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Dr. Shreyashe Awadhkishor Nayak
MD Scholar, Department of

Dravyagunvigyan, CSMSS
Ayurved College, Hospital and
Research Centre, Kanchanwadi,
Chhatrapati Sambhajanagar,
Maharashtra, India

Dr. Jyotsna Kulkarni

Associate professor Dept of
Dravyagunvigyan, CSMSS
Ayurved College, Hospital and
Research Centre, Kanchanwadi,
Chhatrapati Sambhajanagar,
Maharashtra, India

Dr. Aparna M Ghotankar

Professor & HOD, Department
of Dravyagunvigyan, CSMSS
Ayurved College, Hospital and
Research Centre, Kanchanwadi,
Chhatrapati Sambhajanagar,
Maharashtra, India

Corresponding Author:

Dr. Shreyashe Awadhkishor Nayak

MD Scholar, Department of
Dravyagunvigyan, CSMSS
Ayurved College, Hospital and
Research Centre, Kanchanwadi,
Chhatrapati Sambhajanagar,
Maharashtra, India

Understanding Bhoomi: Ayurvedic and modern views on soil and medicine

Shreyashe Awadhkishor Nayak, Jyotsna Kulkarni and Aparna M Ghotankar

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Abstract

Dravya is an important concept in *Ayurveda*, acting as a source of various properties like *Guna* (qualities), *Karma* (action), *Rasa* (taste), *Virya* (potency), and *Vipaka* (post-digestive effect), which influence its effects on the body. The quality of herbal *Dravya*, whether grown on farms or collected from forests, depends on the type of soil and land where it grows. Ancient texts like the *Samhitas* and *Vedas* describe *BhoomiPariksha* (soil testing) in detail, highlighting its role in farming and medicinal plant cultivation. The success of *Ayurveda*'s four key pillars-*Bhishak* (doctor), *Aushadhi* (medicine), *Rugna* (patient), and *Paricharak* (caretaker)-relies on the quality of medicines, which in turn depends on fertile soil (*PrashastaBhoomi*).

Modern science also recognizes that nutrient-rich soil is essential for plant growth. Farmers often add natural supplements like nitrogen, phosphorus, and manganese to improve soil fertility. However, pollution from air and water can lower the medicinal value of plants. Proper soil testing is important not just for farming but also for deciding land use for drinking water sources, roads, and buildings. *Ayurveda* teaches that a patient's health is influenced by their environment, and medicines should come from their natural habitat for the best results. By combining ancient wisdom with modern scientific methods, we can improve agriculture and produce high-quality medicinal plants.

Keywords: Ayurveda, Dravya, Bhoomi Pariksha, soil testing

Introduction

In the present era of globalization, the development of mankind has become a major subject of discussion. Advancements in communication, technology, and media have brought distant places closer than ever before. However, along with these benefits, misuse has also occurred. Man has adopted food habits and lifestyles that are often unsuited to his native environment, leading to various psychosomatic disorders. In such conditions, he frequently turns to modern therapies, considering *Ayurvedic* drugs to yield unreliable results.

For a long time, the issue of standardization of *Ayurvedic* drugs has been a prominent concern, yet no conclusive outcome has been achieved. One of the reasons for this is that we have neglected the classical concepts and the profound Sutras given by our respected *Aacharyas*. In this age of globalization, it is essential to remember the quotation of *Aacharya Charaka* in *Vimansthan* ^[1], which emphasizes the significance of *Desha* and *Bhoomi*.

References to *Bhoomi* are found as early as the Vedic kala, where classifications of *PrashastaBhoomi* were made for the cultivation of plants. At the primary level, *Urvara*, *Irin*, and *ShashyaBhoomi* were recognized. In the *Atharvaveda*, *Yajurveda*, and *Taittiriya Upanishad*, soils are further described as *Mruda*, *Mrutika*, *Rajas Bhoomi*, *Ashama*, *Ashamanti*, *Kinshil*, *Iriya*, *Urevara*, and *Uarvarya* ^[2].

Plants are nourished by groundwater, which absorbs different salts contained in the soil. These constituents vary according to the *Bhutika* predominance, and consequently, the *rasa* (taste), *gandha* (smell), and *varna* (color) of plants also change. Thus, the *guna-karma* (qualities and actions) of a plant are directly influenced by the nature of the soil.

