

Worldwide health scenario from the perspective of herbal medicine research: A Review

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Abstract

Herbal medicine has garnered significant global interest due to its historical efficacy in treating severe maladies during the time of ancient civilizations. Worldwide, phytomedicines are regarded as a significant provider of health care, particularly in remote and rural areas. Interest in traditional medical systems and the expansion of "natural product markets" are outcomes of the worldwide demand for alternative medicine. This article presents an in-depth overview of Herbal medicine, encompassing its historical context (including discussions of the "Indian Medicine system"), its prominent position in the global marketplace, and its gradual integration with modern medical systems.

Keyword: *herbal medicine, global, Indian medicine system, market value of herbal medicine.*

I. Introduction

Herbal medicines are plant-derived substances that occur naturally and are utilised in the treatment of sickness as part of regional or local medicinal traditions. These substances are intricate combinations of organic compounds derived from various unprocessed or refined botanical components. Herbal medicine originates in each and every culture on earth. Although social conditions, environment, and geographic location influence the philosophies and practises of the numerous traditional medicine systems, these systems all adhere to a holistic view of life. Prominent systems of herbal medicine, such as Ayurvedic Medicine and Traditional Chinese Medicine, are founded upon the fundamental principle that health should take precedence over disease. The use of medicinal herbs allows patients to recover and concentrate on their complete health rather than just a single illness, which often results from an imbalance in the three domains of mind, body, and environment. Ancient cultures are the birthplace of herbal medicine. It encompasses the utilisation of botanical remedies to remedy ailments and improve overall health and wellness. Herbal medicine, alternatively referred to as botanical medicine or herbalism, is a system of medicine predicated on the ingestion or topical application of plant substances or plant extracts. (Maiti et al., 2011)

A. Historical Background

For a long time, people relied on foods and medications made from natural sources, such as plants. This was particularly true for the healing properties of plant parts and the prevention of sickness. It is extremely difficult to pinpoint the precise moment when people began using plants as medicine; however, ancient texts and other sources provide indications of its inception. An approximately 5000-year-old Sumerian clay slab discovered in Nagpur contains the earliest known written evidence concerning the

preparation of medicines using medicinal plants. It contained twelve drug preparation formulas and references to more than two hundred and fifty different plants, some of which contained alkaloids like poppy, henbane, as well as mandrake.

The utilisation of botanical remedies, which are abundant in India, is documented in the Vedas, an ancient Indian sacred text. Composed by Emperor Shen Nung around 2500 BC, the Chinese book "Pen T'Sao," which

describes the use of grasses and roots, contains 365 medicines (preserved portions of "medicinal plants"), several of which are still in use today. Theophrastus (371–287 BC) authored "De Causis Plantarum" (Plant Aetiology) and "De Historia Plantarum" (Plant History), which laid the groundwork for botanical science. He compiled a classification of approximately 500 known medicinal plants in these volumes. Theophrastus, in his account of the "plant toxicity" mechanism, emphasised the critical aspect of acquainting humans with the substances through a progressive escalation of the dosage.

Primarily concerned with the physiology and anatomy of the human body, the patriarch of medicine, Hippocrates authored over sixty medicinal works. Additionally, he proposed a humoral theory which asserts that the human body is composed of four humors—blood, phlegm, yellow bile, as well as black bile—which are principally accountable for the body's operation in both healthy and diseased states. Hippocrates exclusively utilised herbal remedies and is renowned for the following proverbs: "Food should be medicine, and medicine should be food," and "Illness results from the body's incapacity to digest its surroundings." The transition from the beginning of the nineteenth century to the present is considered a turning point within the field of medicinal plant use and application. The process of identifying, validating, and extracting alkaloids from poppy along with additional plant sources. Glycoside isolation, meanwhile, signified the inception of scientific pharmacy. The advancement and modernization of chemical techniques led to the identification of additional active compounds derived from medicinal plants.

B. Indian systems of medicine

The origins of the concepts and practises of India's various traditional medicinal systems date back several millennia. Three ancient standardised "Indian systems of medicine" (ISMs)—Ayurveda, Siddha, and Unani—continue to inform and influence a significant segment of the Indian populace's adherence to and utilisation of traditional medical practises. While various compounds, minerals, as well as animal products are employed to formulate curative agents in these systems, treatment has traditionally relied on plants. An estimated 1,200 species of plants are utilised in Ayurveda, whereas 900 species are utilised in Siddha and 700 species are utilised in Unani medicinal preparations. A prudent integration of modern science along with contemporary clinical medicine, Ayurveda and other ISMs possess the capacity to more effectively remedy various maladies and generate novel avenues for advancement in

modern medicine. The use of medicinal plants for therapeutic, promotional, and preventative reasons is now practised by about 1.5 million traditional healers in India.

