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Traditional Medicine in Africa: Opportunities for Advancing Research Innovation, Drug Discovery, and Development

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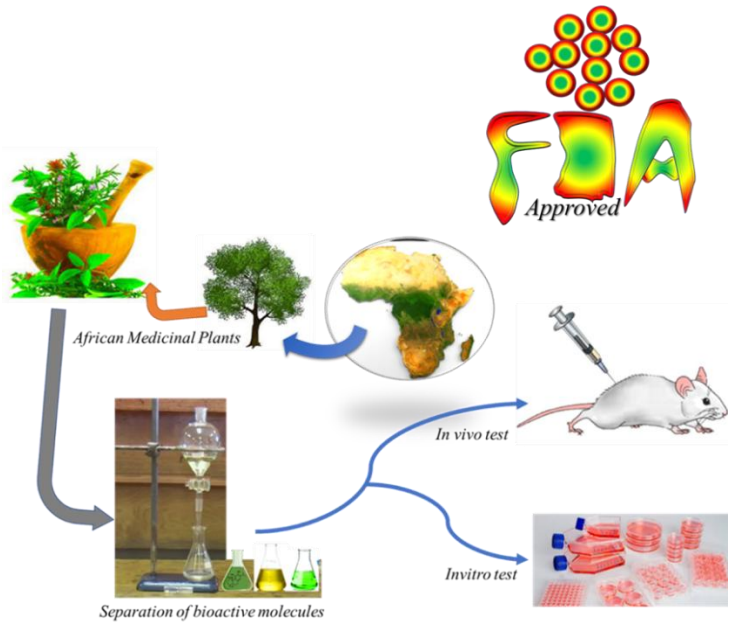
Abstract

The use of traditional medicine for treating health conditions in Africa has been recognized for centuries. Many consumers of traditional medicine believe that plant products with a long history of use are generally safe when utilized correctly. There is a growing interest in herbal remedies, driven by the need to develop new and effective drugs from medicinal plants, which has recently captured the attention of both pharmaceutical and scientific communities. However, scientific evidence regarding the safety and effectiveness of most traditional medicine products is still insufficiently documented. This review discusses the importance of studying traditional medicine and encourages researchers to innovate technologies that improve drug discovery and development from medicinal plants traditionally used in African countries. Africa has a significant potential to leverage expertise in natural products and traditional medicines to drive innovation. However, the growth of drug discovery from medicinal plants faces several challenges, including a lack of technological advancements and low economic status. There is minimal interaction between scientific researchers and traditional healers, preventing collaboration toward a common goal. Additionally, government bodies do not pay enough attention to herbal medicines.

Keywords: Africa, drug discovery, herbal medicine, medicinal plants,

Graphical Abstract



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Introduction

Traditional medicine (TM) refers to the knowledge and practices utilized for diagnosing, treating, and preventing health issues, stemming from Indigenous cultures' theories, beliefs, and experiences. Traditional medicines include medicinal products derived from plants, animals, microbes, and minerals, which are considered potential sources of medications (Shakya & Naik, 2022). Due to concerns about affordability, accessibility, and cultural acceptance, many people around the world prefer traditional medicine for their basic healthcare needs. According to a report from the World Health Organization, more than three-quarters of the global population continues to rely on traditional medicine, as it is readily available in drugstores, health shops, supermarkets, and food stores (Organization, 2019).

Humans have utilized traditional medicine for over 2,000 years, a timeline that surpasses recorded human history. Early humans observed the therapeutic benefits of various herbs and shared their findings through storytelling and spiritual teachings from ancestors (Elahee, MAO, & SHEN, 2019; Pan *et al*., 2014). Consequently, in many African countries before European colonization, healthcare systems relied on Indigenous knowledge, and people largely placed their trust in traditional healers (Ozioma & Chinwe, 2019). Traditional medicine continues to be a key source of healthcare for many people, both in Africa and worldwide. In developing countries, particularly in Africa, limited access to modern medical services has led to a significant reliance on traditional medicine. While the global use of traditional medicine is increasing, there remains a lack of scientific evidence regarding its safety, effectiveness, and potential side effects (Moreira, Teixeira, Monteiro, De-Oliveira, & Paumgartten, 2014; van Wyk & Prinsloo, 2020).

