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Research

Enlistment of Few Herbs in Traditional Writings

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	Abstract
Published on: 02 Nov 2025	The use of herbs in traditional writing systems represents a vital intersection of botanical knowledge and manuscript culture. This article examines the historical and scientific relevance of plant-based materials in three core domains namely, writing surfaces and substrates, ink formulation and preservation and the enhancement of ink permanence. In many traditional societies particularly in South Asia, Middle East and Africa, herbal substances played a foundational role in manuscript production. Surfaces such as palm leaves, tree bark, and paper like material were treated with herbal decoctions to increase durability, insect resistance, and writing quality. Similarly, inks were prepared from plant-derived components including tannin-rich fruits (e.g., <i>Terminalia chebula</i>), gum resins, and natural dyes, selected not only for their coloration but also for their antimicrobial and preservative properties. To ensure ink permanence, resistance to fading, smudging, and biological degradation specific herbs were incorporated to chemically bind pigments and protect inscriptions over long periods. The findings contribute to a deeper understanding of how indigenous knowledge systems supported the long-term preservation and transmission of written knowledge through sustainable plant-based technologies.
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	Keywords: <i>Cyperus papyrus</i> , ink formulation, manuscripts, palm leaf, preservation techniques, sancipat, traditional writings.

INTRODUCTION

The practice of documenting knowledge using plant-based materials represents one of the most profound intersections between natural science and human intellectual history. In pre-modern societies across Asia, Middle East and Africa, writing was not merely a functional act but a culturally sacred endeavour. The materials used ranging from writing surfaces to ink components were carefully selected from the natural environment, particularly from herbs and medicinal plants that offered both practical and symbolic value. Herbal writing surfaces and substrates formed the foundation of early manuscript traditions. Materials such as palm leaves, tree bark, handmade paper, and even treated cloth were commonly used as writing surfaces [1]. These were often processed using herbal infusions to enhance durability, resistance to decay and writing quality. In parallel, herbs played a central role in ink preparation and preservation. Traditional inks were made using naturally occurring compounds like tannins, plant gums, and pigments derived from fruits, seeds, roots, and leaves. Herbs such as *Terminalia chebula* (haritaki), *Acacia catechu* (catechu), *Indigofera tinctoria* (indigo), and *Curcuma longa* (turmeric) provided vibrant colours, binding properties, and antimicrobial protection [2]. These inks were not only visually effective but also biologically resilient, often lasting for centuries on well-prepared surfaces. A critical dimension in this context is ink permanence, the capacity of ink to withstand environmental exposure without fading, smudging or being erased. To ensure this, specific herbal additives were incorporated into the ink formulations. These might include fixatives, mordants, or resinous compounds that chemically bonded with the writing surface. For sacred texts, legal documents and medical treatises, such permanence were essential for preserving the knowledge and authority contained within the manuscript. This article examines how herbs were traditionally used in writing surfaces, ink preparation and to ensure ink permanence, based on historical, ethanobotanical and phytochemical evidence. It shows that traditional knowledge used natural ways to preserve manuscripts, which can still help in today's conservation work.

Historical background of sacred trees used in traditional writings

The history of writing is deeply rooted in the use of sacred trees and herbal materials. Before modern paper and ink, ancient civilizations relied on plant-derived resources for documentation and preservation. In India, palm leaves such as *Borassus flabellifer* and *Corypha umbraculifera* were processed with herbal oils and turmeric for durability [1], while inks were made using *Terminalia chebula*. It is difficult to say exactly when the palm leaf first began to be used for writing. As palm leaves are organic in nature and as susceptible to decay as any other natural material [3]. Similar practices existed in Egypt, where the papyrus plant (*Cyperus papyrus*) was used, and in East Asia, where paper was crafted from *Broussonetia papyrifera*. In Islamic manuscript traditions, herbal infusions and plant dyes were used in manuscript preparation [4]. Palm leaf manuscripts remain revered in Indian culture and are still used in rituals like horoscope writing [5].

These materials served both practical and symbolic roles, reflecting deep botanical knowledge and spiritual beliefs. This legacy of using plant-based materials in manuscript traditions underscores sustainable, eco-friendly techniques, offering valuable lessons for modern conservation efforts.

Herbal writing materials

Surface and substrate

In traditional writing cultures, herbs were essential in preparing and treating writing surfaces such as palm leaves, bark sheets, parchment and handmade paper. These herbal applications helped improve the texture, flexibility, insect resistance and longevity of the materials, allowing them to withstand environmental challenges and preserve the written word for generations.

The herbal treatments showcase the early biotechnology practices of manuscript cultures, emphasizing eco-friendly solutions for material conservation. By using herbs, scribes and artisans created writing surfaces that were not only functional but also imbued with medicinal and spiritual value. There are different types of writing surfaces were used all around the World. Some of them are discussed below [1],

➤ Palm leaf

Palm leaf manuscript is one of the oldest medium of writing in India especially in Southern India, major source for writing and painting in South and Southeast Asian countries including Sri Lanka, Nepal, Indonesia, Burma, Cambodia, and Thailand [6]. There are many varieties of palm trees. However, the leaves of only a few have been used for writing. Most widely used were,

✓ *Borassus flabellifer* Linn (Palmyra palm)

They grows in a dry climate. The leaves of are thick, fibrous, initially flexible but become stiff over time (fig.1). They are also prone to insect attacks [6].