The standardization of *Ayurvedic* medicines remains an ongoing challenge. One major reason for this is the neglect of ancient principles and teachings from *Ayurvedic* scholars (Aacharyas). *Ayurveda* emphasizes the importance of *Bhoomi* (land/soil) in the growth and potency of medicinal plants. References to *Bhoomi* have existed since the Vedic period, and texts such as the *Atharvaveda*, *Yajurveda*, and *Taittiriya Upanishad* classify land into different types based on fertility and properties.

Despite the importance of this principle, the applied aspect of the *Ayurvedic* concept of *Bhoomi* has largely remained unexplored. Hence, an attempt is made here to re-establish and validate the concept by assessing drugs and their actions through experimental studies.

Ayurvedic Concept of *Bhoomi*

Definition

The term *Desha* refers to a specific geographical area or region, directing attention to the properties and influence of a particular land.

In *Vrikshayurveda*, three primary types of *Bhoomi* are mentioned:

1. *Anupa* (wet area),
2. *Jangala* (dry area), and
3. *Sadharana* (balanced area).

Further, all *Aacharyas* describe six varieties of *Bhoomi* based on color: *Krishna* (blackish), *Pandu*, *Shyamala*, *Lohita* (reddish), *Shweta*, and *Peeta* (yellowish).

Similarly, on the basis of taste, soils are classified as *Madhura*, *Amla*, *Lavana*, *Tikta*, *Katu*, and *Kashaya* [3].

Types of *Desha*

According to *Vrikshayurveda* and other classical texts, *Desha* is classified into three main types:

1. *AnupaDesha* (Wet / Marshy region)
2. *JangalaDesha* (Arid / Desert-like region)
3. *SadharanaDesha* (Balanced climate region) [4].

A. *AnupaDesha*

Charaka Samhita

AnupaDesha is described as marshy land, usually found along riverbanks and seashores, characterized by dense forests of trees such as hintal, tamala, narikela, and kadali. The region is cool, with abundant vegetation and melodious bird sounds. People of this region generally have tender bodies, with predominance of *Vata* and *Kaphadosha* [5].

Sushruta Samhita

This region is defined by abundant water, uneven surfaces, high rainfall, and continuous cool breezes. People here are prone to *Kapha-Vata* disorders [6].

Raj Nighantu

AnupaDesha is described as a land rich in ponds, waterfalls, and red-colored soil, producing various grains. It increases *Udararoga* and *Amadosha*, but pacifies *Pitta*.

Bhavaprakasha

Characterized by rivers, mountains, water reservoirs, lotus-filled ponds, and animals like buffalo, deer, and swan. The climate aggravates *Vata* and *Kapha* but is soothing for *Pitta* [7].

B. *JangalaDesha*

Charaka Samhita

JangalaDesha resembles a desert, with thorny trees like khadira, asana, dhava, and tinduka. It is dry, sandy, and windy, often creating mirages. People are hardy, dominated by *Vata* and *Pitta dosha* [8].

Sushruta Samhita

This region is flat, with minimal rainfall and water sources. Winds are hot, and people are thin, emaciated, and prone to *Vata-Pitta* disorders.

Raj Nighantu: It is the opposite of *AnupaDesha*. The soil is dusky in color and hot in nature. It increases *Pitta dosha* but cures many other disorders.

Bhavaprakasha Nighantu

Described as high, dry land with thorny trees like arka and pilu, inhabited by antelopes and donkeys. People suffer mainly from *Vata-Pitta* diseases [9].

C. *SadharanaDesha*

Charaka Samhita

This land has features of both *Anupa* and *Jangala*. It has diverse vegetation, birds, and animals. People here are strong, healthy, and well-balanced [10].

Sushruta Samhita & Raj Nighantu

Defined as a land with mixed features of the other two *Deshas*, producing crops like *Godhuma* and *Masha*. It maintains a balance in the three *Doshas* [10].

Bhavaprakasha Nighantu

Called the best land, as it has balanced cold, heat, rain, and wind, thereby maintaining equilibrium of *Doshas*.

Bhoomi (Soil) and Its Importance

Soil plays a vital role in the *TrividaDesha* classification. *Aacharya Sushruta* has described the *Panchabhautika* classification of *Bhoomi* on the basis of overall appearance, which aligns with modern soil classification.

