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Research Article

Identifying and mass-producing therapeutic plants with the help of Chhatrapati Sambhajnagar district traditional healers

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ABSTRACT

There is a lengthy history of medicinal plant identification and investigation, particularly when it comes to local traditional healers evaluating a plant's suitability for therapeutic purposes. Using taste, smell, and appearance as bodily senses, the initial strategies were organoleptic. In terms of the quantity of publications devoted to the study of medicinal plants and the quantity of additions to their pharmacopoeia, India is now in the lead. Supporting developing nations in their endeavours to advance and enhance their businesses related to medicinal plants is another goal. This includes helping these nations make well-informed choices on the growth of their industries and the goods they manufacture from the plant material that is gathered. This study highlights some of the primary challenges that developing nations must face in order to effectively grow and export medicinal plants, as well as some of the key concerns pertaining to their marketing and production. Medicinal plants including aloe, tulsi, neem, turmeric, and ginger are used to treat a variety of everyday diseases and other conditions.

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Introduction

Since ancient times, people have used plants to promote health and wellness, treat illnesses, and mend injuries. Despite the age of the practice, the World Health Organisation (WHO) reports that most developing country populations continue to employ medicinal trees of the cornerstone of their traditional health system. The needs of the traditional medicine markets, which are present in both local and international markets, are mostly satisfied by medicinal and aromatic plants (MAPs). The field of traditional medicine, encompassing practices such as various indigenous medical systems, Arabic unani medicine, traditional Indian Ayurveda, and Chinese medicine (TCM), along with complementary and alternative medicine used in developed nations, is becoming increasingly recognised globally. The proportion of individuals who use traditional medicine Declines in affluent nations: 47.5% in Australia, 39.2% in the USA, 49.8 to 52.1% in Germany, and 49% in France (1,2). In order to emphasize the prospects for developing nations and to suggest actions that need to be taken to further extend these opportunities, this paper attempt as provide an overview of the market for prizing and their requirement.

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Supporting developing nations in their endeavors to advance and enhance their businesses related to medicinal plants is another goal. This includes helping these nations make well-informed choices on the growth of their industries and the goods they manufacture from the plant material that is gathered. In addition to identifying some of the primary obstacles developing nations must surmount to effectively cultivate and export medicinal plants, this study effort offers information on some of the key difficulties pertaining to their marketing and production (1, 2). Medicinal plants that treat a variety of common illnesses include turmeric, aloe, ginger, tulsi and neem. In many regions of the nation, they are regarded as home treatments. It is well known that many customers use basil, also known as black tea; in their daily routines for pooja, tulsi and other purposes.

Numerous plants are utilized as a sign of good fortune to honor their rulers in various places of the globe. Following their discovery of the therapeutic benefits of herbs, many customers have begun planting tulsi and other medicinal plants in their backyard gardens. Medicinal plants are regarded as abundant sources of substances that may be used in the creation of synthetic, pharmacopoeia, or non-pharmacopoeia medications. Aside from that, these plants are essential to the global evolution of human societies. Additionally, certain plants are suggested for their medicinal benefits since they are thought to be significant sources of nutrients. Among these plants are pepper, turmeric, aloe, walnuts, ginger, and green tea. Certain plants and their derivatives are regarded as significant sources of the active chemicals found in toothpaste, aspirin, and other products. Herbs are utilized not just for therapeutic purposes but also for food preparation, natural coloring, insect control, tea, and other products. Various types of medical plants and herbs are utilized in various nations to deter ants, flies, and mice from entering homes and workplaces. Medicinal plants are now a major source for the production of pharmaceuticals.