There are significant concerns regarding the safety of most (TM) products due to inadequate labeling, insufficient quality control, and a lack of appropriate patient information during treatment (Ekor, 2014; P. K. Mukherjee, Bahadur, Chaudhary, Kar, & Mukherjee, 2015.). Many consumers of TM believe that products with a long history of

widespread use are generally safe when used correctly. However, there is a lack of scientific evidence documenting the safety and effectiveness of most TM products, and they have not been adequately studied. Currently, there has been little effort to scientifically validate TM or to explore its products as potential sources for new drug discovery. This paper will provide an overview of the attempts to establish scientific evidence and clinical validation of traditional medicine in Africa, as well as the current state of the field and future prospects.

Methodology

To provide more contexts on African medicinal plants and new drug delivery, literature on herbal medicine and drug discovery and development has been explored in African and other developing countries. To identify published studies, a web-based research literature search strategy was employed, utilizing international databases such as Google Scholar, PubMed, Science Direct, Google, and Research Gate. An initial limited search of the literature was conducted using the following key terms: medicinal plants, traditional medicinal plants, herbal medicine, Indigenous knowledge, ethno botanical studies, herbal remedies, challenges, trends, opportunities, scientific research in indigenous knowledge, natural products for drug discovery, drug discovery and development in African countries, pharmaceutical manufacturing in developing countries, and investments in drug discovery. This was followed by an analysis of the words contained in the titles and abstracts, as well as the index terms used to describe the articles. For instance, the PubMed search was conducted using the following terms: (((Drug Discovery) AND (Challenges)) AND (natural products)) AND (Africa [Title/Abstract]), or ((((Drug Discovery) AND (Challenges)) AND (natural products))) OR (developing countries [MeSH Terms]). The titles and abstracts of all available bibliographic records were screened, and the full texts of potentially eligible records that passed the title and abstract screening were selected for review from 2014 to 2025.

Results and Discussion

The scientific trend of African traditional healers

Traditional medicine remains widely used across many African countries, and the World Health Organization (WHO) recognizes the valuable role of traditional healers in the region (Okaiyeto & Oguntibeju, 2021). In most African nations, providers of traditional medicine are

nationally regulated and required to obtain government-approved licenses and certificates (Organization, 2019). However, some countries face challenges such as inadequate manufacturing practices, contamination, weak quality control measures, and improper formulation processes. These issues stem from lax regulations governing the practice of traditional medicine, which is often sold as over-the-counter medication (Pulok Kumar Mukherjee, Banerjee, Gupta, & Kar, 2022).

The African continent is rich in a diverse array of plant species that offer both therapeutic and nutritional benefits [3]. Despite Africa's contribuions of approximately 25% of global biodiversity trade, only a small number of medications derived from its plants have been commercialized compared to those from other continents (Okaiyeto & Oguntibeju, 2021). As a result of the potential and increasing demand for traditional medicine, African countries should adopt a collaborative and holistic approach that encompasses participants from various cultural backgrounds (Kolade, Adegbile, & Sarpong, 2022).

To obtain experience, traditional medicine practitioners in Ghana receive training in the scientific application of medicinal plants to diagnose and treat illnesses utilizing locally accessible resources. The government of Ghana is committed to encouraging and supporting patients who see traditional healers by offering an insurance scheme that is the first of its kind in Africa (Bannister, 2023). Currently, traditional healers in Nigeria and South Africa appear to be making moves to join the mainstream healthcare system. Elsewhere, the Ethiopian and Kenyan governments have accepted the importance of traditional medicine and are conducting various capacity-building trainings with governmental universities. Similarly, in Central Africa (Cameroon, Gabon, Chad, and the Democratic Republic of the Congo), traditional healers have been trained by health professionals on the general concepts of specific diseases and their basic signs and symptoms (Kwedi Nolna *et al*., 2020).

