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Traditional Remedies for HIV-Related Gastrointestinal Issues: A Focus on Medicinal Plants

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ABSTRACT

The Human Immunodeficiency Virus (HIV) remains a major global health challenge, particularly in sub-Saharan Africa, where access to antiretroviral therapy (ART) is limited, and gastrointestinal (GI) complications are prevalent. These GI disorders, often exacerbated by HIV infection and HAART regimens, compromise patient nutrition, immunity, and quality of life. In response, many communities turn to traditional medicine, particularly plant-based remedies, to manage these issues. This review explores the ethnobotanical, pharmacological, and clinical dimensions of medicinal plants used for HIV-related GI symptoms in Southern Africa. It examines specific plant species such as *Sutherlandia frutescens*, *Aloe ferox*, and *Myrsine africana*, highlighting their bioactive compounds, traditional uses, preparation methods, and proposed mechanisms of action. While preliminary scientific evaluations show promise, concerns remain regarding the safety, efficacy, and compatibility of these remedies with ART. This paper emphasizes the importance of integrative healthcare strategies that bridge traditional knowledge and biomedical science to enhance holistic HIV care and address persistent GI complications.

Keywords: HIV/AIDS, gastrointestinal disorders, traditional medicine, medicinal plants, Southern Africa, antiretroviral therapy (ART), herbal remedies.

INTRODUCTION

HIV, along with AIDS, has been recognized as a global epidemic. The global number of people living with HIV was approximately 36.9 million. Moreover, it has been predicted that more than 8 million newly infected individuals will arise by 2030 if new prevention methods are not implemented. In Southern Africa, HIV/AIDS has been confirmed as a leading cause of morbidity and mortality. In this region, the annual incidence of new infections among adults was estimated to be 0.9 million. In terms of diagnosis and antiretroviral treatment (ART) coverage, it was estimated that 61% of people living with HIV were diagnosed, and 43% of people living with HIV were being treated. ART and sustainable drug control (SDC) are essential for preventing HIV transmission and prolonging lives. As the HIV epidemic reaches new peaks, the need for safe and efficient methods of HIV treatment has become a primary concern. The standard of treatment for people living with HIV is antiretroviral therapy (ART), commonly described as Highly Active Antiretroviral (HAART) treatment. This treatment is highly effective in treating HIV/AIDS. The primary ART drugs are grouped into five classes: non-nucleoside reverse transcriptase inhibitors (non-NRTIs); nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs); protease inhibitors (PIs); integrase strand transfer inhibitors (INSTIs); and fusion inhibitors (FIs). These drugs are designed to combat all forms of HIV at different locations in the virus. ART is highly effective in delaying disease progression and improving the life quality of people living with HIV and AIDS (PLWHA) [1, 2].

Overview of Traditional Medicine

Despite modern advances in medicine, the use of traditional medicine continues to be widely common in developed, developing, and underdeveloped countries. In some regions, it has been estimated that up to 90% of the population relies on traditional medicine for primary healthcare. Traditional medicine is based on the use of natural products of plant, animal, or mineral origins used for medical purposes. The use of traditional medicine is based on local beliefs, culture, and practices passed down through generations.

Herbal medicine, a form of plant-based traditional medicine, is one of the most widespread forms of traditional medicine concurrently used with biomedical treatments. Medicinal plants are marketed for the treatment of some side effects of ART. Many countries have local names for these plants, and the indigenous knowledge has been passed down orally. Through formal and informal meetings, focus group discussions, and interviews, data on the traditional use of medicinal plants for the treatment of HIV-related gastrointestinal complaints were collected from 78 traditional healers representing eight ethnic groups of the northern provinces of South Africa. From 150 collected rhizomes, tubers, and herbs, 105 taxa were used to prepare herbarium specimens. Ethnobotanical methods were applied to assess the level of agreement on plant use among ethnic groups, the plant taxa used, and their efficacy. The most agreed-upon traditional remedies were paired with a plant herbal extract in an appropriately sterilized tablet form to investigate their in vitro activities against HIV-1 and human adenovirus type 5. Most traditional remedies for HIV-associated gastrointestinal issues in southern Africa are plant-based [3, 4].