The Siddha system of medicine began in southern India during the pre-Vedic era (c. 3000–2000 BC). It is said that the 18 "siddhas," or traditional practitioners of Siddha medicine, founded this system, which is mostly practised in Tamil Nadu and is written in Tamil. Three humoral concepts are acknowledged by the Siddha medicinal system: "vata" (wind), "pitta" (bile), and "kapha" (phlegm). Siddha medicine frequently employs various anatomical features, including the tongue, voice, epidermis, eyes, sensation (to determine whether the individual is dry, heated, chilly, or perspiring), and faeces, as diagnostic criteria. These features include the urine, pulse, and stools.

Hippocrates and, later, Galen established the foundational principles of the Unani method of medicine. Arabs and Persians implanted the Unani system in India during the eleventh century. The "humoral theory" is the foundational tenet of the Unani system. It posits that the body contains four humours: yellow bile phlegm, blood, as well as black bile. Unani practitioners rely primarily on pulse readings, as well as examinations of the urine and excrement, to diagnose ailments.

Indigenous or rural communities in India are disproportionately affected by folk medicine, which is alternatively referred to as "tribal" or "indigenous" medicine. Without a written script, this form of knowledge is typically transmitted orally from the progenitors of the specific group of people. The utilisation of plant-based health care systems by tribal & ethnic communities in India is believed to encompass over 8,000 species. Indian folk medicine makes extensive use of an estimated 25,000 potent plant-based formulations, the majority of which are indigenous to rural and ethnic communities.

C. Herbal medicine and modernity

Herbal remedies have a long history and are being used today. Unfortunately, despite its potential, herbal medicine is utilised to a lesser extent for the treatment of maladies. A substantial proportion of rural and ethnic communities utilise and stoically contribute to the preservation of antiquated medicinal knowledge concerning plants, which would otherwise perish into oblivion. A revival of herbal medicine is imminent. Assuring contemporary safety and effectiveness requirements while integrating "herbal medicine" into real mainstream of modern health care is no simple feat. With the expectation of a treatment strategy that

is more biocompatible, environmentally friendly, and comparatively secure, herbal drugs & products derived from plants are gaining recognition in developed nations and among those who can afford more expensive allopathic medicines in the twenty-first century.

Around 20% of the 49,000 plant species found on the Indian subcontinent are recognised globally. The number of plant species with medicinal properties is estimated to exceed 3,500, although the Ayurvedic industry currently utilises only 500 of these species. Numerous reports have posited that approximately 80% of pharmaceutical molecules originate from or draw inspiration from natural sources. Approximately fifty percent of medications licenced since 1994 are reportedly derived from natural products. Undoubtedly, numerous vegetation contain

unidentified substances with potential medicinal properties. Traditional Indian medical systems adhere to a holistic philosophy and are regarded as antiquated manifestations of medicine based on system biology.

Nutritional supplements are an important sector in which herbal products are gaining popularity. Herbal supplements provide essential nutrients that are absent from the diet or are not ingested in sufficient amounts. Vitamins, minerals, macronutrients, antioxidants, and other substances that are vital to good health may be present in herbal supplements. As a result, there is a growing demand for several Indian formulations, including muslipak, chyawanprash, and ashwagandhadi lehyam. The figure illustrates the approach taken to integrate and progress "traditional herbal medicine" into modern medicine.

