

Special Issue: Horticulture

Herbal Plants: A Key to Developed Poor Countries

Waleed Fouad Abobatta*

Horticulture Research Institute- Agriculture Research Center, Giza, Egypt

***Corresponding author:** Waleed Fouad Abobatta, Horticulture Research Institute- Agriculture Research Center, Giza, Egypt.

Email: wabobatta@arc.sci.eg

Received: September 30, 2024; **Accepted:** October 18, 2024; **Published:** October 25, 2024

Background

Herbal plants are a wide range of wild and cultivated varieties that have been used for different purposes since ancient times. They were used in ancient Egyptian civilization (Pharaonic era) in traditional medicine as a medicine for different illnesses and daily food as a part of the daily mail, in addition to their use as cosmetics such as henna (*Lawsonia inermis*) [1].

Until now, the peoples of ancient civilizations have used herbal plants in traditional medicine, such as in Egypt, Iraq, China, and India. These plants are rich in bioactive compounds such as alkaloids, volatile oils, phenols, glycosides, and many other compounds that provide many health benefits and contribute to the recovery from many diseases, in addition, they improve health, support traditional medicine, create livelihoods, and drive economic growth [2].

The cultivation of herbal plants achieves many goals, including medical benefits and their contribution to economic development, especially in rural areas where they can be grown and marketed in local and global markets.

Poor countries can harness these resources for sustainable development, self-sufficiency, and poverty alleviation by promoting herbal plant cultivation, processing, and exportation, to improve the national economy [3].

There are various key ways herbal plants can contribute to the development of poor countries, including economic empowerment and livelihoods, health improvement and access to alternative synthetic medicines, promotion of cultural heritage and indigenous knowledge, and reserve biodiversity and environmental sustainability.

Herbal plants are often low-maintenance and environmentally friendly, requiring fewer inputs like chemical fertilizers and pesticides. Promoting herbal cultivation can contribute to sustainable agricultural practices, conserving soil and water resources while supporting biodiversity [4].

Numerous herb plants are used in different regions worldwide, as shown in (Table 1) that play an important role in preserving human health.

Benefits of Herbal plants in developing countries

Herbal plants have the potential to contribute significantly to the development of poor countries in several key ways:

Economic Empowerment and Livelihoods

a. **Income Generation through Cultivation:** Poor countries often have favorable climates for growing medicinal plants. By promoting the cultivation of herbal plants, rural communities can create income-generating opportunities, reducing poverty and improving livelihoods. Small-scale farmers can diversify their crops by growing medicinal herbs, which often have high market demand [5].

b. **Processing and Value-Added Products:** In addition to cultivation, developing processing facilities for herbal extracts, oils, and supplements can increase the value of raw materials [6].

c. **Establishing local industries:** Processing herbal plants can provide jobs and create a higher economic return for producers.

d. **Export Potential:** The global market for herbal products is growing rapidly, including medicinal herbs, essential oils, teas, and cosmetics. Promote the cultivation and export of herbal products can benefit from this demand. For instance, countries like India, China, and Brazil have successfully tapped into the global herbal market, creating new revenue streams.

Health Improvement and Access to Medicine

- Traditional Medicine
- Disease Prevention
- Affordable Healthcare
- Prevention and Treatment of Diseases
- Integration into Public Health Systems

Promotion of Cultural Heritage and Indigenous Knowledge

a. Preservation of Traditional Knowledge: Poor communities have valuable traditions of using herbal plants as medicine, often passed down through generations. The use of herbal plants preserves indigenous knowledge, which is valuable to the global as a natural resource for modern medicine and as a part of natural medicine.

b. Cultural Identity and Heritage: The cultivation and use of herbal plants are often deeply embedded in the cultural identity of many communities, by promoting the use of these plants, countries can protect their cultural heritage, enhancing national pride and social cohesion.

c. Education and Research: Promoting research into efficacy, safety, and commercialization of herbal plants can encourage knowledge development. Universities and research institutions in poor countries can collaborate with international organizations to study herbal plants for modern medicinal applications.

Biodiversity and Environmental Sustainability

a. Conservation of Biodiversity: Many herbal plants are native to biodiversity-rich regions, and their cultivation can encourage

conservation efforts. By preserving natural ecosystems that support the growth of herbal plants, countries can protect their environmental resources and ensure sustainable harvesting.

b. Agroforestry and Land Rehabilitation: Growing herbal plants in agroforestry systems can help rehabilitate degraded lands, improve soil fertility, and promote sustainable land use. Some herbal plants, like neem and moringa, also have pest-repellent properties, reducing the need for harmful chemical pesticides.

c. Climate Change Mitigation: Herbal plant cultivation can contribute to climate change mitigation efforts by promoting organic farming practices, reducing deforestation, and sequestering carbon.