By 2012, the WHO and the Government of Cameroon had teamed up to launch a strategic roadmap for the integration of TM with the National Health System of Cameroon. So, it is possible to say that such efforts are good progress in the integration of TM into the formal system (Tseng *et al*., 2022) and open the way for traditional

health professionals to collaborate with modern physicians in the current health system and to study the effects of TM scientifically (Li *et al*., 2022). However, in many developing countries, traditional medicine knowledge and practices have not been scientifically studied, exploited, or documented.

Rather, the attitude of traditional healers towards research scientists and modern health professionals is a major obstacle to the development of TM scientific research.This is because, in most cases, traditional healers typically keep their indigenous practices transmitted down through their ancestors and refuse to disclose their therapeutic knowledge to other scholars (Okaiyeto & Oguntibeju, 2021).

They believe that the medications will lose their effectiveness when their indigenous knowledge is shared (Dejene K. Mengistu, Jemal N. Mohammed, Yosef Gebrehawaryat Kidane, & Carlo, 2022). Some have linked the mysteries of traditional medical knowledge to the rituals of the gods, claiming that gods do not allow disclosing their knowledge. Traditional knowledge and practice transmitted orally to the next generation of practitioners: As a result of poor relationships with the younger generation and the secrets of TM practitioners, TM is in danger of disappearing or dying with them. This makes it difficult to study TM scientifically or integrate it (Chebii, Muthee, & Kiemo, 2020; Tuasha, Petros, & Asfaw, 2018).

Investigation of plants for African traditional medicine

Plants have played a significant role in the medicinal remedies used within Africa's primary healthcare system. Various diseases have been treated with these medicinal plants across the continent. As a result, natural products derived from plants are not only valuable for addressing a range of health issues but also serve as promising starting points for drug discovery and development. Consequently, numerous studies have been conducted in various African countries to evaluate the therapeutic efficacy of these plants and validate their use in traditional medicine (Oguntibeju, 2018).

In Nigeria, a total of 120 medicinal plant species have been identified and documented from 158 specimens used to treat various diseases (Lautié, Russo, Ducrot, & Boutin, 2020). Likewise, Ugandan researchers have identified and reported seventy-one medicinal plant species for boosting or restoring immunity in people living with HIV/AIDS. Another study was

also conducted on nine species of medicinal plants in South Africa to control internal and external parasites in goats (Sanhokwe, Mupangwa, Masika, Maphosa, & Muchenje, 2016).

Most of the time, information about medicinal plants was obtained by ethno botanical survey from the traditional healers. A semi-structured interview, field observations, group discussions, guided field walks, and a market survey were conducted with the local inhabitants, herbalists (local healers), and medicinal plant sellers in the local markets. Through ethnobotanical information, including various data such as the type of plant species, the part of plant used, the purpose of usage, the preparation procedure, the type of disease, and the duration of the treatment, we obtained information through interviews and discussions. The specimens of medicinal plants were identified by specialists with the help of available flora and consulting with different herbal literature and herbariums (Amiri & Joharchi, 2013).

For proper plant identification, a professional botanist was involved to identify the species and prepare part of the plant for herbarium. After plant species identification, various types of bioactive compounds, or phytochemicals, were isolated from plant extracts Figure 1.

