SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

ROLE OF HERBAL DRUGS IN MODERN PHARMACOLOGY: A REVIEW

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Article DOI: https://doi.org/10.36713/epra25984
DOI No: 10.36713/epra25984

ABSTRACT

Herbal drugs have been utilized for the treatment and prevention of various diseases since ancient civilizations and continue to maintain their relevance in contemporary pharmacology. These medicines are obtained from natural sources, primarily plants and medicinal herbs, and contain a wide range of biologically active constituents responsible for their therapeutic actions. In recent times, the demand for herbal medicines has increased due to their perceived safety, affordability, and easy accessibility when compared to synthetic pharmaceutical agents. Modern pharmacology emphasizes the scientific validation of herbal drugs through evaluation of their pharmacological properties, mechanisms of action, standardization, and clinical effectiveness. This review highlights the significance of herbal drugs in modern pharmacology, discussing their role in drug discovery, disease management, advantages, limitations, and future potential. The increasing global acceptance of herbal medicines underlines their importance in advancing healthcare and pharmaceutical research.



KEYWORDS: *Herbal drugs, Medicinal plants, Phytoconstituents, Modern pharmacology, Traditional medicine*

• INTRODUCTION

Herbal drugs are medicinal preparations obtained from various parts of plants such as roots, leaves, bark, flowers, fruits, and seeds. They form the foundation of traditional medical systems including Ayurveda, Unani, Siddha, and Traditional Chinese Medicine. For centuries, these systems have relied on plant-based remedies for maintaining health and treating illnesses.

With advancements in pharmaceutical sciences, herbal drugs are now subjected to systematic scientific investigation to establish their safety, efficacy, and pharmacological activity. Modern pharmacology focuses on identifying active phytoconstituents in medicinal plants and studying their interactions with biological targets. The development of several modern medicines from plant sources highlights the continued relevance of herbal drugs in pharmacological research.

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1. Historical Background of Herbal Drugs

The use of medicinal plants can be traced back to early human civilizations in regions such as India, China, Egypt, and Greece. Classical texts like the Charaka Samhita and Sushruta Samhita document extensive knowledge regarding the therapeutic use of herbs. Over time, traditional medicinal knowledge has contributed significantly to the discovery of important drugs such as morphine, quinine, and digoxin, all of which originated from plant sources. This historical contribution emphasizes the role of herbal medicine in the evolution of modern pharmacology.

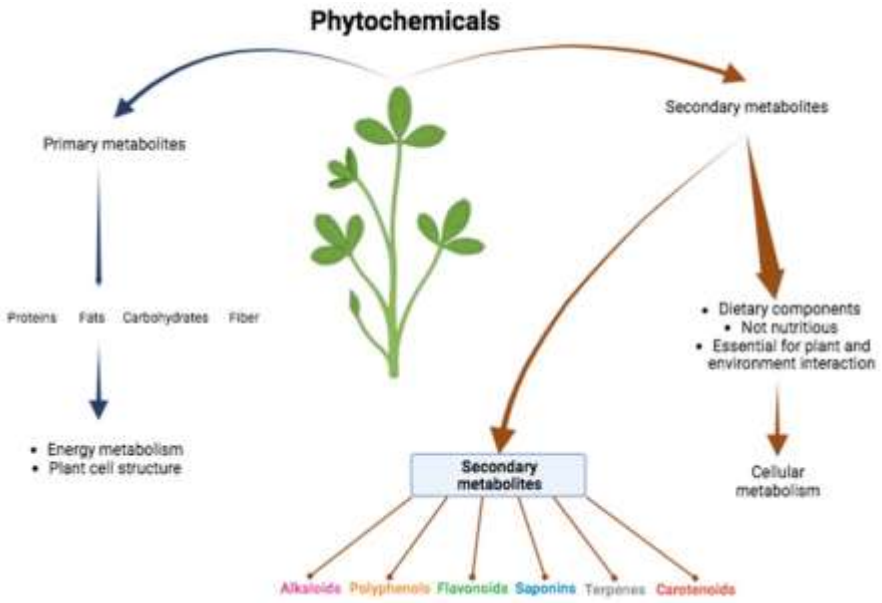
2. Phytochemicals and Their Pharmacological Significance

Phytochemicals are chemical compounds naturally present in plants and are primarily responsible for their medicinal properties. These bioactive constituents exhibit diverse pharmacological effects.