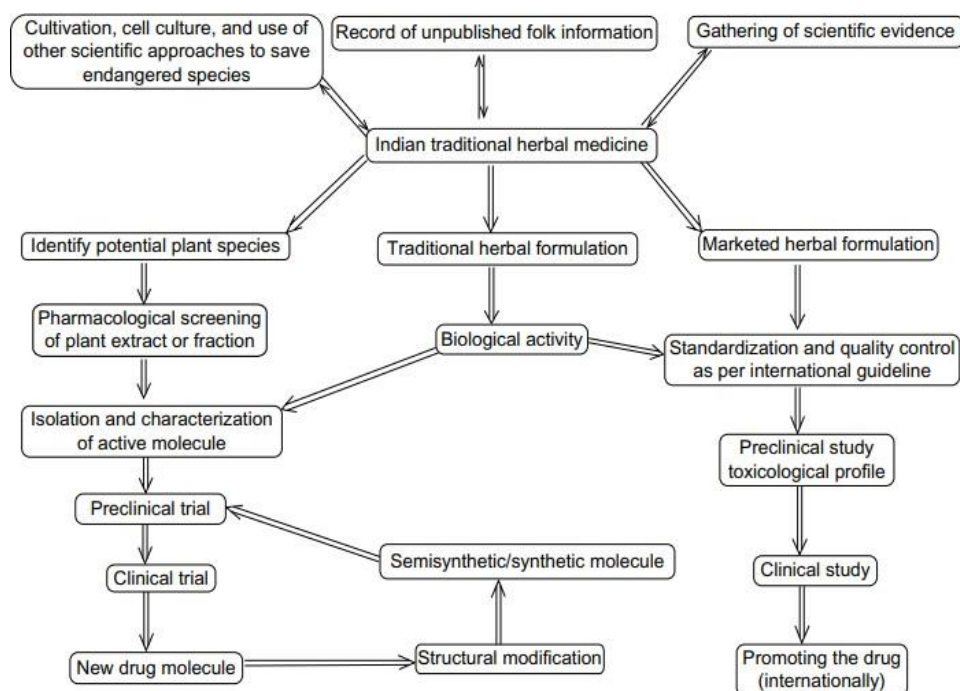


Figure-1 Strategy for advancement and integration of traditional herbal medicine into modern medicine.

D. Globalization

The global recognition and interest in traditional health care systems continue to grow as a result of the public's fascination with herbal remedies and their remarkable efficacy in addressing a wide range of complex health issues with minimal to no adverse effects. Currently, 60% of the global population employs herbal or conventional remedies as their primary therapeutic agents to manage fevers caused by malaria. 80% of Africans, 30%–50% of Chinese, 48% of Australians, 70% of Canadians, 80% of Germans, 42% of

Americans, 39% of Belgians, and 76% of French individuals favour herbal/alternative medicine as their first line of defence against a variety of maladies. The utilisation of herbal medications is observed among 75% of HIV-positive/AIDS patients in San Francisco, London, and South Africa. The utilisation of herbal products is gaining prominence among health professionals and is becoming more cost-effective. Countries such as Malaysia have begun to allocate more funds towards essential healthcare remedies compared to allopathic medications.

E. Market value

Leading and swiftly expanding in this sector are the following international herbal pharmaceutical companies: Hamdard Laboratories, India; Nutraceutical International, USA; "Shen Chang Pharmaceutical Company", China; Himalaya Drug Company, India; Zandu Pharma, India; Dabur, India; and Hamdard International, India. The global herbal market is dominated by major and minor pharmaceutical corporations and organisations, leading to a highly competitive as well as fragmented sector. Multinational corporations are pushing regional & indigenous herbal companies to the brink of extinction with regard to pricing, product offerings, and quality as they extend their operations into these nations. The level of competition is already substantial and is only expected to intensify. Prominent institutions are placing emphasis on extraction methodologies and purification protocols in order to furnish the superior quality product necessary for the expansion of the herbal medicine market. There are some restrictions, such as erratic rules and authorities for quality assurance and patents, as well as a deficiency of reliable research data to support the growth of the herbal business.

F. Present Scenario

The global distribution of phytomedicines, also known as herbal medicines, is expanding at a rapid rate. There has been a recent surge in the utilisation of herbal products by individuals across various national health-care settings to address a wide range of health issues. In both developed and developing nations, public interest in natural therapies has increased significantly over the past few decades. The proportions of the population in developing nations, such as India and Africa, where traditional practitioners as well as herbal remedies continue to be the primary means of treatment at up to 90% and 70%, respectively. Traditional medicine comprises approximately 40% of the total health care provided in China, with more than ninety percent of general hospitals housing specialised divisions dedicated to traditional medicine. Currently, botanicals are being utilised to treat acute and chronic diseases, as well as a wide range of maladies and problems, including but not limited to cardiovascular disease, prostate issues, melancholy, inflammation, and immune system enhancement.