Traditional medicine practitioner provide very effective for treating common ailments like, coated tongue, bronchial asthma, fevers, constipation, diarrhea, leucorrhoea, low sperm count, menstrual disorders, dysentery, weak penile erection, piles (3). These publications' monographs provide guidance on the kinds of analyses that should be carried out; for manufacturers, this usually entails requiring them to have access to ever-more sophisticated equipment. Numerous facets of analytical analysis have advanced most notably the development of chromatographic, hyphenation and spectroscopic technique. The field of metabolomics has been made possible by the ability to process data using multivariate analysis software. This has increased our understanding of the various chemical compound variations found in medicinal plants and given us more assurance about the quality of the plants and medicines as well as their suitability for clinical research. Technological advancements have made it possible to classify and test plants efficiently, as well as identify impurities and adulterants at very low concentrations. But technological advancements can't provide us all the answers we need to produce high-quality herbal medications, therefore conventional methods of evaluating quality are still relevant today.

Material and Method

Study Area Selection: Current research is conducted in part from Gangapur, Vaijapur, and Kannad Talukas of Maharashtra, which is home to the Chhatrapati Sambhajinagar district. Using healers, we chose locations to gather plant resources for the purpose of manufacturing medication.

Plant identification and fruit and seed: collecting in a chosen research area Plant population available for healers to gather at a certain plant spot.

Dolichandrone falcate: In a few study areas, *Dolichandrone falcate* is accessible for farming as well as forestry conservation. It is often found in the wild plant group. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad; plant number 07 is accessible there. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery.

***Aegle marmelos*:** *Aegle marmelos* is a plant that often grows in the wild and may be farmed. It can also be preserved in forests in certain study areas. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We tour the several locations where plant number 58 is accessible in Vaijapur, Gangapur, and Kannad. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery.



***Hemidesmus indicus*:** In a few study areas, *Hemidesmus indicus* is accessible for farming as well as forestry conservation. It typically occurs in the wild plant group. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad, where plant number 16 is accessible. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery.

***Sandalum album*:** In a few study areas, *Sandalum album* is accessible for farming as well as forestry conservation. It typically occurs in the wild plant group. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad, where plant number 23 is accessible. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery.

***Terminalia chebula*:** In chosen study areas, *Terminalia chebula* is accessible for farming and forestry conservation. It typically occurs in wild plant groups. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad; plant number 13 is accessible there. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery.

***Terminalia bellirica*:** This plant species is usually found in wild populations and may be farmed, as well as used for forest conservation in certain study areas. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We tour the many locations where plant number 20 is accessible in Vaijapur, Gangapur, and Kannad. Following the conclusion of these plants' life cycles, we gather the seeds in order to

mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery.

Terminalia arjuna: This plant species is found in wild plant groups and may be farmed and used for forest conservation in certain study areas. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad, where plant number 26 is accessible. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery (4).

Madhuca longifolia: In a few study areas, *Madhuca longifolia* is accessible for farming as well as forestry conservation. It typically occurs in a wild plant group. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad; plant number 22 is accessible there. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery (5).

Asclepias speciosa: This plant species is often found in natural settings and may be farmed or used for forest conservation in certain study areas. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to the places where plant number 15 is available in Vaijapur, Gangapur, and Kannad. Following the conclusion of these plants' life cycles, we gather the seeds in order to mass multiply them and create plant seedlings. Ten to twelve fruits and two hundred seeds were collected from each plant to create a seedling in a nursery (6).

Diospyros peregrina: *Diospyros peregrina* is a plant that typically grows in the wild and may be farmed. It is also accessible for conservation in a few study areas. This portion of the plant was used medicinally by healers from Vaijapur, Gangapur, and Kannad. We go to several locations in Vaijapur, Gangapur, and Kannad, where plant number 22 is accessible. Following the conclusion of these plants' life cycles, we gather the fruit and seeds to create a large-scale plant multiplication that results in seedlings. To create a seedling from a nursery, 10 to 12 fruits and 200 seeds were collected from each plant (7).

Fruit and Seed Collection: Ten different plant species were chosen, and their ripe seeds were collected from nurseries to start sprouting fruit.

Seed Germination: The current research examined seed viability, floater and sinker, and seed germination selection. These two methods were used to choose germination seeds for fresh seedlings to be released into the wild.