Major Classes of Phytochemicals

Alkaloids (e.g., morphine, atropine)
Glycosides (e.g., digoxin)
Flavonoids
Tannins
Terpenoids
Saponins

These compounds possess a wide range of biological activities including anti-inflammatory, antioxidant, antimicrobial, anticancer, and antidiabetic effects, making them valuable in therapeutic applications.(1)



•Role of Herbal Drugs in Modern Pharmacology

1 **Herbal Drugs in Drug Discovery**

Medicinal plants represent an important source for the identification and development of new drugs. Modern pharmacological techniques enable the isolation, characterization, and modification of bioactive plant compounds. Several contemporary drugs are either directly derived from plants or synthesized based on plant-derived molecules.

2 **Herbal Drugs in Disease Management**

Herbal medicines are commonly used in the treatment and management of chronic conditions such as diabetes mellitus, arthritis, cardiovascular disorders, and liver diseases. Medicinal plants like Withania somnifera, Curcuma longa, and Gymnema sylvestre have demonstrated significant therapeutic benefits in such conditions.

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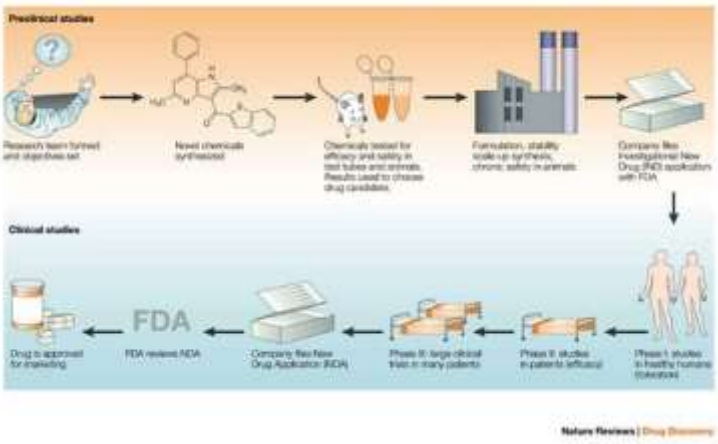
3 **Herbal Drugs as Complementary Therapy**
In modern healthcare, herbal drugs are frequently used alongside conventional medicines as complementary or alternative therapy. This integrative approach can enhance therapeutic outcomes, reduce adverse effects, and improve patient adherence to treatment.

4**. Role in Preventive Healthcare**
Due to their antioxidant and immune-modulating properties, herbal drugs play an important role in disease prevention. Regular consumption of certain herbal preparations helps strengthen the immune system and reduce the risk of lifestyle-related disorders.

3. Advantages of Herbal Drugs
Derived from natural sources with better patient acceptability
Generally associated with fewer side effects
Economical and easily accessible
Suitable for prolonged use
Exhibit multiple therapeutic actions

4. Limitations of Herbal Drugs
Despite their benefits, herbal medicines also face several challenges, including:
Lack of proper standardization
Variability in quality and potency
Insufficient clinical and scientific evidence
Risk of herb-drug interactions
Regulatory and quality control issues(2)

5. Standardization and Quality Control
Ensuring the quality, safety, and efficacy of herbal drugs requires proper standardization. Modern pharmacological methods such as chromatographic and spectroscopic techniques, along with biological assays, are used to identify active constituents, detect adulterants, and maintain consistency in herbal formulations.