Decades of traditional herbal medicine in Africa have been devoted to the treatment of atrophy symptoms linked to HIV using the Africa flower. At this time, it is estimated that nature provides approximately 90% of the novel drug molecule. A number of powerful pharmaceuticals have been discovered by nature, including the following:

dactinomycin, bleomycin, doxorubicin, vinblastine, irinotecan, topotecan, etoposide, and paclitaxel (cancer drugs); mefloquine, chloroquine, amodiaquine, artemisinin, dihydroartemisinin, artemether, and arteether (antimalarial drugs); metformin and, eventually, the other biguanide, harunganin, cryptolepine, and maprouneacin (antidiabetic drugs). Traditional medicinal practises in India involve more than 1.5 million individuals and encompass an estimated 25,000 efficacious plant-based formulations. India uses almost 2,000 metric tonnes of herbs per year in its 7,800 medical medication production plants. According to the data at hand, traditional medicine possesses a substantial market share. The "Indian herbal market" is valued at approximately 50 billion rupees and is expanding at a rate of 14% per annum. The herbal product's value upon export is approximately one billion rupees.

The World Health Organisation (WHO) predicts that the worldwide herbal industry will increase from its present level of \$62 billion to \$5 trillion in 2050, driven by the ever-increasing demand for therapeutic herbs. India and China collectively contribute to over 70% of the whole-world diversity. Emerging herbal markets in Brazil, Argentina, Mexico, China, as well as Indonesia are joining the ranks of the most important worldwide markets for herbal exports, which also include the United States, Canada, Australia, and Japan. (Bhardwaj et al., 2018)

II. Literature Review

(Saggar et al., 2022) Natural herbs have been widely employed since ancient times to address and prevent a wide range of ailments. In recent decades, extensive research within traditional medical systems has led to the development of numerous herbal medicines that are safe for human health, the environment, and organic systems. Furthermore, these medicines are priced affordably and are environmentally sustainable. The Indian subcontinent possesses considerable potential to fulfil the global demand for herbal medicines owing to its abundant supply of such products. Throughout history, the Indian population has consistently been instrumental in the advancement and administration of these biological resources, as well as in the preservation of their valuable data, which has been amassed through centuries of trial and error. As a result of an extraordinary worldwide resurgence in alternative and traditional healthcare systems, the herbal medicine market has expanded at a remarkable rate and holds considerable economic significance.

(HOSSAIN et al., 2022) Historical interest in traditional herbal remedies has grown substantially worldwide as a result of their effectiveness in treating severe ailments during the time of ancient civilizations. Worldwide, phytomedicines are regarded as a significant provider of health care, particularly in remote and rural areas. A substantial proportion of the population relies on or is willing to take homegrown medications as indispensable remedies for various ailments, as opposed to synthetic drugs. Due to the severe side effects, toxicity, lack of effectiveness, and specificity associated with synthetic medications, herbal medicine is receiving a lot of attention from researchers. So far, only a limited number of botanical products have been granted approval, notwithstanding the substantial surge in international interest in their exploration and advancement. Development of pharmaceuticals for natural products is beset by substantial financial and technical obstacles, such as an extensive formulation process, quality control, safety concerns, therapeutic effectiveness, marketing considerations, and administrative complexities.

(Parkash et al., 2018) It is postulated that Ayurveda originated more than 6000 years ago. Herbal medicine has recently gained a lot of attention as an alternative medicine that can help treat or prevent lifestyle-related illnesses. It was developed to promote good well-being and longevity rather than to combat disease and was practised by doctors and surgeons (known as Bhesha or vaidya). Herbs are a boon from nature that enable humans to live healthy, disease-free lives. India's rich heritage provides an abundance of traditional remedies, the majority of which are derived from plants. Herbal remedies encompass the medicinal utilisation of the seeds, fruit, roots, leaves, bark, or blossoms of various plants.

(Vinod Babu et al., 2018) A greater number of individuals worldwide have begun to utilise medicinal plant products as part of their healthcare system in recent years, which is the subject of this review. Natural product markets as well as curiosity in traditional medical systems have grown in response to the global demand for alternative medicine. Standardisation, quality control, and the appropriate fusion of contemporary scientific methods and traditional wisdom are critical in the process of turning botanical materials into remedies using herbal drug technology. Herbal remedies constitute a substantial portion of the trend towards alternative medicine. Since the advent of civilization, herbal remedies have been utilised to preserve health and treat a variety of diseases. In order to contend with the expanding pharmaceutical industry, it is

critical to utilise and analytically validate a greater number of herbal products that possess medicinal properties.