Result:

We are being more removed from nature as our lifestyle becomes more technologically oriented. Because they are natural goods, herbs have no negative effects and are readily accessible locally, safe, and environmentally friendly. Many plants have historically been used to treat illnesses associated with the various seasons. In order to preserve human lives, they must be promoted. These days, herbal medications stand for safety as opposed to synthetic pharmaceuticals, which are seen to be harmful to both people and the environment. *Terminalia chebula*(Tc), *Diospyros peregrina*(Dp,)*Terminalia bellirica*(Tb), *Madhuca longifolia*(Mi), *Terminalia arjuna*(Ta), *Aegle marmelos*(Am), *Dolichandrone falcate* (Df), *Hemidesmus indicus*(Hi), *Santalum album*(Sa), *Terminalia arjuna*(Ta) and *Asclepias speciosa*(As) are all wild medicinal plants that were studied in this research. A local healer has conducted a study on plant diversity, gathering information on medical emergencies. We travel to various locations in Vaijapur's tahshil villages, including Pimparkheda, Aghur, Potul, Bhalgoan, Chorwaghgaon, Nagapur, Borsar, Khandala, Manjari, Garaj, Golwadi, Shioor, Vaijapur Rural 1, Vaijapur Rural 2, Gangapur's tahshil villages, which include Fatiyabad, Tad pimpalgaon Pishor, Godegoan, Hanumantgaon, Manganegaon, Nimbhora, Shendurwada, wadhod, Wahegoan,

umbarkheda, Tenbhapuri, Adgoan, Sarola Chikalthan and Hiverkheda. There were 237 different types of wild medicinal plants in all 30 settlements, and they were as follows: (table no.1)

Sr. No	Plant Name	No. of Plant Avl.inVaijapur Villages	No. of Plant Avl.in Gangapur Villages	No. of Plant Avl.in Kannad Villages	Total Plant in Villages
1	<i>Dolichandrone falcate</i>	02	01	04	07
2	<i>Aegle marmelos</i>	13	15	30	58
3	<i>Hemidesmus indicus</i>	04	02	10	16
4	<i>Sandalum album</i>	04	08	12	23
5	<i>Terminalia chebula</i>	02	06	05	13
6	<i>Terminalia bellirica</i>	06	04	10	20
7	<i>Terminalia arjuna</i>	12	08	06	26
8	<i>Madhuca longifolia</i>	11	05	06	22
9	<i>Asclepias speciosa</i>	06	03	06	15
10	<i>Diospyros Peregrina</i>	06	08	08	22

Table.1) Wild Plant Diversity available in Vaijapur, Gangapur and Kannad.

