different Indian states highlights the richness and diversity of ethnomedicinal practices, which are confirmed to be distinctive and distinct by traditional Ayush literature (Rai & Shiddamallayya, 2021). Each of these regional systems adjusts to its own cultural and ecological context, adding to the rich tapestry of Indian traditional medicine.

A. Ayurveda: Ancient Wisdom for Modern Well-being

यत्र आयुर्वेदः तत्र जीवर्वतम्, तत्र शान्तः सदा भवर्वता”

Yatra āyurvedaḥ tatra jīvitam, tatra śāntiḥ sadā bhavati.

“Where Ayurveda is practiced, life flourishes, and peace prevails

~*Atharvaveda*

Ayurveda, meaning "Science of Life" (*Ayuh* = life, *Veda* = knowledge), is one of the world's oldest holistic healing systems, with its roots in ancient India over 5,000 years ago. India has been using Ayurveda, one of the oldest holistic medicinal systems in the world, for more than 3,000 to 5,000 years. The three biological energies, or doshas, of *vata*, *pitta*, and *kapha*, which are thought to govern physiological and psychological processes, are managed to promote the balance of mind, body, and spirit. This approach has its roots in the Vedic texts, especially the *Atharvaveda* (Micke *et al.*, 2009). The idea of *prakriti*, or a person's distinct constitutional composition, is fundamental to Ayurveda and informs customized therapies meant to improve health, longevity, and quality of life (Teoh, 2016). Dietary plans, herbal remedies, yoga, meditation, and detoxification treatments like *Panchakarma* a five-step cleansing procedure that uses methods like therapeutic vomiting, enemas, and bloodletting to get rid of toxins are just a few of the many therapeutic approaches used by Ayurveda (Cesar *et al.*, 2013). Regional variations of Ayurveda, including *Unani* medicine and *Siddha* medicine in Tamil Nadu, show how the system may



adapt to different cultural situations while preserving its core ideas (Teoh, 2016; Cesar *et al.*, 2013). Despite its long history, Ayurveda is still incorporated into contemporary scientific studies, particularly in fields like stress management, personalized treatment, and phytotherapy. Ayurveda promotes holistic health and psychological well-being through a combination of bioactive herbs, mindfulness practices, and lifestyle routines. Key herbs such as *Ashwagandha*, *Brahmi*, and *Shankhapushpi* are widely recognized for their adaptogenic and neuroprotective properties, helping to reduce stress, improve cognitive function, and enhance mental clarity (Soni & Sharma, 2024). *Rasayanas* like *Amla* and *Chyawanprash* further support rejuvenation and vitality (Najar *et al.*, 2024). Complementing these herbal therapies are mindfulness practices rooted in *Ayurveda*, including meditation, yoga, and *Dinacharya* (daily routines), all of which contribute to emotional balance and mental stability (Soni & Sharma, 2024; Akshay *et al.*, 2024). Additionally, therapies such as *Panchakarma* support detoxification, while dietary modifications are tailored to align with an individual's constitution (*Prakriti*) and seasonal variations. Together, these practices form a comprehensive *Ayurvedic* framework that addresses both physical and psychological aspects of health an approach increasingly validated by recent studies (Sen *et al.*, 2024; Azeem *et al.*, 2024). The inclusion of heavy metals in some conventional preparations, particularly in cancer applications, raises concerns, nevertheless, and requires more research and regulation (Micke *et al.*, 2009). Several studies affirm the effectiveness of Ayurveda in managing chronic non-communicable diseases (NCDs) through safe, holistic, and sustainable interventions. A systematic review protocol supports the use of *Chyawanprash* in improving health outcomes related to NCDs across various populations (Sharma *et al.*, 2023). Qualitative research from OECD (Organization for Economic Cooperation and Development Countries) like Australia, Austria, Belgium, Canada indicates growing global acceptance of Ayurveda as a complementary approach in NCD care (Egwumba *et al.*, 2023). Specific formulations like *Trivrit Avleha* and *Sanjeevani Vati* have shown positive outcomes in chronic kidney disease, with patients reporting improved symptoms and renal function (Ji *et al.*, 2024). Moreover, Ayurvedic principles emphasizing lifestyle changes and diet offer long-term preventive strategies for conditions such as diabetes and cardiovascular diseases (Bhukan *et al.*, 2024). Ayurveda has also shown efficacy in treating Crohn's disease, demonstrating favorable results through its holistic and individualized therapies (Varsakiya *et al.*, 2024). These findings highlight the growing relevance of Ayurveda in global NCD management and underscore the need for further research and integration into modern healthcare systems. Ultimately, Ayurveda's holistic, preventative, and individualized approach to health is what makes it so relevant today. In addition to addressing today's healthcare issues, its incorporation with contemporary research helps people rediscover sustainable and natural health practices (Azeem *et al.*, 2024; Cesar *et al.*, 2013).