✓ *Corypha umbraculifera* Linn (Talipot, fan palm)

They thrive in wet, coastal climate. The leaves are soft, light coloured when dry and stay flexible for a long time (fig.2). Most ancient manuscripts were written on these leaves. They are also used for making fans, mats and etc. They are highly durable and decay-resistant. It is considered as best among palm leaf types for writing [6].

✓ ***Corypha taliera* Roxb**

These are strong variety palm tree. Its leaves are slightly brown with black spines (fig.3). They are thick, non flexible and prone to insect attack.

Among the three varieties, talipot palm leaves are the most smoothest, most supple and long lasting. All the three types are used for writing in India [6].

❖ **Preparation of Palm leaf**

• **Initial Treatment**

Leaves were cut to remove the midrib, then dried, boiled, dried again, and smoothed using stone.

• **Sourcing**

Young leaf buds were collected from palm trees, especially in Sri Lankan tradition.

• **Boiling & Drying**

Leaves were soaked in cold water, then kept in hot water for 4 hours, followed by shade-drying for 3 - 4 nights.

• **Softening**

Leaves were softened by rubbing them on a cylindrical wooden surface, often from the areca palm.

• **Shaping & Binding**

Leaves were cut to the required size, ends pressed with hot iron to prevent moisture damage, folded and unfolded, holes punched, and bound with cords between two wooden covers.

• **Storage**

The prepared palm leaf manuscripts (typically 4–90 cm in length and 2.5–8 cm in breadth) were wrapped in red or yellow cloth for preservation [1].

➤ **Bhojapatra (Birch Bark)**

The botanical source of the Bhojapatra is *Betula utilis* (Himalayan birch (fig.04)). It is used extensively in Kashmir and Himalayan regions for religious texts and scriptures. They have a smooth, natural paper-like texture. They have antimicrobial properties naturally due to the presence of triterpenes and durability. It is commonly found in Himalayan slopes and not found in south [1].

❖ **Preparation of bark**

There are about 40- 50 thin layers of the inner bark of the birch bark are collected separately and then treated with oil in addition to that they are polished with smooth stones.

➤ **Sanchipat - Traditional Writing Material from Assam**

Sanchipat is a traditional bark-based writing material from Assam, made from the *Aquilaria agallocha* (Sanci tree) (fig.5), also known for producing fragrant agarwood (Oud).

The bark of the Aloe tree is called *Sanchi path* in Assam [1], [7].

✓ **Preparation Process**

- Inner bark is collected, boiled, and treated with herbal solutions like turmeric and neem.
- Bark is dried, flattened, and polished to form a smooth surface.
- Coated with mustard oil or castor oil for preservation.

➤ **Papyrus (*Cyperus papyrus*)**

Papyrus are used in Ancient Egypt and Nubia for religious texts, medical scrolls, and administrative records (fig.6). They are made by layering papyrus stalks, pressed and dried to form sheets. It is used for religious texts (such as the Book of the Dead), medical manuals, administrative documents, and personal letters [8].

Ink preparation

The preparation of ink was a critical step. Several herbs and plant materials were used to create high-quality ink that would last for centuries. Some of the key ingredients used in ink preparation include,

- *Indigofera tinctoria* is used for preparation of blue ink.

- ***Terminalia chebula* (Haritaki)** is rich in tannins, it was used in ink and leaf treatment for binding, making the ink permanent (fig.07).
- ***Acacia catechu* (Cutch/Katha)** has the pigment base in black/brown ink. It was a crucial component in the creation of durable ink (fig.08).
- **Gum Arabic (from Acacia)** is used as a binder, it stabilized the ink on the surface, ensuring that it did not smudge or fade over time (fig.09) [13].
- **Gallnuts (*Quercus* spp.)** is a source of tannins, Gallnuts were used to create permanent iron-gall ink, a durable and long-lasting writing material [14], [15].
- **Tamarind seed extract** is acting as a binder or ink enhancer, Tamarind seed extract also repelled insects and exhibited antimicrobial properties.
- **Soot (Lampblack)** is burned from herbs, wood, or oil and mixed with gum to create black ink (fig.10) [9].
- **Henna (*Lawsonia inermis*)** is sometimes used to give ink a reddish or brownish color.
- **Turmeric** provides bright yellow pigment [2], [16].

There are two types of ink were used,

- ✓ Indelible ink which was used to write manuscript.
- ✓ Delible ink which was used to write ordinary material [1].

• General Ink Preparation

It is prepared by using natural ingredients such as collyrium powder, mercury, sesame oil, gum Arabic, neem, and bark gums. The ink is made in copper vessels over 20 days.