•ABOUT THE STUDY
Herbal medicines, derived from plants and plant extracts, have been used for centuries as remedies for various ailments, Traditional systems of medicine, such as Ayurvesla, Traditional Chinese Medicine (TCM), and Indigenous healing practices, have long recognized the therapeutic potential of herbs. In recent years, there has been a resurgence of interest in herbal medicines within the field of modern pharmacology. Researchers and scientists are exploring the scientific basis and efficacy of these traditional remedies, striving to bridge the gap between ancient wisdom and contemporary medical advancements. To understand the current role of herbal medicines in modern pharmacology, it is important appreciate their historical significance. Herbal remedies have been used by different cultures throughout history, with knowledge passed down through generations. Ancient civilizations recognized the therapeutic properties of plants and developed sophisticated systems of herbal medicine.(4)

•Therapeutic Activities of Herbal Drugs
1)Anticancer Activity
Extensive research is being conducted to develop drugs for the treatment of various human tumors using medicinal plant products with anticancer activity. Several medicinal plants have been traditionally used for cancer treatment, including Acalypha fruticosa, Alangium

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lamarki, Catharanthus roseus, Celastrus paniculatus, Embelia ribes, Ficus glomerata, Ficus racemosa, Ocimum basilicum, Plumbago zeylanica, Terminalia chebula, Tylophora indica, and Wrightia tinctoria. For the treatment of breast cancer, herbal extracts from Buthus martensi, Colla cornu, Herba epimedii, Fructus lycii, Radix angelicae, Radix bupleuri, Rhizoma corydalis, Rhizoma curculiginis, Radix paconiae, Radix glycyrrhizae, Scolopendra subspinipes, Squama manitis, and Tubercurcumae are used. Meanwhile, Emblica officinalis, Nigella sativa, and Terminalia bellerica are commonly used for the treatment of pancreatic cancer. The search for natural compounds with potential anticancer activity is ongoing, and these medicinal plants are promising candidates for the development of new anticancer drugs. However, more studies are needed to determine their safety and efficacy in humans.

2)Antidiabetic Activity

Numerous herbal plants. Identified for their antidiabetic propertie these plants include Abroma augusta, Acacia melanoxylon, Acacia modesta, Acacia nilotica, Aconitum ferox, Adhatoda vasika, Adiantum capillus, Adiantum incisum, Agrimonia eupatoria, Allium sativum, Aloe barbadensis, Althaea officinalis, Apium graveolens, Arctium lappa, Commiphora abyssinica, Emblica officinalis. Eucalyptus globulus, Panax ginseng, Gymnema sylvestre. Inula helenium, Juniperus communis, Medicago sativa, Nigella sativa, Orthosiphon stamineus, Panax quinquefolius, Polygala senega, Plantago ovata, Punica granatum, Salvia officinalis, Scoparia dulcis, Tanacetum vulgare, Taraxacum officinale, Tecoma stans, Trifolium alexandrinum, Trigonella foenum, Turnera diffusa, Urtica dioica, Xanthium strumarium, Zea mays, Zingiber officinale, and Annona squamosa. These herbs contain various bioactive compounds such as alkaloids, flavonoids, terpenoids, and polyphenols, which have been shown to possess antidiabetic properties. Some of these compounds act by increasing insulin sensitivity and glucose uptake by the cells, while others promote the regeneration of pancreatic beta-cells and inhibit the breakdown of insulin. Herbs such as Gymnema sylvestre, Trigonella foenum, and Panax ginseng have been found to be particularly effective in reducing blood sugar levels in diabetic patients. Other herbs like Aloe barbadensis, Allium sativum, and Punica granatum have been found to have antioxidant and anti-inflammatory properties, which can help reduce the risk of diabetic complications. In conclusion, herbal plants have been found to have a range of antidiabetic properties and can be used as alternative or complementary treatments for virginiana, Mardenia cundurango, Pisum sativum, Podophyllu peltatum, Punica granatum, Raphanus sativus, Rehmannia glutinosa, Semecarpus anacardium, Sesbania sesban, Stemona japonica, Thuja occidentalis, Taxus baccata, and Verbena officinalis.

3)Analgesic Activity

These plants, namely Bougainvilla spectabilis, Chelidonium majus, Ficus glomerata, Dalbergia lanceolaria, Glaucium grandiflorum, Glaucium paucilobum, Nepeta italic, Polyalthia longifolia, Sida acuta, Stylosanthes fruticosa, Toona ciliate. Zataria multiflora, and Zingiber zerumbet, have extracts that are utilized as analgesic agents.