Ayurvedic treatments, which are based on a holistic view of the body, mind, and spirit, greatly enhance people's health and happiness by encouraging balance, prevention, and customized care. Here's how:

Table 1 Dosha Balance Restoration for Optimal Health (Khatua *et al.*, 2023)

Dosha Type	Body Type Characteristics	Key Functions	Balance Restoration Methods	Dietary Recommendations	Herbal Remedies & Therapies
Vata	Slim frame, dry skin, variable energy	Nervous system regulation, circulation	- Warm oil massages (sesame/almond oil)- Meditation & gentle yoga-Regular sleep schedule	- Warm, moist foods (soups, stews)- Sweet, sour, salty flavors-Avoid raw/cold foods	- Ashwagandha root powder- Brahmi leaf tea- Dhanwantharam thailam oil
Pitta	Medium build, sensitive skin, intense energy	Metabolism, temperature regulation	- Cooling meditation near water- Moderate exercise (e.g., swimming)- Moonlight exposure	- Cooling foods (cucumber, coconut)- Sweet, bitter, astringent tastes- Avoid spicy/oily foods	- Aloe vera gel- Coriander seed infusion- Shirodhara therapy
Kapha	Sturdy frame, oily skin, steady energy	Immunity, structural integrity	- Vigorous exercise (e.g., aerobics)- Dry heat saunas- Stimulating aromas (Eucalyptus)	- Light, warm foods- Pungent, bitter, astringent tastes- Avoid dairy/heavy meals	- Ginger-turmeric decoction- Triphala churna-Vamana (therapeutic vomiting)

Table:2 Customized Lifestyle for Long-Term Health Ayurveda provides seasonal (*Ritucharya*) and daily (*Dinacharya*) (Teoh, 2016).

Aspect	Description	Key Practices and Recommendations
Ritucharya	Seasonal regimen aimed at maintaining health by adapting diet, lifestyle, and behavior according to seasonal changes. It balances the doshas affected by different seasons to prevent disease and promote vitality.	- Follow seasonal diets emphasizing foods that balance aggravated doshas. - Adjust lifestyle: sleep, exercise, hydration. - Use seasonal herbs and spices. - Six Ayurvedic seasons: Vasanta (Spring), Grishma (Summer), Varsha (Monsoon), Sharad (Autumn), Hemanta (Early Winter), Shishira (Winter).



		• Example: Increase hydrating foods in summer; warming, nourishing foods in winter. • Avoid cold/raw foods in winter to prevent Vata aggravation. Align daily routines with environmental changes. • Prevent seasonal disorders by maintaining dosha balance.
Dinacharya	Daily routine or regimen designed to maintain health and balance by regulating daily activities in harmony with natural cycles.	• Wake up early before sunrise. Oral hygiene: tongue scraping, oil pulling. • Regular elimination and bathing. • Exercise and meditation. • Balanced meals at appropriate times. • Sleep early and maintain consistent sleep schedule. • Avoid overeating and heavy meals at night. • Incorporate self-massage (Abhyanga) with medicated oils. • Adjust activities to support digestion and mental clarity daily.
Purpose of Both	To promote physical, mental, and spiritual well-being by preventing dosha imbalances caused by environmental and lifestyle factors.	• Enhance digestion (Agni) and immunity. • Prevent lifestyle and seasonal diseases. • Support longevity and vitality. • Maintain harmony between body, mind, and environment.



B.Holistic Healing in Western India: The Role of *Rasashastra*

“Rasayanam cha yat proktam tasya prayojanam mahat, deha siddhim param yati maranamtasya nashyati.”

(“The purpose of Rasayana is significant; it leads to the perfection of the body and the destruction of death.”)

A specific area of Ayurveda called *Rasashastra*, which translates to "Science of Mercury," The evolvement of *Rasashastra* as a specialized branch is traced to the great Buddhist Sage *Naagaarjuna*. Who is considered as 'Father of *Rasashastra*'. It is believed to have come into its proper existence with its scientific classification and documentation around the 8th century. *Naagaarjuna* proclaimed “*Siddhe Rase Karishyaami Nirdaridryamidam jagat*” - meaning that I am experimenting with mercury to eliminate poverty from this world. The main foundation being the concept that the objective of the science of mercury is not limited to Alchemy (Dhaatuvaada) but also to maintain health and strengthen the body for achieving *Mukti* i.e. ultimate salvation- the concept is incorporated in the sloka as :“*Na Ca Rasashaastram Dhaatuvaadaartham Iti Mantavyam, Dehavedhadvaaraa Muktirev Paramaprayojanaat.*” ([Anonymous-2004](#)) Ravishankar, B. (2011). The therapeutic formulations from medicinal herbs, minerals, and metals particularly mercury and its compounds, or *Rasa dravyas*, emphasizing the importance of dietary regimens alongside these treatments,.According to Jatoliya *et al.* (2024), important texts like "*Rasendra Chudamani*" and "*Rasaratnakara*" offer thorough insights into the preparation and therapeutic uses of metals and minerals, highlighting procedures like "*Shodhana*" (purification) and "*Marana*" (calcination) that make these materials safe for use in medicine.