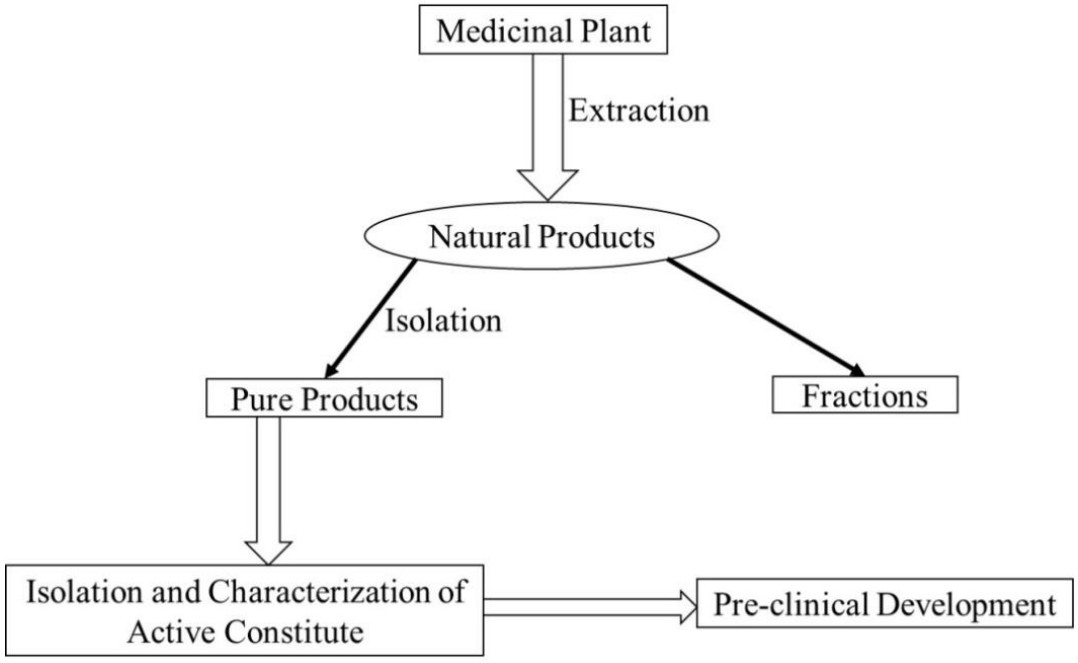

Figure 1: Methods for obtaining active substances from plants

Scientific researches on Traditional Medicinal Plants in Africa

Although the therapeutic activities and side effects of widely used TMs have not been well documented in Africa, many research efforts have been made to extensively investigate the scientific evaluation of the herbs used by traditional healers. Numerous researchers have examined a range of medicinal plants *in vitro, in vivo*, and in clinical tests against different diseases like antibacterial, anti-inflammatory, and anti-cholinesterase activities (Kudumela & Masoko, 2018; Mahammed, Mitiku, & Mohammed, 2020; Ndlovu, Fouche, Tselanyane, Cordier, & Steenkamp, 2013; Ogbole, Segun, & Adeniji, 2017). In Nigeria, traditional medicinal plant species have been evaluated to treat numerous infectious diseases. The analgesic and anti-inflammatory effects of two plants, *Cassia sieberiana* and *Terminalia avicennioides,* were comparatively examined by the Chinazo group, which concluded that both plants possess the capacity to relieve peripheral pain (Okpoko, Ezenyi, Adzu, & Salawu, 2020). In the scientific evaluation of traditional medicinal plants, Kenyan researchers have also conducted *in vitro* and *in vivo* experiments. They studied the activity of the crude extracts against different microbes.

Rapid advancements in science, technology, and research have significantly transformed global healthcare. The growing demand for natural products has prompted extensive research and development efforts focused on new drug discovery (Najmi, A. Javed, Al Bratty, & A. Alhazmi, 2022). Consequently, many research institutions and companies in the drug discovery sector are increasingly looking to traditional medicine as a source of new treatments. Research on medicinal plants often plays a key role in guiding the chemical screening and clinical testing of these new drugs. The drug discovery and development process is complex and time-consuming, encompassing multiple stages, including drug discovery, preclinical research, clinical trials, and post-marketing safety monitoring (Yi Hua *et al*., 2022).