4)Antifertility Activity

The use of plant-based drugs as a natural source of fertility regulating agents has gained popularity due to their minimal or no side effects. Various plants have been reported to possess antifertility properties, including Amaranthus retroflexus, Artabotrys odoratissimus, Barberis vulgaris, Carica papaya, Dieffenbachia seguine, Evodia rutacapra, Fatsia horrid, Ferula assafoetida, Hibiscus rosasinensis, Lonicera ciliosa, Magnoli virginiana, Mardenia cundurango, Pisum sativum, Podophyllu peltatum, Punica granatum, Raphanus sativus, Rehmannia glutinosa, Semecarpus anacardium, Sesbania sesban, Stemona japonica, Thuja occidentalis, Taxus baccata, and Verbena officinalis. These plants have been studied for their potential to regulate fertility, and some have shown promising results. For example, Carica papaya has been found to possess antispermatogenic and anti-implantation effects, while Punica granatum has been reported to possess antifertility activity in both males and females. Other plants, such as Amaranthus retroflexus and Sesbania sesban, have been reported to possess anti-implantation properties, while Artabotrys odoratissimus has been shown to exhibit estrogenic activity. However, it is important to note that further studies are required to determine the safety and efficacy of these plant-based drugs as fertility regulating agents. Additionally, it is crucial to ensure that the use of these plants is sustainable and does not harm the environment. In conclusion, plant-based drugs are a promising natural source of fertility regulating agents with minimal side effects. While several plants have been reported to possess properties, further research is needed their safety and efficacy.

5)Antipsoriasis Activity

Psoriasis, a chronic autoimmune skin condition, can cause discomfort and embarrassment for those who suffer from it. While there is no known cure for psoriasis, various herbal remedies and preparations containing plant materials have been used to alleviate its symptoms. Turmeric and curcumin, which are derived from the turmeric plant, have shown promise in reducing inflammation and improving psoriasis symptoms. Shark cartilage extract has also been used to reduce inflammation and promote wound healing in psoriasis patients. Oregano oil, another natural remedy, has antimicrobial and anti-inflammatory properties, which may help to reduce skin irritation and inflammation associated with psoriasis. Milk thistle, a plant with antioxidant and anti-inflammatory properties, has also been used to treat psoriasis.In addition to herbal remedies, various antimicrobial agents such as Azadirachta indica (neem),

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Calendula officinalis (marigold), Cassia tora (sickle senna), and Wrightia tinctoria (dyer's oleander) have been used to manage psoriasis symptoms. These natural agents can help to reduce inflammation, soothe skin irritation, and promote

•Future Prospects of Herbal Drugs in Pharmacology

The future of herbal drugs appears promising due to growing global interest and advancements in research technologies. The integration of herbal medicine with modern approaches such as biotechnology and nanotechnology may lead to the development of more effective and safer therapeutic agents. Strengthened regulatory frameworks and scientific validation will further support the incorporation of herbal drugs into mainstream healthcare.

•CONCLUSION

Herbal drugs hold a significant position in modern pharmacology by contributing to drug discovery, therapeutic management, and preventive healthcare. Scientific research has validated the medicinal potential of numerous plants, expanding their role in contemporary medicine. Although challenges related to standardization and regulation remain, ongoing research and technological advancements are expected to enhance the credibility and acceptance of herbal drugs. Thus, herbal medicines represent a valuable resource for the future development of pharmacology and global healthcare systems.

•REFERENCES

1) *Pandey A, Tripathi P. Concept of standardization, extraction and pre-phytochemical screening strategies for herbal drugs. J Pharmacogn Phytochem. 2014;2(5):115-119.*
2) *Ekor M. The growing use of herbal medicines: issues relating to adverse reactions and safety monitoring challenges. Front Pharmacol. 2014;4:177.*
3) *Rates SMK. Plants as sources of drugs. Toxicon. 2001;39(5):603-613.*
4) *Balick MJ, Cox PA. Plants, People, and Culture: The Science of Ethnobotany. Scientific American Library; 1996.*
5) *World Health Organization. Traditional Medicine Strategy 2014–2023. WHO.*