Tourism and Cultural Exchange

a. Herbal Tourism.

b. Herbal Gardens and Healing Centers.

Additionally, by cultivating native herbal plants, countries can build resilience against climate-related challenges like drought and soil degradation.

Table 1: Herb plants and their beneficial effects on human.

Common name	Scientific name	Uses	Form	Action
Chamomile	Matricaria chamomilla	Calm anxiety, promote sleep, and aid digestion	Tea, extracts, or oils	Anti-inflammatory properties
Mint	Mentha	Remedy for indigestion, nausea, and headaches	Fresh or dried leaves, essential oil, or extracts	antibacterial properties
Lavender	Lavandula	Reduce stress, anxiety, and insomnia	Essential oil, dried flowers, or extracts	antiseptic properties
Rosemary	Rosmarinus officinalis	Enhance memory and concentration	Fresh or dried leaves, essential oil, or extracts.	antioxidant and anti-inflammatory properties
Aloe Vera	Aloe barbadensis	Treat burns, skin irritation, and wounds	Gel from the leaves, juices, or supplements	hydrating properties
Turmeric	Curcuma longa	Treating nausea, digestive issues, and colds	Powdered root, supplements, or extracts	anti-inflammatory and antioxidant
Ginger	Zingiber officinale	Treating muscle pain and menstrual discomfort	Fresh root, powder, or tea	anti-inflammatory properties
Echinacea (Echinacea purpurea	Strengthen the immune system	Capsules, extracts, or teas	anti-inflammatory and antiviral properties
Basil	Ocimum basilicum	Reducing stress, promoting digestion	Fresh or dried leaves, oils, or extracts	Antibacterial and antioxidant.
Thyme	Thymus vulgaris	Treat coughs, bronchitis, and digestive issues	Fresh or dried leaves, essential oils, or extracts	Antibacterial, antifungal, and antiviral properties
Sage	Salvia officinalis)	Improve digestion, reduce inflammation, and enhance memory	Fresh or dried leaves, teas, or oils	Antimicrobial properties
Ginseng	Panax	Boost energy, lower blood sugar, reduce stress, and improve cognitive function	Root supplements, teas, or extracts.	Antioxidant and anti-inflammatory effects
Cilantro. It is also rich in antioxidants	Coriandrum sativum	Promote digestion, detoxify the body, and lower blood sugar levels	Fresh leaves, seeds (coriander), or oils	antioxidants
Peppermint	Mentha piperita	Treat headaches, digestive issues, and respiratory problems	Fresh or dried leaves, essential oils, or extracts	Soothing effects for muscle pain
Fennel	Foeniculum vulgare	Aid digestion, reduce bloating, and act as a mild diuretic	Seeds, teas, or extracts	Support respiratory health and hormonal balance
Lemon Balm	Melissa officinalis	Reduce stress, promote sleep, and treat digestive issues	Fresh leaves, teas, or extracts	Antiviral properties

Phototherapy

Phototherapy is considered the precursor to modern medicine, also, the roots of modern pharmacology lie in phytotherapy and treatments of diseases with medicinal plants [7].

Early pharmacopoeias (compilations of medicinal plants and their uses) paved the way for more systematic approaches to medicine. For instance, Quinine, extracted from the bark of the Cinchona tree, was used to treat malaria, and this plant-based treatment continued into the 20th century.

Herbal medicine across History

Humanity has long utilized plants and herbs as remedies for various ailments. Ancient Egyptian society was aware of the benefits of using some plants, such as henna and black seed oil, for cosmetic purposes and for treating different illnesses.

a. Pharaonic Civilization

The medical papyri, which describes the uses of several plants and herbs, are regarded as pharmacopoeias. Additionally, they include categorized and ordered medical prescriptions, which describe ailments, their symptoms, and the plants that were employed in the Pharaonic era to treat them, such as the Siddr tree, Chicory, Anise, and Roselle [9].