As far as science is concerned, *Rasashastra* seems wonderfully prophetic. The calcination process that produces *Bhasmas* frequently produces nanoparticles, which are structures that are now recognized by modern science for their improved cellular absorption and bioavailability. Numerous Ayurvedic *Bhasmas*, including *Swarna Bhasma* (gold calx), have been shown to have nanoscale dimensions and to have anti-inflammatory, immunomodulatory, and neuroprotective qualities (Savrikar & Ravishankar, 2011; Hussain, 2018). These discoveries establish a connection between modern disciplines such as pharmacognosy and nanomedicine and ancient Ayurvedic pharmacology. *Rasashastra* also demonstrates a sophisticated understanding of pharmacodynamics through the use of herbo-mineral formulations, which are combinations of minerals and herbs some are mentioned in Table no. 4. These classical formulations—such as *Amapachaka Vati* - An Ayurvedic herbo-mineral formulation primarily used for digestive disorders, particularly *Agnimandhya* (poor digestion) and *Ajirna* (indigestion), is derived from the classical preparation *Shoolaharana Yoga*. It combines various herbal and mineral ingredients known to synergistically enhance digestive function and therapeutic efficacy (Rathod & Vyas, 2024) *Kravyada Rasa* - A notable herbo-mineral formulation in Ayurveda is primarily utilized for addressing digestive disorders such as *Agnimandhya* (weak digestive fire) and *Ajeerna* (indigestion) . This classical preparation incorporates potent ingredients like *Parada* (purified mercury), *Gandhaka* (purified sulfur), and various *bhasmas* (calcined and purified metals), which are subjected to a meticulous *shodhana* (purification) and *bhavana* (levigation) process using specific herbal media. These procedures are crucial for detoxifying the metals and enhancing their bioavailability and therapeutic potency . In the broader context of *Rasayana*, the Ayurvedic branch dedicated to rejuvenation, vitality, and longevity, such formulations play a pivotal



role in not only managing digestive ailments but also in promoting systemic health and preventing age-related degenerative conditions (Srikanth, 2024) and *Chandrakala Rasa*— a herbo-mineral formulation classified under Kharaliya Rasa, primarily utilized for treating various conditions such as dysuria, bleeding disorders, and diabetes mellitus. Its therapeutic applications extend to managing Pitta Vikara, including Raktapitta (bleeding disorders) and Jwara (fever)(Fattepur et al., 2024) Their preparation techniques often involve intricate procedures like levigation (*bhavana*), trituration, and purification (*shodhana*), which are critical for enhancing the bioavailability, potency, and safety of the end products (Vimalan *et.al* 2021)). For example, *Chukkumthippalyadi Gulika* is traditionally recognized for its broad-spectrum antipyretic activity, effectively managing various types of fevers. Similarly, *Chandrodaya Rasa*, prepared through the *Kupipakwa Rasayana* technique, highlights the importance of precise ingredient selection and controlled thermal processing to ensure deep cellular penetration and rejuvenation(Sathe *et al.*, 2022). Despite their historical significance and empirical use, many of these formulations require rigorous clinical evaluation and pharmacological validation to substantiate their therapeutic claims and establish standardized safety profiles (Rathod & Vyas, 2024).These formulations aim to improve therapeutic efficacy while reducing toxicity. These methods are becoming more and more applicable to contemporary drug research, especially when it comes to targeted therapies and synergistic chemicals. Additionally, Rasashastra's Rasayana element, which emphasizes renewal and illness prevention, is highly compatible with preventive medicine and holistic health approaches, which are becoming more and more well-liked globally (Srikanth, 2024). This age-old field also lends credence to the contemporary ideas of individualized medicine. The idea of *Prakriti*, or individual constitution, in Ayurveda aligns with genomic-based healthcare models and systems biology, providing a personalized approach to wellness and treatment (Payyappallimana & Venkatasubramanian, 2016). Furthermore, contemporary nutritional research finds resonance in the Ayurvedic dietary philosophy, which views food as medicine, especially in the treatment of chronic illnesses like cancer and diabetes (Pal & Pant, 2014). When used in modern healthcare settings, *Rasashastra* has a number of difficulties despite its potential. These include the requirement for strong scientific support, formulation standardization, quality assurance, and public education. Heavy metal toxicity is still a concern, particularly when processing procedures are not strictly adhered to. However, effective integration models, like those supported by India's AYUSH Ministry, show that combining traditional and contemporary medicine may be done to enhance healthcare results and accessibility (Kalra *et al.*, 2024).

Table: 4 Rasashastra Formulation

Formulation	Traditional Use	Preparation Methods	Modern Scientific Relevance	Citations
<i>Amapachaka Vati</i>	Treats digestive disturbances	<i>Bhavana</i> (levigation), <i>Shodhana</i> (purification), <i>Trituration</i>	Supports gut health and detoxification	Rathod & Vyas (2024);
<i>Kravyada Rasa</i>	Used for digestive and metabolic disorders	Complex herbo-mineral preparation	Demonstrates synergistic effects of herbs and minerals	Fattepur <i>et al.</i> (2024)



Chandrakala Rasa	Used for bleeding disorders and fevers	<i>Shodhana, Bhavana</i>	Potential anti-inflammatory and hemostatic properties	<i>Vimalan & Antony (2021)</i>
Chandrodaya Rasa	Rejuvenation and cellular therapy	<i>Kupipakwa Rasayana (sealed-fire process), thermal processing</i>	Demonstrates deep cellular penetration; aligns with nanomedicine	<i>Sathe et al. (2022)</i>
Swarna Bhasma (Gold calx)	Used for immune modulation, anti-aging, cognitive support	<i>Marana (calcination), repeated incineration and purification</i>	Proven nanoscale structure, neuroprotective and immunomodulatory effects	<i>Hussain (2018)</i>