Medicinal Plants in Traditional Remedies

Some of the 69 plants currently under investigational drugs were also traditionally used, and some of them yield traditional remedies with known anti-HIV activity. The majority of the plants with promising anti-HIV activity belonged to the more widely researched families in terms of plant-derived anti-HIV drugs, namely: Euphorbiaceae, Fabaceae, and Lamiaceae, while five plant species belonging to the poorly explored families, namely: Combretaceae, Fumariaceae, Monotropaceae, Sarcostemaceae, and Sphagnaceae, were identified. Madagascar was identified as a ripe region for investigations although it was never included in investigations of southern African plants against HIV. A few dozen plants are currently undergoing biological activities testing for anti-HIV activity with one whole plant remedy. The continuously growing volume of secondary literature confirms the interesting history and current hot topic of southern African plants as sources of new anti-HIV drugs. Traditional remedies provide good leads as they are usually rich in bioactive compounds and have a long history of use. Prevention is the best approach to combat a pandemic like the HIV pandemic. So far, vaccines based on selected HIV-1 candidate epitopes have failed. The selection of a vaccine for HIV-1 remains an open question. Several trials have pointed to the intriguing possibilities of eliciting protective immunity against HIV-1 by using live needles in a debiased manner. However, viruses intrinsically force a siege by neutralizing antibodies by constantly changing surface structure. On the other hand, all currently known HIV-1 infects cells of the innate immune system endowed with Natural Killer cell cytotoxicity. Therefore, candidate epitopes eliciting cytotoxic T cells should seek viral determinants comparable to the hepatitis C virus. Medicinal plants used in traditional HIV/AIDS therapy were defined. Several of these, based on chemical knowledge, also deserve scrutiny against biological insights. The most commonly used traditional plant remedy with credible bioactivity is the pome extract of Sutherlandia frutescens. The plant with the highest number of HIV-1 related publications is Withania somnifera, providing a likely unifying research approach where the active materials are already known and clinical effect is imputed [5, 6].

Common Gastrointestinal Issues in HIV Patients

Gastrointestinal pathology is a common and potentially life-threatening manifestation of HIV infection, including esophageal diseases, gastric diseases, intestinal diseases, and colon diseases. In HIV-infected patients, GI lesions can be either opportunistic infections or non-infectious inflammatory diseases. Diagnosis consists of clinical history-taking and integrity examination, along with endoscopy, biopsy, and cytodiagnosis after treatment failure. Misdiagnosis may occur due to the nonspecificity of signs and symptoms, as well as the presence of mimicking lesions. However, their treatment is of great importance, since they may cause GI bleeding, perforation, or an atypical course of opportunistic infections with mortality. Gastrointestinal manifestations occur in the early stage of HIV infection, and the patient may complain of nonspecific GI symptoms, such as dysphagia, odynophagia, epigastric pain, diarrhea, or constipation. The integrities and appearances of the tongue, buccal mucosa, pharynx, esophagus, stomach, liver, gallbladder, pancreas, and intestines should be meticulously examined. Oesophagogastroduodenoscopy is the examination of choice to diagnose the esophagus, stomach, and duodenum, and lower GI endoscopy is used for viewing and biopsy examination of the colon and rectum. Non-infectious diseases include HIV enteropathy, inflammatory bowel disease, and neoplasms, such as lymphoma and Kaposi's sarcoma. Infectious diseases include opportunistic infections, such as candidiasis, ulcerative esophagitis, and CMV. The oesophagus is commonly involved in patients with AIDS, particularly when they are immunocompromised due to low CD4+T cell count. Esophagitis often manifests as odynophagia or dysphagia, and less frequently as retrosternal pain or bleeding. If candidiasis

is not recognized and treated, the disease will progress quickly, with the development of ulcerative esophagitis, esophageal stenosis, or disseminating candidiasis [7, 8].

Role of Medicinal Plants in Managing Gastrointestinal Symptoms

Food-related gastrointestinal (GI) ailments are primary health concerns for HIV-positive individuals, worsened by highly active anti-retroviral (HAART) treatment. In Zambia and similar regions, patients consult traditional healers, especially herbalists, to manage HAART-related GI disorders, experiencing discomfort and distress. Typical issues include dysentery, diarrhea, gastrointestinal tuberculosis, loss of appetite, constipation, nausea, vomiting, and abdominal pain. These GI ailments, influenced by gastroenterology, deprive patients of essential nutrients early in the disease, jeopardizing HAART effectiveness. Patients report significant health improvements through Zambian traditional remedies rich in micronutrients, enhancing appetite and the overall eating experience. This blend of modernity and traditional wisdom can provide affordable, accessible solutions for food-related GI disorders in HIV/AIDS patients, ultimately enhancing quality of life. A significant knowledge gap regarding HIV's impact on food-related GI processes prompted this study to explore Zambian traditional methods for managing these complaints. The focus was on various symptoms reported, herbal remedies used by traditional healers, their preparation, and the healers' knowledge and training. However, valuable knowledge about enzyme-boosting medicinal plants is rapidly diminishing, as researchers struggle to establish a comparable modern understanding. Efforts to undermine indigenous knowledge have sparked a renewed interest in preserving the traditional medicinal plant knowledge globally [9, 10].