In general, traditional medical knowledge is important not only for its contribution to drug development and market values but also to public health. Scientific research on traditional medicine has not received much attention in Africa in recent decades. Although there have been some attempts to investigate medicinal plant uses for drug discovery, it is safe to say that medicinal

plant studies for new drug discovery are merely at the infant stage in Africa.

Industries producing drugs from medicinal plants

As much as 70–90% of the medications taken in the majority of African countries are imports. Vulnerable citizens are more susceptible to shortages because of their excessive reliance on imports. Due to a general mistrust of medications manufactured domestically and the extreme scarcity of domestic drug-producing sectors, there is a huge demand for pharmaceuticals from abroad (Adebisi *et al*., 2022). The pharmaceutical industry uses medicinal plants to isolate active ingredients for manufacturing medicines for therapeutic and preventive purposes (Najmi *et al*., 2022).

The pharmaceutical industry uses medicinal plants to isolate specific medicinal products that have been refined or to create advanced extracts that are well-standardized concerning their active ingredients. For Africa, a wide variety of medicinal plants can be used for further scientific research to explore their therapeutic efficacy, value addition, and use in curing various old and new diseases. A strong policy framework should support integrated efforts in research, cultivation, collection, storage, processing, manufacturing, and marketing to promote the growth of the medicinal plant industry (Ekeigwe, 2019).

The process of manufacturing a new drug from herbal remedies is very complex. It involves several phases that must be followed meticulously. These phases include starting with the initial idea, conducting market analysis, selecting high-quality plant materials, preparing for production, ensuring quality control of the product, preparing necessary documentation, protecting intellectual property rights, and finally, introducing herbal drugs into regular production (Djordjevic, 2017). Of course, the pharmaceutical industry has many unusual characteristics that are very different from what people think of the industry. In Africa, a few recognized herbal firms are producing herbal treatments based on African medical systems, despite certain limitations on the development of phytomedicine, such as a lack of standardization, efficacy, and quality control of plants (Dzoyem, Tshikalange, & Kuete, 2013).

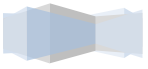

Table 1: some pharmaceutical industries for new drug production from medicinal plants

Industrial Companies	Country
Afriplex Pty. Ltd.	South Africa
Big Tree Nutraceutical	South Africa
Zamerc Investments CC	Namibia
AC Drugs Limited	Nigeria
Abumec Pharmaceuticals Ltd	Nigeria
Biopharma nig ltd	Nigeria
Addis Pharmaceutical Factory PLC	Ethiopia
CHEMI-PHARMA	Ethiopia
ETAB INTER-MEDICAL PLC	Ethiopia
Didy pharmaceutical	Kenya
Pfizer Corp	Kenya

Trends of traditional medicine and its importance for drug discovery

However, the majority of tropical nations suffer greatly from a variety of ailments, and so far, there has been relatively little study conducted regarding the production and finding of new drugs to treat these illnesses. In most developing countries, traditional medicine practice is abundantly available (James, Wardle, Steel, & Adams, 2018). The availability of resources for traditional medicine (rich in sources of plants and other natural products) provides a remarkable opportunity for practicing traditional medicine, but developing new drugs is not yet applicable (Ansari *et al*., 2022).

Despite the need for new drugs in developing countries due to disease challenges and the availability of resources for drug discovery, developing effective treatments is limited due to lengthy and costly pharmaceutical innovation (Kim, Atukeren, & Lee, 2022). Most developing countries, particularly in Africa, have limited annual national budgets that are often only slightly higher than the estimated cost of producing a single drug. The rising expenses associated with drug discovery and development, including the costs of animal testing and clinical trials, contribute to this issue. In fact, many African countries have annual budgets that are lower than the

estimated costs required to produce even one drug.