C.Siddha Medicine: Healing from Nature

“காடுகளின் மருந்த்கள் அனைத்தும் இயற்கையின் பரிசுகள்”

Kaadugalin marundugal anaitthum iyarkaiyin parisugal

(All forest medicines are gifts of nature)

~ *Thirumoolar's Thirumanthiram*

The *Siddha* system of medicine, one of the oldest traditional medical systems, originated in South India, particularly Tamil Nadu, and is deeply rooted in ancient Tamil culture. Developed by the *Siddhars* Tamil sages and spiritual scholars the system promotes a holistic approach to health that balances the body, mind, and spirit through diet, lifestyle regulation, and natural therapies. *Siddha* medicine utilizes a rich pharmacopeia of herbs, minerals, animal products, and marine resources, such as *Palagarai* (*Cypraea moneta* Linn), to create potent remedies. A hallmark of *Siddha* is its use of Herbo mineral formulations, valued for their long shelf life, efficacy in small doses, and superior therapeutic potential compared to herbal remedies alone (Devi et al., 2019). Based on the idea of the five elements (*Aimpootham*) earth, water, fire, air, and space and how they affect the three humors (*Mukkuttram*) *Vali* (air), *Azhal* (fire), and *Iyyam* (water) which correlate to the *doshas* in *Ayurveda*, *Siddha's* fundamental principle is established (Thillaivanan et al., 2010). *Siddha* medicine is unique in that it makes sophisticated use of highly processed metals and minerals, such as arsenic, iron, gold, and mercury. These undergo complex purifying and burning processes to produce *Chenduram* (red oxides) and *Parpam* (calcined powders), which are said to be safe and effective at very low dosages. *Siddha* pharmacology exhibits early applications of concepts similar to contemporary nanotechnology, much as *Ayurvedic Rasashastra* (Sujithra et al., 2022). According to research, *Siddha* formulations frequently include nanoparticles that can improve therapeutic efficacy and absorption (Rajkumar & Meenakshi, 2014). Additionally, *Kayakalpa*, a rejuvenation treatment meant to postpone aging and encourage lifespan, is highly valued in *Siddha* medicine. These treatments incorporate



yoga, meditation, nutritional control, and herbal-mineral formulations, all of which align with contemporary integrative and preventive healthcare methodologies. In order to find new leads for medication discovery and disease treatment, the *Siddhars* also recorded their expertise in palm-leaf manuscripts, many of which are currently being digitized and examined (Pitchiah Kumaravel, 2017). Notable examples from *Siddha* medicine include herbal formulations such as *Thippili Rasayanam*, *Adathodai Kudineer*, and *Amukkara Chooranam*, which have demonstrated therapeutic potential in managing COVID-19 variants, showing rapid patient recovery with minimal adverse effects (Chitra *et al.*, 2023). Additionally, traditional medicinal powders like *Thayirchundi Chooranam* are widely used for gastrointestinal ailments, including indigestion and flatulence, reflecting *Siddha*'s focus on digestive health. A unique *Siddha* preparation, *Chunnam*—a calcinated nanoparticle-based powder—is indicated in the management of chronic conditions such as tuberculosis, cancer, and certain metabolic disorders, leveraging advanced pharmaceutical concepts rooted in ancient practices (Devaki, 2023; Indrakumar *et al.*, 2023). In the domain of oral health, *Siddha* formulations such as *Kalnar Parpam* and *Lavangapattai Thailam* are employed to treat conditions like dental caries, gingivitis, and mouth ulcers, offering natural alternatives to synthetic treatments (Mary *et al.*, 2023). Furthermore, *Siddha* medicine emphasizes individualized dietary regimens based on one's body constitution (*Udaliyal*) and seasonal variations, integrating nutrition with preventive healthcare to promote holistic well-being (Elangovan *et al.*, 2023).

Several researches show how *Siddha* medicine may be validated using contemporary scientific methods, indicating how it can be incorporated into modern medical procedures. For example, a recent study of 1206 people examined the traditional *Siddha* understanding of diabetes mellitus, which takes into account variables like gender, marital status, and lifestyle. The results showed significant correlations with ancient texts, highlighting the need for additional scientific validation of *Siddha* principles in the context of diabetes (Vijay *et al.*, 2019). Similarly, contemporary research has confirmed the antimicrobial, antifungal, and anthelmintic properties of *Butea Monosperma*, a plant that has been widely mentioned in *Siddha* literature. This validates the ancient claims of its efficacy in treating a variety of ailments (Niruba, 2017). Additionally, scientific analysis of the *Siddha* polyherbal compound "*Raasa Amirthathy Chooranam*" has demonstrated its anti-tuberculosis, antibacterial, and anti-inflammatory qualities, substantiating its traditional use in treating tuberculosis-like diseases (M & R, 2021). Through extensive scientific testing, including in vitro studies on HeLa cell lines, the herbo-mineral formulation "*Rasa Parpam*" has been validated for its anti-cancer properties, particularly against cervical cancer, indicating its potential as a non-toxic alternative to conventional cancer therapies (Deepa, 2017). The anti-inflammatory qualities of the *Siddha* therapeutic snuff "*Navatchara Aakiranam*" have also been confirmed by standardization and in vitro testing, which is consistent with its traditional use to treat sinusitis (Muniraj *et al.*, 2023). Together, these findings show how *Siddha* medicine can be verified by science, providing a link between conventional wisdom and contemporary medical research. Some of the modern science relevance are mentioned in the Table no. 5.