Specific Medicinal Plants and Their Uses

Gastrointestinal problems can severely affect the quality of life of people living with HIV/AIDS (PLWHA), resulting in an important public health issue. In line with the objectives of this work, the current review focuses on the gastroprotective and anti-diarrheal activity of herbal remedies for gastrointestinal issues in HIV/AIDS in Southern Africa. According to a survey, Gauteng province is most representative of the regions of South Africa, and hence it was selected as the study area. Therefore, the focus of the current review is South African plant species, which are used as traditional remedies for HIV/AIDS. Searches for herbal remedies to treat HIV-related GI issues were conducted on Medicines of South Africa, scientific journals, and published books. Ethnobotanical data were collected, focusing on plant family, genus, and species names, vernacular names, plant parts used, and preparation methods. Plant species mentioned at least five times across different sources were prioritized for a systematic literature search for existing scientific studies on their gastroprotective or anti-diarrheal properties. Key phytochemical information, toxicity data, and pharmacological results were also collected. Traditionally, five plant species were identified and prioritized for literature searches. Aloe ferox (Aloaceae), Gossypium herbaceum (Malvaceae), Myrsine africana (Myrsinaceae), Rumex acetosa (Polygonaceae), and Sutherlandia frutescens (Fabaceae) were the plants of focus. More than 25 scientific studies evaluated these plants or extracts for different medicinal purposes. Most research efforts have been directed toward South African plants traditionally used for the treatment of gastrointestinal problems and/or HIV/AIDS [11, 12].

Mechanisms of Action of Medicinal Plants

Gastrointestinal issues or disturbances are common clinical symptoms of HIV infection and/or AIDS. The approach to HIV/AIDS management should be holistic, thus combining both traditional and scientific treatment methods. Where available, some medicinal plants traditionally used for the treatment of HIV-related gastrointestinal issues, or symptoms, were compiled together with the expected means of action under seven categories: stimulation of arachidonic acid metabolism and increased secretion of mucus by intestinal goblet cells; protein synthesis inhibition; effects on ion transport; proteases inhibition; cholera toxin receptor-like effects; anti-TB activity; and reversal of immune deficiency by providing vitamins and minerals. Phytochemical studies of these plants show they are rich in phenolics, flavonoids, and diverse sulfur compounds. At least 81 compounds have been purified and identified. The use of a combination of different plants resulted in increased anti-HIV activity compared to the use of single concentrations of active plants. Also, the proposed means of action and isolated compounds explain the medicinal plants' usefulness against gut-related issues of HIV-infected individuals more widely. However, further efficacy testing in vivo, isolation of active compounds, and in vivo toxicity assays are needed. Such studies would open future avenues for the possibility of commercialising reliable traditional remedies against HIV/AIDS [13, 14].

Cultural Perspectives on Traditional Remedies

Through the role of Knowledge, educators can deliver culturally specific HIV/AIDS information within the community, providing educational initiatives and follow-up. THPs, respected community members, can help change attitudes towards openness about HIV/AIDS. Over the decades, attitudes have improved, shifting towards altruism and a recognition of the need to inform others. THPs believe cultural and spiritual approaches can effectively supplement counselling where Western practices have fallen short. Index patients conduct public talks with churches and clinics to inform communities about preventing HIV infection. Churches offer protective benefits, facilitating faith-based support and greater openness. Many have formed networks with the broader community, adding credibility to their messages. Church leadership can ensure HIV/AIDS initiatives are accepted rather than viewed with suspicion. Additionally, religious messages promoting monogamy and abstinence may help prevent disease spread. Conversely, churches have been criticized for enabling sinful behaviours, and there are fears that openness may endanger families. AIDS-related programming can lead to resentment among those feeling blamed for the disease. Educating on preventative behaviours also risks encouraging them in some individuals [15, 16].

Safety and Efficacy of Medicinal Plants

It is important to note that medicinal plants show promise in the management of HIV, but their safety and efficacy have not been sufficiently proven. It is, therefore, crucial to identify the medicinal properties of the plants mentioned in this study. Moreover, some medicinal plants that are considered safe in one geographic region may be unsafe in another region. The safety and efficacy of most of the medicinal plants used by HIV-positive people identified in this study were not known in the literature. Consequently, the need to incorporate this set of information into the counselling protocols of HIV-positive people in Lesotho is of paramount importance. HIV-positive people in Lesotho and other parts of the world were encouraged to inform their physicians if they were using medicinal herbs so that liability issues could be avoided. This study cannot be conclusive regarding the efficacy and safety of the traditional remedies used by HIV-positive people in Lesotho. However, the findings are a starting point for further investigations on the veracity of the remedies. Moreover, this study highlights pertinent areas that need to be investigated. Despite the restrictions on using medicinal plants, further investigation on safety, efficacy, compatibility with ART, and chemical constituents of the plant species is warranted. Further studies are also warranted to elucidate the safety and efficacy of the extracts from the plant species. The efficacy and toxicity of the plants mentioned in this study will be evaluated in vitro and in vivo. It is crucial to isolate and characterize biologically active compounds from the locally used plant species. Most importantly, ethnopharmacological surveys of plant species used to manage HIV-related conditions should be conducted in the rest of Southern Africa and in other areas of the world where HIV poses a significant challenge to humanity. Indeed, tackling the HIV pandemic cannot be done through ART alone, but through a multi-pronged, holistic approach supported with safe and efficacious traditional remedies [17, 18].