One of the main obstacles to acquiring pharmaceuticals in Africa is the lack of patents and the limitations on access for indigenous producers, researchers, and scientists. Due to inadequate investment in research and development, the pharmaceutical industries in many African countries are not producing new medications at their best (Adebisi *et al*., 2022). The other important challenges to the growth of novel drug discovery and development are the lack of infrastructure, capacity building, economic restraints, inadequate coordination between different organizations, and the technological competence of developing countries (Parvin, Reza, Das, Miah, & Karim, 2023).

Drug discovery begins with formulating the drug's chemical structure or obtaining it from plants or other sources, identifying and screening the end product, and evaluating its efficacy in animal and in vitro models. The discovery and development of novel pharmaceuticals require highly sophisticated equipment with appropriate methods for screening in addition to high-quality raw materials. Most developing countries lack deliberate technological learning and the implementation of technological policies that are in line with domestic health and economic problems (Ifeanyi, 2023). Along with these challenges, Cameroonian researchers use traditional herbal medicine for drug development and have found good results in clinical trials that show potential drug safety, efficacy, and good drug stimulation and drug parameters. The success of drugs production from medicinal plants is evident in the market with commercially available drugs (Fokunang *et al*., 2011). Efforts have been made in Africa to develop drugs from medicinal plants. Despite such research efforts, it is still widely considered that there are a large number of medicinal plants that have not been properly studied and tested for animal safety and efficiency and that some countries do not pay attention to drug discovery research.

The process of discovering and developing new drugs involves producing new chemical compounds, which require careful design of their chemical structures and an understanding of medicinal chemistry. These compounds can be obtained either through chemical synthesis or by extracting them from natural products. Natural products represent a diverse range of resources, and approximately 25% of the

world's top-selling pharmaceuticals are derived from these natural substances (Qiang *et al*., 2023). A well-known example is aspirin, which is the most recognized analgesic medication globally and is just one of many drugs currently available that originated from natural sources.

In modern research, sophisticated bioassays and bioassay-guided fractionation of medicinal plants and their safety and efficiency on animal tests have been studied for the isolation of several new therapeutically important compounds. New potent therapeutic agents and many new pharmacologically active constituents have been developed from medicinal plants due to the dedicated efforts of researchers (Dar, Shahnawaz, & Qazi, 2017). Plants can produce secondary metabolites, which have great potential for drug discovery and are a heterogeneous group of naturally occurring compounds that have been used to treat various diseases (Anand, Jacobo-Herrera, Altemimi, & Lakhssassi, 2019).

As reported by Katiyar, Gupta, Kanjilal, and Katiyar (2012), the use of medicinal plants as a starting point in the drug development program has some specific advantages: Compared to other plant species, the active compounds extracted from medicinal plants are generally considered safer due to their long history of use by humans in ethnomedicine. However, these plant sources may have certain inherent limitations. These limitations can often be addressed through semi-synthesis. Using natural resources as a starting point offers the dual benefit of delivering the original compound as a candidate for use or developing a semi-synthetic molecule to overcome any limitations associated with the original molecule.

Generally, medicinal plant-based ancient wisdom can be used as a powerful tool for the study of natural compounds in the process of drug discovery. As a result, many drugs on the market are of plant origin; several reviews reported that, out of the 1,328 new chemical entities approved as drugs between 1981 and 2016, only 359 were purely of synthetic origin (Lautié *et al*., 2020).

Table 2: List of some medicines from plants

Medicinal plants	**Developed drugs**	**Used for the treatment of**	**Sources**
Adonis vernalis	Adoniside	Cardiovascular	(Maridass & De Britto, 2008)
Andrographis paniculate	Andrographolide	Antineoplastic	(Varma, Padh, & Shrivastava, 2011)
Anabasis sphylla	Anabesine	Skeletal muscle relaxant	(Singh, 2016)