All plants derive nutrition from the land in which they grow. Man, animals, and birds in turn depend on these plants for their sustenance. Thus, the *Bhutika* constitution of land directly affects the quality, potency, and properties of plants and drugs derived from them.

Types of *Bhoomi*

Based on predominance of *Mahabhuta*, *Bhoomi* is classified as:

1. *ParthivaBhoomi* - Rich in stones and pebbles, firm, blackish, producing strong trees and grains.
2. *JaleeyaBhoomi* - Marshy, moist, full of ponds and rivers, favorable for delicate plants and grasses.
3. *AgneyaBhoomi* - Sandy, stony, colorful, producing stunted vegetation, associated with heat.
4. *VayaveyaBhoomi* - Dry, porous, ash-colored, with scanty vegetation, linked to *Vata* predominance.
5. *AkashiyaBhoomi* - Uneven, with deep ditches, nutrient-poor soil, tall mountains, and sparse trees [11].

Impact of *Bhoomi* on Medicinal Plants

The soil and environment where a plant grows affect its nutritional and medicinal properties. Plants absorb nutrients and minerals from the soil, which influence their taste, potency, and therapeutic effects. *Ayurvedic* texts suggest that herbs should be collected from specific types of land to maximize their medicinal benefits.

For example: For Purgation Therapy (*Virechana*), herbs should be collected from soil rich in *Prithvi* (earth) and *Aap* (water) elements. - For Emetic Therapy (*Vamana*), plants should come from *Agni* (fire), *Akasha* (ether), and *Vayu* (air) predominant land. - For Balancing Therapy (*Shamana*), herbs should be obtained from *Akasha* (ether) dominant land [12].

Modern Perspective on Soil and Agriculture: Today, soil fertility is maintained using organic nutrients like nitrogen,

phosphorus, and manganese. However, pollution from air and water can harm medicinal plants by altering their chemical composition. Modern soil testing methods help determine the best land for agriculture, construction, and potable water sources.

- **Alluvial Soil:** Rich, fertile soil formed by river deposits; suitable for crops like rice, wheat, and sugarcane.
- **Black Soil:** Clayey, moisture-retentive soil; ideal for cotton cultivation; high in lime, iron, magnesium.
- **Red Soil:** Sandy, less fertile, rich in iron; suitable for millets, groundnut, pulses.
- **Laterite Soil:** Rich in iron and aluminum; poor in organic matter; used for crops like cashew, coffee, and tea.
- **Desert Soil (Arid Soil):** Sandy, saline, and infertile; requires irrigation; used for barley, bajra.
- **Mountain/Forest Soil:** Found in hilly and forested regions; rich in humus; good for tea, coffee, spices.
- **Peaty and Marshy Soil** - High organic matter and waterlogged; acidic in nature; supports rice and jute cultivation.
- **Saline and Alkaline Soil:** Poor fertility due to excess salts; reclamation required for agriculture.

Discussion

The standardization of Ayurvedic drugs is a crucial topic because these medicines are often used in their natural form. Environmental factors can influence both the quality and quantity of medicinal substances. Ancient texts provide numerous references about the best locations for sourcing specific herbs, but many plants remain unexplored in this context. The unpredictable nature of these herbs makes their collection and formulation challenging.

To ensure effective clinical application, understanding the impact of soil on medicinal plants is essential. Soil examination plays a vital role in Dravyaguna. From a health perspective, JangalaDesha is generally considered more beneficial than AnupaDesha. In Ayurvedic treatment, the concept of Desha (land/region) is not only geographical but also refers to the nature of the disease.

Ancient scholars emphasized that Ahara (diet), Vihara (lifestyle), and Aushadha (medicine) should be selected based on the Desha of the patient. This principle is essential when designing treatment plans, conducting research, and developing medical strategies.

Conclusion

Understanding *Bhoomi* is essential for maintaining the quality and potency of *Ayurvedic* medicines. By integrating ancient wisdom with modern scientific approaches, we can ensure the sustainable cultivation of high-quality medicinal plants. Proper soil selection, ethical harvesting, and standardization of *Ayurvedic* drugs will enhance their effectiveness and reliability.

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