Table: 5 *Siddha* Medicines

Formulation	Traditional Use	Preparation/Key Features	Modern Scientific Relevance	Citations
Thippili Rasayanam	Therapeutic for managing respiratory ailments including COVID-19	Herbomineral formulation with potent bioactive compounds	Shown efficacy against COVID-19, supporting rapid recovery without adverse effects	Chitra <i>et al.</i> (2023)
Adathodai Kudineer	Used for respiratory disorders	Herbal decoction, part of classical Siddha pharmacopeia	Demonstrated therapeutic potential in respiratory infections including COVID-19	Chitra <i>et al.</i> (2023)
Amukkara Choornam	General health tonic, immune booster	Herbal powder formulation	Supports immunity and recovery in viral infections	Chitra <i>et al.</i> (2023)
Thayirchundi Chooranam	Treatment of gastrointestinal issues like indigestion, flatulence	Herbal powder, traditionally prepared	Used widely in digestive health, aligns with modern focus on gut health	Devi <i>et al.</i> (2019)
Chunnam (Calcinated powder)	Chronic diseases: tuberculosis, cancer, metabolic disorders	Calcinated nanoparticle powder; advanced pharmaceutical concepts	Nanoparticle-based formulations enhance bioavailability and therapeutic efficacy	Indrakumar <i>et al.</i> (2023)
Kalnar Parpam & Lavangapattai Thailam	Oral health: dental caries, gingivitis, mouth ulcers	Herbomineral and oil-based formulations	Natural alternatives to synthetic oral care products	Mary <i>et al.</i> (2023)
Kayakalpa Therapy	Rejuvenation, anti-aging,	Integrated use of yoga, meditation,	Aligns with preventive and	Sujithra <i>et al.</i> (2022)



	lifespan extension	nutrition, Herbo mineral medicines	integrative medicine concepts	
<i>Butea monosperma (Plant)</i>	Antimicrobial, antifungal, anthelmintic agent	Plant-based extracts used in Siddha medicine	Scientific validation supports traditional claims for treating infections	Niruba (2017)
<i>Raasa Amirthathy Chooranam</i>	Anti-tuberculosis, antibacterial, anti-inflammatory	Polyherbal compound	Validated scientifically for efficacy against tuberculosis-like diseases	Vimalan, & Antony Duraichi, R. (2021)
<i>Rasa Parpam</i>	Anti-cancer, particularly cervical cancer	Herbo-mineral formulation, nanoparticle-based	In vitro studies confirm anti-cancer properties and non-toxic nature	Deepa (2017)
<i>Navatchara Aakiranam</i>	Treatment of sinusitis, anti-inflammatory	Therapeutic snuff	Standardized and in vitro tested; confirms traditional use	Muniraj et al. (2023)

D.Unani Medicine: Natural Healing Concepts

Unani medicine, which has its roots in ancient Greek customs and was subsequently greatly expanded upon by Islamic experts, has had a major impact on medical systems throughout the world, including those in Europe starting in the 17th century. Hippocrates and Galen's writings were thoroughly analyzed, preserved, and elaborated upon by distinguished medical professionals and academics during the Islamic Golden Age, establishing the groundwork for a methodical and scientific approach to healing (Islam, 2018; Viqar *et al.*, 2021). Later, this Greco-Arabic approach was adopted into India and developed into a unique kind of traditional medicine that is still widely used today. The fundamental idea of *Unani* medicine is its all-encompassing approach to health, which emphasizes balance between the environment and the body's physiological systems. Elements (*arkan*), temperament (*mizaj*), humors (*akhlat*), organs (*aaza*), vital spirit (*arwah*), capacities (*quwa*), and physical functions (*afa'al*) are the seven fundamental principles (*al-umoor al-tabiyyah*) that are at the heart of this philosophy (Rol-Tanguy, 2023). Together, these guidelines seek to keep the body's four main humors—blood, phlegm, yellow bile, and black bile—balanced. This balance is thought to be upset by illness, and it can be restored with multimodal therapy and individualized diagnoses (Alam *et al.*, 2023; Wadud, 2022). Diet treatment (*Ilaj bil Ghiza*), regimental therapy (*Ilaj bil Tadbeer*), medication (*Ilaj bil Dawa*), and surgery (*Ilaj bil Yad*) are all part of the comprehensive therapeutic system provided by *Unani* medicine. *Unani*'s sophisticated understanding of preventive and rehabilitative care is demonstrated by regimented therapies like cupping (*Hijama*), massage (*Dalak*), steam baths, and bloodletting—practices that are in line with contemporary wellness,