The Pharaohs utilized plants as a carminative, a remedy for burns, scabies, headaches, respiratory, digestive, toothaches, infections, inflammatory disorders, and allergies, among other ailments. These included fever, tapeworm, indigestion, and intestinal colic. The Pharaohs painted the walls of Pharaonic tombs and temples with many ancient Egyptian plants.

b. Europe

The Greeks and Romans were instrumental in the early documentation of medicinal plants. Hippocrates, the "Father of Medicine," advocated for using herbs such as willow bark (the precursor to aspirin) to treat pain. Galen, a Roman physician, built upon these practices by compiling herbal remedies that influenced Western medicine for centuries.

c. Middle Ages

In medieval Europe, monasteries became centres for preserving herbal knowledge, with monks cultivating medicinal plants in monastery gardens. Herbal medicine texts, such as Dioscorides' "De Materia Medica", remained a crucial source of medical knowledge for over a millennium.

d. Islamic Medicine

During the Islamic Golden Age (8th–14th centuries), scholars like Avicenna and Al-Razi advanced herbal medicine by cataloguing the medicinal uses of plants and synthesizing ancient Greek, Roman, and Persian knowledge. They promoted plants such as cinnamon, thyme, and aloe vera.

Global Herbal Medicine Market

The global herbal market continues to expand, with increasing consumer interest in natural and plant-based remedies. In countries like the U.S. and Europe, herbal medicine has been integrated into

wellness trends, with products like essential oils, herbal teas, and tinctures becoming mainstream.

Regulation and Standardization

With the growing popularity of herbal medicines, there has been a greater emphasis on regulation and standardization. Regulatory agencies in various contents now require that herbal products meet safety and quality standards, like the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA).

Challenges and Considerations

a. Regulation and Standardization: The herbal industry needs regulations and quality control standards to ensure the safety and efficacy of herbal products. Developing countries must develop certified systems that provide strong certification of herbal products and ensure they meet international export standards [8].

b. Education and awareness raising: Promoting the benefits of and safe use of herbal plants requires educational and awareness campaigns, so governments, NGOs, and local stakeholders need more collaboration to educate local communities about proper practice management, right harvesting dates, and techniques.

c. Market access: Developing countries may face challenges in accessing global herbal markets due to trade barriers, lack of infrastructure, or inadequate marketing. Building trade networks and improving processing and packaging capabilities are essential to success [10].

d. Overharvesting: Randomized harvesting of wild herb plants poses a great risk to their continuity and exposes them to extinction, leading to environmental degradation and loss of biodiversity. Therefore, the use of sustainable agricultural and proper harvesting practices is necessary to ensure the safe use of these plants without degradation of ecosystems.

Conclusion

Herbal plants play many roles due to their multiple benefits, including health, economic, environmental, and cultural advantages, so they represent a viable path to improving livelihoods and promoting development in poor countries. Achieving sustainable use and sustainable development of their natural herbal resources helps developing countries fight poverty, improve health care, and build more economies that are resilient.

References

- Metwaly AM, Ghoneim MM, Eissa IH, Elsehemy IA, Mostafa AE, Hegazy MM, et al. Traditional ancient Egyptian medicine: A review. *Saudi journal of biological sciences*. 2021; 28: 5823-5832.
- Pinto T, Aires A, Cosme F, Bacelar E, Morais MC, Oliveira I, et al. Bioactive (poly) phenols, volatile compounds from vegetables, medicinal and aromatic plants. *Foods*. 2021; 10: 106.
- Unati S, Mpumelelo N, Wonder N, Michael AA, Mudau FN. Challenges militating against sustainable economic development potential of African aromatic, beverage and medicinal herbs: a south African perspective. *Indian journal of pharmaceutical education and research*. 2016; 50: 80-89.
- Chen SL, Yu H, Luo HM, Wu Q, Li CF, Steinmetz A. Conservation and sustainable use of medicinal plants: problems, progress, and prospects. *Chinese medicine*. 2016; 11: 37.

5. Karki MB. Harnessing the Potential of Medicinal, Aromatic and Non-timber Forest Products for Improving the Livelihoods of Pastoralists and Farmers in Himalayan Mountains. In: Rajasekharan, P., Wani, S. (eds) Conservation and Utilization of Threatened Medicinal Plants. Springer, Cham. 2020: 93-106.
6. Giannenas I, Sidiropoulou E, Bonos E, Christaki E, Florou-Paneri P. The history of herbs, medicinal and aromatic plants, and their extracts: Past, current situation and future perspectives. In Feed additives. Academic Press; 2020: 1-18.
7. Kurhekar JV. Ancient and modern practices in phytomedicine. In Preparation of Phytopharmaceuticals for the Management of Disorders. Academic Press; 2021: 55-75.
8. Khan MSA, Ahmad I. Herbal medicine: current trends and future prospects. In New look to phytomedicine. Academic Press; 2019: 3-13.
9. Abobatta WF. Herbal Egyptian Plants Siddr Tree (*Ziziphus spinachristi* L.). J Agri Res. 2023; 8: 000330.
10. Zhou X, Li CG, Chang D, Bensoussan A. Current status and major challenges to the safety and efficacy presented by Chinese herbal medicine. Medicines. 2019; 6: 14.