(Bhardwaj et al., 2018) Herbal medicine & treatment utilising herbs are not novel concepts to the human race; they have been utilised for millennia and continue to be practised today. Developed and developing nations alike are currently placing emphasis on herbal medicine as a treatment option due to its manifold advantages. Ayurveda, the traditional Indian medical system, was also founded on herbs along with medicinal plants, given that India is the land of herbs. India is a well-known source of herbal flora with documented medicinal applications. Herbal medicine is alternatively referred to as phytomedicine or botanical medicine. According to a survey report published by the World Health Organisation, traditional herbal medicine is utilised by 80% of the global population for their primary health care needs. Indeed, alternative medicine is experiencing a steady surge in prominence within developed nations due to its demonstrated efficacy, safety profile, and reduced occurrence of adverse effects. Herbal medications have an extensive historical background of utilisation and are generally well tolerated by patients. This review examines the constraints and difficulties encountered in the manufacturing process of herbal medicine.

(Kala, 2017) The longstanding conventional methods of healthcare remain pertinent and continue to be practised by communities throughout the world. The development of conventional health care systems continues to be a subject of exemplary contribution from India. This research assesses the efficacy of India's traditional medical practises and plants, which have played an important role in health care since the beginning of time and continue to be the community's first option for treating a wide range of long-term illnesses. For the purpose of compiling data on India's traditional systems of medicine, such as Ayurveda, Unani, homoeopathy, and Siddha, a thorough literature review was conducted. Ayurveda is one of the earliest systems of medicine to have originated in India, according to meticulous information research. It is a comprehensive approach to treatment that combines adherence to behaviour and exercise with the use of medicine as well as a consistent diet. There are more than 6,500 kinds of plants in India that are used by different "traditional health care practitioners". Plants play a crucial role in Indian systems of medicine as raw materials for medicinal formulations. Also discussed are the Indian government's efforts to improve and manage these antiquated health care systems.

(Qazi Majaz & Molvi Khurshid, 2016) There is a significant disparity between the percentage of pharmaceuticals derived from plants in established nations like the US (up to 25%), and quickly growing countries like China and India (up to 80%). Between 250,000 and 500,000 different species of plants are thought to exist on our planet. Food and medicine for people and animals are made from these tiny fractions, which range from 1% to 10%. Food and medicine might be made from the remaining parts of the plant. This is why it is crucial to do study on plants to determine their potential medical value, and a review on the herbal medicine is a great place to start.

(Sen & Chakraborty, 2015) There is an extensive vocabulary of medicinal plants and herbal compounds in India's historic codified medical systems and folk medicine. There has been a growing window of opportunity for advancing Indian traditional medicine on a global scale due to the rising popularity of the herbal medicine and related items in recent decades, both as an adjunct to conventional treatment methods and as a standalone tool for health care management. A growing number of individuals from both rich and poor nations are showing interest in traditional Indian herbal remedies. Many contemporary pharmaceuticals have their origins in the plant remedies utilised in Ayurveda as well as other ancient medical systems. Traditional herbal treatment systems like Ayurveda have the potential to fill certain current medical gaps and serve as a springboard for new drug discoveries.

(Maiti et al., 2011) A large portion of the trend towards alternative medicine consists of herbal remedies. As more and more individuals look for alternatives to conventional care, herbal therapy is booming in popularity. Traditional herbal medicine has a long history of usage in medicine, dating back to the earliest days of human civilization. Using and scientifically authenticating more medicinally beneficial herbal items is important to compete with the rising pharmaceutical industry. In addition to giving readers a bird's-eye view of herbal remedies, this paper aims to shed light on their therapeutic efficacy, potential side effects, drug interactions, pharmacovigilance, regulatory status, and the process for standardising and stability testing herbal remedies.

III. CONCLUSION

Herbal medicine's extensive application is not limited to developing nations. Particularly in developed nations, the revival of botanical medicine is predominately attributable to a renewed public interest in flora and scientific knowledge regarding them. The paper discusses the market value and

worldwide acceptability of herbal medicine. Herbal medicine has a long history within Indian systems of medicine, and it has recently become linked with modern health care, which is considered to have contributed significantly to its market growth.

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