detoxification, and physiotherapy (Hippocratic J, 2016). Because they place a strong emphasis on seasonal eating, diets tailored to a person's temperament, and the use of food as a preventative and therapeutic tool, *Unani's* dietary concepts are especially in line with contemporary nutritional science. Importantly, *Unani* medicine does not distinguish between mental and emotional health and physical health. Its focus on temperament (*mizaj*) foreshadows current trends in precision medicine and enables an individualized approach to therapy. With few adverse effects, several polyherbal *Unani* formulations made from herbal *Colchicum luteum* (*Suranjan Shirin*), mineral *Laccifer lacca* (*Luk-e-Maghsool*, a resin from insect secretion), and animal otoliths (fish ear bones), pancreatic extracts sources are used to treat chronic illnesses such as migraine, anemia, arthritis, and digestive issues (Siddiqui *et al.*, 2024; Sameen *et al.*, 2025). In the realm of cosmeceuticals, *Unani* formulations such as *ghaza*, *ghamra*, *ghaliya*, and *ubtan* exemplify traditional approaches to skincare, utilizing natural ingredients like neem, turmeric, rose water, and aloe vera. These are acclaimed for their dermatological benefits and are largely free from the adverse effects commonly associated with synthetic cosmetic products (Begum & Idris, 2016). The growing global preference for plant-based, side-effect-free skincare highlights the relevance of such formulations in contemporary wellness industries. Therapeutically, *Unani* medicine has shown promising applications across a spectrum of modern health challenges. For instance, during the COVID-19 pandemic, formulations like *Tiryaq Wabai*, *Arq-e-Ajeeb*, and *Habb-e-Loban* were explored as adjuvant therapies to standard allopathic care. Clinical evaluations reported improvements in lymphocyte counts, symptom resolution, and overall recovery with no significant adverse effects, highlighting their immunomodulatory and antiviral potential (Kumar *et al.*, 2023). In the management of nephrotic syndrome, classical *Unani* preparations such as *Sharbat Buzoori Moatadil* and *Majoon Dabeed-ul-Ward* have demonstrated encouraging outcomes, including improvements in kidney function, reduced edema, and better fluid retention control (Sabir *et al.*, 2024). Similarly, in chronic plaque psoriasis, formulations like *Ma'jūn Mundī* and *Qairūtī Karnab* have shown statistically significant reductions in the Psoriasis Area and Severity Index (PASI). These results suggest effective anti-inflammatory and skin-regenerative actions, offering an alternative, holistic option for dermatological care without adverse effects (Fatima *et al.*, 2022).

This makes *Unani* a strong alternative to traditional treatment, especially when it comes to treating non-communicable diseases and enhancing life quality. Thousands of formulations made from plants, minerals, and animal products are included in the *Unani* pharmacopeia. Under the guidance of organizations such as the Central Council for Research in *Unani* Medicine (CCRUM), several of these polyherbal medications have been standardized. Numerous *Unani* treatments have been shown to be effective in treating chronic conditions like diabetes, hypertension, arthritis, and skin disorders (Siddiqui *et al.*, 2021).

E.Sowa-Rigpa (Amchi Medicine – Ladakh, Sikkim, Arunachal Pradesh)

The *Sowa-Rigpa*, which translates to "the science of healing" in Tibetan, is a traditional medical system that is used in portions of Tibet, Bhutan, and Mongolia as well as in Ladakh, Sikkim, Arunachal Pradesh, and Himachal Pradesh. It shares significant similarities with Ayurveda, particularly in concepts such as *Tridosha* and *Panchamahabhuta* and It has historical significance as one of the oldest medicinal traditions in the world, dating back more than 2,500 years to *Shang Shung's* pre-Buddhist period. Beginning in the third century AD, Indian Ayurvedic practices had a significant impact on its development. This was especially true after Buddhism was introduced to Tibet in the seventh century, which made it easier to translate and preserve many medical texts (Stobgais *et al.*, 2023) (Sarsina *et al.*, 2011). The system's



distinctive theoretical underpinnings, which support its physiological and pharmacological methods, include the ideas of the three humors and the five elements (Gurmet, 2004). Key examples of *Sowa-Rigpa* treatments include the use of precious pills, such as "*Jikmé's Old Turquoise-70*," which are formulated from a combination of plants, minerals, and animal-derived substances, reflecting the system's holistic approach to health. In 2010, the Indian government officially recognized *Sowa-Rigpa* as one of the Indian medicinal systems under the Ministry of AYUSH, along with *Ayurveda*, *Yoga*, *Naturopathy*, *Unani*, *Siddha*, and *Homeopathy*. Organizations like the National Institute for *Sowa-Rigpa* (NISR) in Leh, Ladakh, have been established for the purpose of studying and disseminating it. It is a part of India's cultural and medical heritage, particularly in the Himalayan regions. It Offers a great deal of promise for improving patient care and treating chronic illnesses in modern healthcare systems. *Sowa-Rigpa*, which has its roots in a holistic concept of the body-mind-environment nexus, places a strong emphasis on disease prevention, lifestyle management, and long-term health maintenance. These ideas are in line with contemporary complementary and alternative medicine (CAM) techniques (Gupta, 2024; Javed *et al.*, 2021). *Sowa-Rigpa's* focus on natural self-healing and preventive care complements the disease-centered approach of modern medicine, offering strategies like personalized treatment protocols that have shown promise in managing chronic conditions (Kalra *et al.*, 2024). *Sowa-Rigpa* presents a more holistic viewpoint, emphasizing balance between internal body energies (*nyepa*) and external environmental effects, in contrast to Western biomedicine, which mostly concentrates on acute care and symptomatic alleviation. During the COVID-19 epidemic, this system's importance was very clear. Tibetan doctors demonstrated the system's adaptability, resilience, and therapeutic capacity in modern catastrophes by skillfully modifying conventional diagnostic and treatment protocols to address the crisis (Tidwell & Gyamtso, 2021). These modifications not only strengthened the fundamental ideas of *Sowa-Rigpa* but also created new avenues for incorporating them into more comprehensive health initiatives. Additionally, the combination of contemporary digital tools like artificial intelligence and electronic health records with classical *Sowa-Rigpa* diagnostics shows potential for individualized treatment regimens. Practitioners can improve clinical accuracy while maintaining conventional ways by using AI to assess pulse measurements or find appropriate herbal formulas (Singh *et al.*, 2024). By combining traditional wisdom with modern technology, this hybrid approach has the potential to revolutionize holistic care in the twenty-first century.