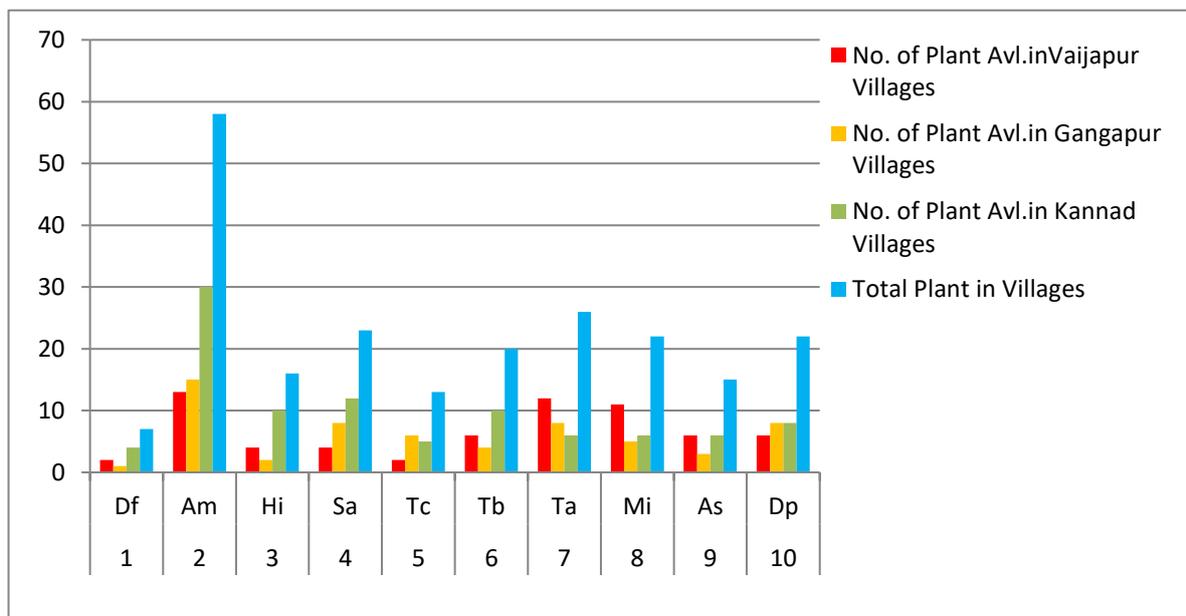


Figure 1. Wild Plant Diversity available in Vaijapur, Gangapur and Kannad

Terminalia chebula(Tc), *Diospyros peregrine*(Dp,)*Terminalia bellirica*(Tb), *Madhuca longifolia*(Mi), *Terminalia arjuna*(Ta), *Aegle marmelos*(Am), *Dolichandrone falcate* (Df), *Hemidesmus indicus*(Hi), *Sandalum album*(Sa), *Terminalia arjuna*(Ta) and *Asclepias speciosa*(As).

122 fully ripe raped fruits are collected from all 237 wild medicinal plants. The fruit was gathered, the seeds were separated, and the floater and sinker method was used to pick the seeds, resulting in the germination of 210 to 247 seeds per plant, with each plant selecting 227 seeds for germination. Thus, all 2268 seeds were planted, producing 1510 seedlings for the upcoming June 2023 rainy season. (table no.2)

Sr. No	Plant Name	No. of fruit	No. of Seed	Total Selected Seed	Total Seed germinate
1	<i>Dolichandrone falcate</i>	10	223	200	150

2	<i>Aegle marmelos</i>	11	252	200	162
3	<i>Hemidesmus indicus</i>	10	244	200	123
4	<i>Sandalum album</i>	12	253	200	156
5	<i>Terminalia chebula</i>	10	227	200	123
6	<i>Terminalia bellirica</i>	10	246	200	153
7	<i>Terminalia arjuna</i>	12	223	200	146
8	<i>Madhuca longifolia</i>	10	223	200	163
9	<i>Asclepias speciosa</i>	10	246	200	121
10	<i>Diospyros peregrina</i>	10	233	200	163