Atropa belladonna	Atropine	Anticholinergic	(Koetz, Santos, Rayane, & Henriques, 2017)
Berberis vulgaris	Berberine	Bacillary dysentery	(Neag *et al*., 2018)
Ananas comosus	Bromelain	Antiinflammatory,	(Mohan, Sivakumar, Rangasamy, & Muralidharan, 2016)
Camellia sinensis	Caffeine	CNS stimulant	(PHAM *et al*., 2019)
Papaver Somniferum	Codeine	Analgesic	(Mohsin, Wahab, Nasir, Zulkefl, & Nasir, 2012)
Curcuma longa	Curcumin	Choleretic	(Paulucci, Couto, Teixeira, & Freitas, 2013)
Cynara scolymus	Cynarin	Choleretic	(Nasser, 2012)
Digitalis lanata	Deslanoside	Cardiovascular	(Yoshimatsu, Satake, Shimomura, Sawada, & Terao, 1990)
Rauvolfia canescens	Deserpidine	Antihypertensive	(Madawala, Arambewela, & Premakumara, 2013)
Digitalis purpurea	Digitoxin	Cardiotonic	(Verma, Gantait, Jeong, & Hwang, 2018)
Ephedra sinica	Ephedrine	Sympathomimetic	(González-Juárez *et al*., 2020)
Octea glaziovii	Glasiovine	Antidepressant	(Rosenkranz, Fasinu, & Bouic, 2012)
Citrus species	Hesperidin	Capillary fragility	(Jokić *et al*., 2019)
Hydrastis canadensis	Hydrastine	Hemostatic	(Khin, Cech, Kellogg, & Caesar, 2020)
Hyoscyamus niger	Hyoscyamine	Anticholinergic	(Ghafarzadegan *et al*., 2010)
Mentha species	Menthol	Rubefacient	(Wijaya, Hardjo, & Putra, 2019)
Nicotiana tabacum	Nicotine	Insecticide	(Kheawfu, Kaewpinta, Chanmahasathien, Rachtanapun, & Jantrawut, 2021)
Cinchona ledgeriana	Quinine	Antimalarial,	(Murauer & Ganzera, 2018)
Taxus brevifolia	Toxol	Antitumor agent	(Pandi, Kumaran, Choi, Kim, & Muthumary, 2011)
Theobroma cacao	Theophylline	Diuretic	(Jokić, Gagić, Knez, Šubarić, & Škerget, 2018)
Camptotheca acuminata	Topotecan	Antitumor	(Yang, Cragg, & Newman, 2001)
Valeriana officinalis	Valapotriates	Sedative	(Al-Attraqchi, Deb, & Al-Attraqchi, 2020)
Pausinystalia yohimbe	Yohimbine	Aphrodisiac	(Cohen, Wang, Maller, DeSouza, & Khan, 2016)

Challenges in drug discovery from medicinal plants

Drug discovery is a complex, expensive, and time-consuming process. For every successful drug finding, thousands of experiments have been performed over many years, and 5000 to 10,000 compounds fail through the necessary tests (Rousseaux, Bracken, & Guionaud, 2023). The progress of drug discovery depends on many factors, including research talent, cutting-edge technology, and, more importantly, the availability of funds for proceeding with the process.

The process of drug discovery from medicinal plants involves the collaboration of various professionals, including botanists, ethno botanists, ethno pharmacologists, and plant ecologists, who are responsible for collecting and identifying plant species. The fundamental steps in developing drugs from these plants include preparing extracts from the plant materials, conducting biological screening using pharmacologically relevant assays, and isolating and characterizing the active compounds through bioassay-guided fractionation (Datir, 2018).

The main challenges encountered in the process of finding medications derived from medicinal plants include the speed at which active compounds are isolated, the extractions' bioassay screening, and the isolation of large enough quantities to optimize lead development and clinical trials. In developing continents, in addition to isolation and separation of active compounds, high costs of animal testing and clinical trials, poor technological capability, and a lack of skilled manpower are some of the bottlenecks in drug development from medicinal plants (Nyigo & Malebo, 2005).

Most African countries face such challenges: they are less developed in the field and have economic constraints for research and development. Much effort needs to be made to overcome these challenges and contribute to the research and development of new drugs from medicinal plants. The scientific researchers and traditional healers must work together for a common purpose, and the governmental bodies must support the idea of discovering drugs from medicinal plants.