F.Folk and Tribal Medicine (Pan-India)

Folk and tribal medicine in India embodies a vast and nuanced system of indigenous healing practices that have evolved over centuries, often functioning alongside formal systems like various forms such as *Ayurveda*, *Siddha*, and *Unani*, alongside unique folk remedies practiced by indigenous communities. Folk medicine, often referred to as "hand remedies" or "grandmother's remedies," has been integral to Indian society since the Vedic period, with practitioners relying on local herbs and natural resources for treatment (Sood *et al.*, 2019). For instance, the use of *Rauwolfia serpentina* for hypertension and *Catharanthus roseus* for leukemia exemplifies the significant contributions of traditional knowledge to modern pharmacology (Sinha, 1999). These traditions are deeply embedded in local cultures and ecosystems, utilizing a rich variety of medicinal plants, animal products, and spiritual practices passed down through oral traditions. For instance, tribes such as the *Gonds*, *Baigas*, and *Santhals* in Central India rely on forest-based medicine and sacred groves, which serve both as sources of healing plants and as biodiversity conservation areas (Maravi *et al.*, 2017; Jain *et al.*, 2011; Hamilton, 2022). The Baigas, in



particular, are known to use over 59 plant species for therapeutic purposes, far surpassing the medicinal knowledge of neighbouring tribes (Parvez *et al.*, 2023). In the Western Himalayas, traditional ecological knowledge is closely tied to conservation, reflecting a harmonious relationship between health and the environment (Lal & Prasher, 2016). Oral transmission of knowledge remains central, with communities like the Bonda tribe depending on elders and traditional healers (*Desaris*) to maintain and pass down Indigenous Medicinal Knowledge (IMK) (Kumari *et al.*, 2024). Similar knowledge-sharing systems exist in other indigenous contexts, such as among the *asing'anga* in Zambia (Mvula, 2023), highlighting the global relevance of oral medical traditions. In Northeast India, traditional healers including herbalists, bone setters, and birth attendants are vital to rural healthcare. The Khasi tribe of Meghalaya, for example, uses plants from the *Zingiberaceae* family (*Hedychium spicatum*, *Kaempferia rotunda*

, *Amomum subulatum*) for bone healing, while tribes in Nagaland—such as the Ao, Angami, Lotha, and Sema employ over 250 ethnomedicinal species (Hinge *et al.*, 2025; Laskar, 2014). Despite high literacy rates, the lack of robust modern healthcare infrastructure in this region makes traditional remedies indispensable. Medicinal plants such as *Bhoot Jolokia*, *Artemisia*, *Perilla*, and *Piper longum* are widely used for various ailments, with some of these documented in Table No. 5. (Kumar *et al.*, 2023; Devi *et al.*, 2022). Ethnozoological practices involve the use of animal parts for treating various ailments and are deeply rooted in tribal traditions. Among the *Khasis* of Meghalaya, bile juice from cows and bears is used to treat malaria. In *Chhindwara*, Madhya Pradesh, tribal healers use blood, bones, excreta, and other parts from animals to manage conditions like asthma, arthritis, and rheumatism, further highlight the system's complexity and breadth (Singh *et al.*, 2020). Scholars argue that integrating this rich corpus of knowledge into modern healthcare can enhance accessibility and offer novel therapeutic options, especially in underserved areas (Joshi & Vashist, 2018; Sood *et al.*, 2019). Medical anthropologists stress the need for systematic documentation and validation of these practices to preserve cultural heritage and ensure their responsible inclusion in contemporary health systems (“Medical Resources in Tribal Culture,” 1996). As India moves toward a more inclusive healthcare framework, these traditional systems hold immense potential for contributing to a culturally rooted and ecologically sustainable model of care.