Table.2) Collection of fruit and seed for mass multiplication of wild plant

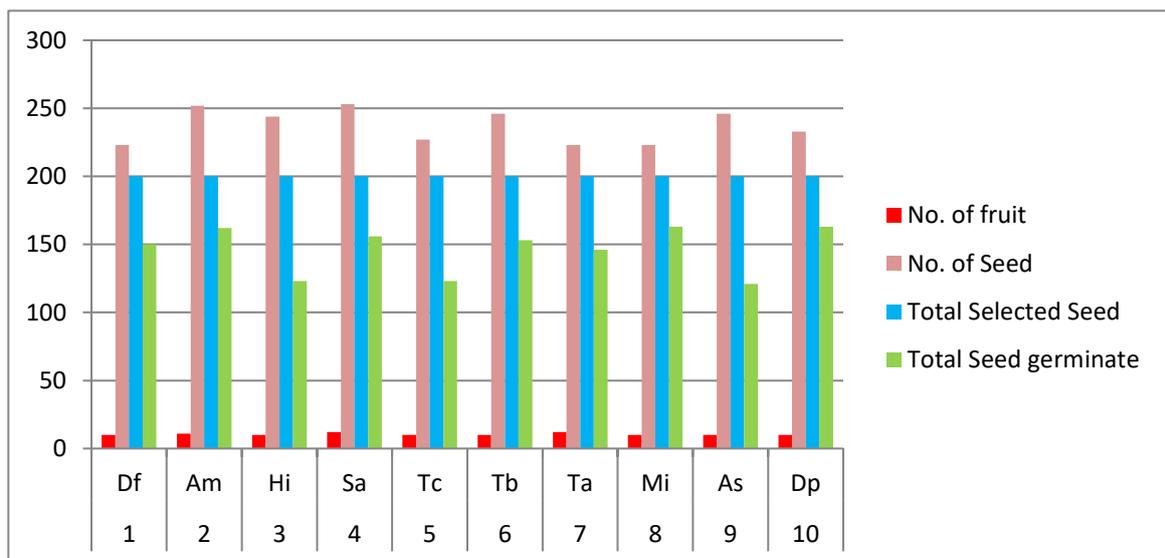


Figure 2. Collection of fruit and seed for mass multiplication of wild plant

Terminalia chebula(Tc), *Diospyros peregrine*(Dp,)*Terminalia bellirica*(Tb), *Madhuca longifolia*(Mi), *Terminalia arjuna*(Ta), *Aegle marmelos*(Am), *Dolichandrone falcate* (Df), *Hemidesmus indicus*(Hi), *Sandalum album*(Sa), *Terminalia arjuna* (Ta) and *Asclepias speciosa*(As).

Discussion

The leap in sophistication and complexity of the research published during this period, with a shift from basic to more advanced biochemical investigations and more emphasis focused on disease and diagnosis strategies such as in cancer and infectious disease, is a reflection of the newly fostered research and development investment and cooperation globally. Advanced biological study on for skolin, which originated with *Plectranthus barbatus* Andrews, as a diterpene activator in nucleotide metabolism, is among the most extensively referenced studies of this era. Despite the use of spectrometric enzymatic tests, colorimetric techniques, and basic biochemical equipment, a more sophisticated knowledge of plant metabolites is evident (8). This is also shown by the study of lectins as cell recognition molecules and their participation in several molecular processes and possible diseases, such as metabolic control and the processes of bacterial, viral, and other infections (9).

Apart from their function as phytochelants in the complexation of heavy metals (10, 11), licorice was investigated in greater detail through the application of a novel conceptual framework to evaluate its mineral-corticoid activity, role in sodium retention, and flavonoid properties that scavenge radicals (12). Plants have been implicated in cancer for both preventive and therapeutic purposes; this was shown by a widely referenced analysis of Chinese esophageal cancer etiology. The impacts of fungal growth and related nitrosamines as a result of unfavorable storage conditions were of particular concern. This served as a basis for subsequent

research on aflatoxins, which are now known to cause major health issues due to improper processing and storage.

From a therapeutic standpoint, research into antileukemia and anti-tumor drugs, such as *Taxus brevifolia* Nutt. stem bark, which had been studied some decades earlier, has persisted and eventually led to the development of an entirely new treatment strategy (13). During this time, westerners were informed about one of the most significant discoveries in the history of medicinal plants. The Chinese scientist Youyou Tu was awarded a Nobel Prize in Medicine for discovering the antimalaria properties of artemisinin, which is derived from *Artemisia annua* L. This discovery marked a paradigm shift in the treatment of malaria, as it replaced the use of quinoline, to which parasite becoming increasingly resistant. Additionally, it opened the door for the discovery of new drug classes, such as those potential for anticancer and antiviral treatment (14).

Summary

We will undoubtedly be able to delve deeper and deeper into the chemical makeup of medicinal plants and create increasingly sophisticated methods for the detection and quantification of adulterants and contaminants as pharmacopoeial requirements and instrumental technology develop. Though these scientific advancements allow us this chance, it is important to remember that more conventional organoleptic analysis also gives us vital sensory information about the quality of medicinal plants. We have shown the development and historical significance of sophisticated analytical methods used to the study of medicinal plants. Any analytical method, meanwhile, can only provide a limited understanding of intricate multicomponent mixtures. Therefore, establishing best practices at every level of the manufacture and distribution of herbal medicines may be more important for future advancements in this field than creating ever-more advanced analytical procedures. While herbs have long been valued for their medicinal, flavoring, and aromatic properties, their significance was briefly eclipsed by contemporary synthetic goods. But the heedless reliance on synthetics is ending, and people are going back to naturals in the hopes of security and safety. It is time to market them internationally.

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