Current Status of the Arts and Future Prospects

The adoption of local wisdom includes the use of plant-based remedies to treat various diseases. Therefore, it is essential to create an inventory of traditional knowledge concerning the use of medicinal plants for illness prevention and treatment. This is crucial for maintaining health and well-being among different ethnic groups.

Traditional medicine serves as the foundation for both current and future technological advancements. It fundamentally relies on the rich diversity of plants and the associated knowledge of their use in herbal therapy (Budiarti *et al*., 2020). Although a typical emphasis is given to the modern medicinal system, traditional medicinal practices are mostly undocumented and receive little to no attention (Chebii *et al*., 2020).

Today, animals, bacteria, fungi, marine life, and minerals are being utilized as promising sources for both traditional and modern medicines in the pharmaceutical industry in addition to medicinal plants (Pirintsos *et al*., 2022). Meanwhile, pharmacognostic research has become highly engaging and informative due to the rapid development of analytical techniques in phytochemistry, pharmacology, drug discovery, and biotechnology (Wainwright *et al*., 2022). To address the growing demands in pharmaceutical education and research, the traditional botanical approach to pharmacognosy has been expanded and adapted to integrate modern scientific methods (Dhami, 2013).

However, African traditional medicine heavily relies on beliefs related to culture, religion, and spirituality (Adeleye *et al*., 2021). Therefore, the study of traditional wisdom needs three pillars: respect, protection, and connection to the modern era of medicine. Moreover, the same weight should be given to traditional knowledge as to scientific knowledge. The goal of the integrated drug discovery programs is to combine traditional knowledge of medicine with novel drug discovery processes. In other words, it's very much a demand of the times to integrate natural products, traditional wisdom, and biotechnology because more than half of all drugs authorized are from natural products, and nearly 80% of drug molecules are naturally occurring (Sharma, Singh, & Sharma, 2022).

The global pandemic COVID-19 makes governments, researchers, and other organizations collaborate to find new medications and vaccines to treat the deadly zoonotic coronavirus infections from medicinal plants, which present a promising pipeline for the future (Chinsembu, 2020). With cooperation, partnership, and openness in practice, particularly with traditional medical practitioners, African traditional herbal medicine may have a bright future. Such cooperation can boost the availability of services and healthcare, as well as the economic potential and reduce poverty

(Wainwright *et al*., 2022). Therefore, the research on traditional medicine will increase the amount of locally produced, scientifically proven traditional medicines and give rural residents a better access to prescription drugs. This would therefore lower the price of imported medications, boost national income, and create more jobs in the medical and industrial sectors. Large-scale medicinal plant cultivation and harvesting will eventually supply enough raw materials for local production, research, industrial processing, and export-ready packaging (Ozioma & Chinwe, 2019).

Conclusions

Medicinal plants have a long history of use as therapeutic agents and have been a valuable source for the discovery of successful drugs. They continue to play a crucial role in identifying new pharmacological leads today. Research on medicinal plants often guides the chemical screening and clinical testing of drugs derived from natural products. As a progressive effort, this paper will give an overview of the attempt at scientific evidence and clinical validation of traditional medicine in Africa. In African countries, scientific research on plant-derived natural product-based drug discovery has not received much attention in recent decades. Therefore, much effort needs to be made to come up with and contribute to the research and development of new drugs from medicinal plants.

In general, taking the experience of stakeholders who worked together to find new medicines and vaccines to prevent the coronavirus pandemic that happened in the world in 2019/2020, to modernize African traditional medicine, discover and develop new drugs, special emphasis has to be given to the indigenous knowledge of medicinal plants, the provision of adequate funding for researchers, and follow the Ghanaian government model as an experience. Adopting this kind of approach will improve Africa's future and lead to a renaissance in drug discovery.

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Disclosure statement

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