- ✓ Charcoal-based ink was mixed with gum, sugar, and water for ordinary ink.
- ✓ Permanent ink used charcoal boiled in almond/sesame oil.
- ✓ Indelible ink used charcoal from peepal tree baked with gum and water [1].

• Black Ink

There are two types of black ink.

- ✓ Lampblack ink: Made from soot (collected by burning oils like linseed or beeswax), stable but water-sensitive.
- ✓ Gall ink: Made from iron (II) sulphate (green vitriol) and galls, common in Europe [9].

• Colored Inks

- ✓ The **Red** colour is obtained from cinnabar (with white lead), and natural dyes like lac, kermes, cochineal [10].
- ✓ The **Yellow** colour is obtained from orpiment mixed with gum Arabic and water [11].
- ✓ The **Blue** colour is obtained from Indigofera tinctoria (fig.11). [10]
- ✓ The **Green** colour is made by using combinations like orpiment + copper sulphate, gall juice + copper sulphate, or saffron + copper sulphate [10].

• White Ink

It is prepared by corroding lead over vinegar/urine in a sealed pot, then grinding the crust [12].

Preservation

In addition to creating durable ink, the manuscript traditions also employed various herbs and plant materials to preserve the manuscripts from insects and fungal damage. Some of the key ingredients used for preservation include,

Table 1: List of herbs used for preservation of traditional writings.

Herb	Uses
Neem (<i>Azadirachta indica</i>)	Repels insects; antimicrobial [17]
Turmeric (<i>Curcuma longa</i>)	Antifungal; used in coatings or storage [16]
Camphor (<i>Cinnamomum camphora</i>)	Stored with manuscripts to repel pests [18]
Clove (<i>Syzygium aromaticum</i>)	Insect repellent due to strong aroma [19]
Black Pepper	Occasionally used in storage for pest resistance [20]
Aswagantha	Insect repellent [20]
Black cumin	Repels insect, contains strong aromatic smell [20]
Ajwain	Insect killer, fungicide [21]
Mint leaves	Repels ants and cockroaches [20]

Sandal wood	Repels insect [22]
Frankincense and Myrrh	Resins used for fumigation to prevent insect and fungal damage
<i>Aloe vera</i>	Sometimes used in mixtures for protective coatings

Ink permanence

To prevent ink from fading or being erased, traditional writings employed various herbs and plant materials. Some of the key ingredients used to prevent ink erasability include,

- **Carbon black** - Fading of ink is restored by applying carbon black mixed with oil to the leaf [9].
- **Gallnuts** - Bonding ink to the surface, Gallnuts made it difficult to erase, ensuring that the text remained permanent (fig.12) [14], [15].
- **Hari taki** is used as a fixative and ink enhancer, Hari taki helped to create durable ink that would last for centuries.
- **Gum Arabic** act as a strong binder, Gum Arabic prevented smudging and erasure, ensuring that the text remained clear and legible [15].
- ***Aloe Vera* / Plant Resins** - Sealing the writing and adding a protective layer, Aloe Vera and Plant Resins helped to preserve the manuscript and prevent ink erasability.
- **Natural resins and plant oils** are applied to protect writing and seal it from tampering [1].



Fig.1 *Borassus flabellifer* Linn



Fig.2 *Corypha umbraculifera* Linn.



Fig.3 *Corypha taliera* Roxb

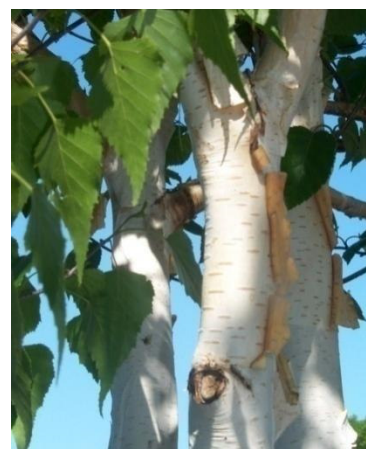


Fig.4 Bhojapatra (Birch Bark)



Fig.5 *Aquilaria agallocha* (Sanchi tree)



Fig.6 Papyrus (Cyperus papyrus)



Fig.7 *Terminalia chebula*



Fig.8 *Acacia catechu*
(Haritaki)



Fig.09 Acacia gum
(Gum Arabic)



Fig.10 Soot (Lampblack)



Fig.11 *Indigofera tinctoria*



Fig.12 Gallnuts

CONCLUSION

Herbs have played a vital role in traditional manuscript culture, serving as essential resources for preparing writing surfaces, formulating durable inks, and ensuring ink permanence. Plant-based substrates like palm leaves and bark were treated with herbal solutions for longevity and resistance. Similarly, inks derived from herbal extracts not only provided rich pigmentation but also offered antimicrobial protection. Specific herbs further enhanced the permanence of writing, preventing fading and deterioration. These practices reflect a deep understanding of natural materials and highlight the sustainable, bio-informed techniques used by traditional knowledge systems for preserving written heritage.

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