4.Importance of Indian Knowledge System through Traditional Indian Medicine for Morden India

Traditional Indian medicine has a lot of promise to improve healthcare affordability, accessibility, and overall health, especially in underserved and rural areas. Traditional healthcare systems like Ayurveda, Siddha, and Unani are crucial in areas where modern services are frequently unavailable or prohibitively expensive, as almost (65%) of India's population lives in rural areas (Kushwaha, 2022). Millions of people may afford these systems since they use affordable, locally accessible solutions, particularly in light of the growing trend of healthcare privatization (Bheenaveni, 2016). Since these traditional techniques are efficient in managing chronic ailments and promoting preventive healthcare, the Ministry of AYUSH has aggressively promoted them (Premachandra, 2011). The non-pharmacological methods of Ayurveda, which prioritize nutrition, lifestyle changes, and the use of common medicinal plants, fit very nicely with the objectives of preventive and sustainable healthcare (Kushwaha, 2022). With the growing public interest in immunity and wellness in recent years, this has become particularly pertinent. This trend is demonstrated by the revival of *Ayurvedic* treatments such as *Chyawanprash*, which is renowned for its immune-boosting and rejuvenating qualities and comprises over forty herbs (Singh *et al.*, 2024). Due to its demonstrated advantages in stress management, mental health enhancement, and the prevention of lifestyle diseases,



yoga—a discipline with strong roots in Indian tradition—has become more popular worldwide alongside Ayurveda (Biswas & Debnath, 2017). Combining allopathic and traditional medicine offers a possible route to individualized, integrated care. According to Kalra *et al.* (2024), holistic methods are especially useful for treating chronic illnesses when traditional treatment frequently fails. Natural treatments including ashwagandha, giloy, and tulsi became commonplace during the COVID-19 pandemic, and ancient methods received renewed attention for their ability to strengthen immunity and advance general health (Verma, 2021).

The bioactive ingredients in conventional herbal remedies are also attracting more and more scientific attention. Significant antioxidant, anti-inflammatory, antibacterial, and neuroprotective properties are displayed by phytochemicals including polyphenols, flavonoids, alkaloids, and terpenoids that are generated by metabolic pathways such as the shikimic acid and mevalonic acid pathways (Ramawat *et al.*, 2009; Gupta, 2023). These substances have been essential in the creation of nutraceuticals and health supplements, as well as in the search for new drugs to treat diseases like cancer, heart disease, and malaria. Furthermore, the potential of these herbal substances to be tailored based on individual genetic profiles, optimizing efficacy and limiting adverse effects, has been further underlined by the rise of integrative and personalized medicine (Osman & Minorics, 2024). To guarantee uniformity, safety, and therapeutic efficacy, however, extensive use necessitates stringent clinical validation and strong quality control (Gupta, 2023; Ramawat *et al.*, 2009). In conclusion, traditional Indian medicine provides a scientifically promising, financially viable, and culturally based alternative to contemporary healthcare.

5. Policy Support and Future Directions

The AYUSH (*Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homeopathy*) sector is crucial in creating a more comprehensive healthcare framework, and the incorporation of traditional medicine into India's public health system is progressing quickly. By focusing on long-term management of chronic diseases, individualized treatment, and preventative care, traditional Indian medical systems especially *Ayurveda, Siddha, and Unani*—offer complementary approaches to allopathic medicine (Kalra *et al.*, 2024). The World Health Organization's (WHO) Sustainable Development Goals (SDGs) are supported by this integrative vision, which is in line with the National Health Policy 2017 (Saxena *et al.*, 2024; Acharya & Padhan, 2023). There has been substantial institutional and financial expansion in the AYUSH business. The number of AYUSH educational institutions has expanded from 495 in 2010 to 735 in 2019, and budget allocations have increased from

₹1,214 crores in 2015–16 to ₹3,050 crores in 2022–23 ("Perspectives on Ayush Sector: Innovations for Future Integrative Health Systems", 2022). To lead research, education, and standardization of traditional treatments, national institutes devoted to *Ayurveda, Unani*, and other systems have been founded. Furthermore, the goal of developing integrative health models, like those supported by the AYUSH-ICMR Advanced Centre for Integrative Research, is to successfully incorporate traditional methods into mainstream healthcare systems while also providing scientific validation for them (Singhal *et al.*, 2024). The integration of indigenous medicinal knowledge is also greatly aided by state-level programs and Tribal Research Institutes. These organizations can support the documentation and standardization of regional healing traditions, foster research collaborations, and raise public knowledge of the advantages of



traditional medicine (Saxena *et al.*, 2024). Centralized hubs for training practitioners, sharing verified knowledge, and advancing evidence-based traditional medicine include platforms such as the AYUSH Portal. WHO's strong support of traditional and complementary medicine is an example of policy alignment on a global scale. The relevance of TCM in attaining universal health coverage is highlighted by the WHO Traditional Medicine Strategy, particularly in underprivileged communities where traditional medicine frequently acts as the main source of care (Cramer, 2023). Further evidence of the world's recognition of India's leadership in this field and its ability to contribute to global health solutions is the WHO Global Centre for Traditional Medicine's establishment in India (Patwardhan *et al.*, 2023; Cramer, 2023).

In order to guarantee safe, efficient, and moral procedures, WHO-led programs also place a strong emphasis on training requirements, regulatory frameworks, and cooperation between biomedical experts and traditional healers (Dalamagka, 2024). The effectiveness of Ayurveda, herbal remedies, and integrative practices in treating chronic illnesses, improving patient outcomes, and lowering reliance on synthetic drugs is still being shown by an increasing amount of clinical and pharmacological research (Kalra *et al.*, 2024; Patwardhan *et al.*, 2023). All things considered, these advancements signify a paradigm change in healthcare policy, one that values an integrated and diverse approach.

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