Clinical Studies on Traditional Remedies

Many Africans with HIV and AIDS in southern Africa use traditional medicines, either alone or alongside HAART. This summary of scientific studies evaluates traditional remedies for their effectiveness against HIV-related GI tract disorders. Data were gathered through ethnobotanical studies and literature searches from 2010. A qualitative analysis was performed on the findings, noting the testing methods and plants involved. A total of 33 species were identified, with 30 appearing only once. Most remedies, generally complex and often polyherbal, contain a combination of leaves and roots, frequently prepared as teas. Traditional healers played a key role in preparing and administering these treatments, primarily found in KwaZulu-Natal, Lesotho, and Swaziland. Scientific testing of traditional remedies for HIV-related GI disorders is emerging, focusing on commonly used plants, including Cyclopia genistoides, Halleria lucida, Helichrysum aureonitens, Securidaca longepedunculata, Striga asiatica, and Zanthoxylum capense. Among those addressing diarrhoea, vomiting, or appetite loss, five plants have demonstrated varying degrees of efficacy in scientific studies. Although there are limited ethnobotanical investigations into these remedies, they offer valuable insights for guiding future research and experimentation [19, 20].

Challenges in Integrating Traditional and Modern Medicine

Tanzania is grappling with an HIV/AIDS epidemic, with around 1.6 million infected individuals, of whom at least 1 million require treatment. Due to stigma, many turn to both auto and traditional medicine. Symptoms of HIV/AIDS, particularly opportunistic infections, are similar across different socioeconomic settings, manifesting as fevers, night sweats, vomiting, diarrhea, skin issues, weight loss, and cough.

Although effective drugs for these infections are available, they are often unaffordable and inaccessible, particularly for rural communities. Traditional healers provide herbal remedies targeting symptoms instead of curing the disease. They offer a culturally appropriate, client-centered approach to health, fostering effective communication on health matters, including STDs. Many individuals with HIV/AIDS consult these healers as they are more accessible and respected healthcare providers. With existing formal health services out of reach for the poor, traditional medicine presents a viable solution. Traditional healers also serve as crucial educators and counselors within their communities. For over a decade, the Tanga AIDS Working Group (TAWG) has collaborated with traditional healers to bolster HIV transmission reduction efforts, providing education, counseling, testing, and home-based care. TAWG is actively engaged in assessing the use of herbal remedies among AIDS patients, including understanding the medicinal plants involved [21, 22].

Patient Perspectives on Traditional Treatments

Traditional healers are regarded by their clients as knowledgeable and trustworthy health providers. The powerful plants used in the traditional treatment of HIV and related opportunistic infections have an important role for dominant groups in the local society, namely, monks. The plants selected are based on the specific treatment and application to patients. Nevertheless, overutilization and unethical harvesting put some species in danger of extinction. Construction of the medicinal plant species propagation and commercial collection systems is necessary to protect biodiversity and guarantee long-term conservation and sustainable distribution of medicinal plants. Consumption of medicinal plants is determined by culture, values, beliefs and accessibility of alternative medications. Patients evaluated the effectiveness of the traditional remedies against the severity of nausea, vomiting, diarrhea, and/or loss of appetite. Success depends on the persons queried and their definitions of the concept. Many patients are grateful for the enormous relief the medicine provides, while others believe that the medicines, in fact, may be harmful, precipitating the return of their original symptoms. Suggestions for further study topics include exacting pharmaceutical analyses of the plant collections; comparisons based on the evaluation of the degree of foliar infestation stress indicators; focus group investigations of respects and resentments, as well as success versus failure [23, 24].

Ethical Considerations in Using Traditional Remedies

Research has shown that some traditional healers may take an advantage of the demand for herbs from HIV/AIDS patients and sell untested products to unsuspecting clients. In managing HIV/AIDS patients, it is critical that the untested products used are not toxic. Medicinal plants that are not safe for use will cause more harm to patients whose immunity is already compromised. Therefore, patients using poisonous herbs would find themselves with opportunistic infections sooner than they would be expected. The purpose of this study was to find out which plants HIV-positive people had used to treat themselves for HIV/AIDS related symptoms in Lesotho and evaluate the risk of the level of herbs used. A questionnaire was used to conduct semi-structured interviews on HIV-positive people previously treated at the Maseru Clinic. The plants had been used to relieve HIV/AIDS associated symptoms. Plant specimens were collected and identified at the National University of Lesotho's Botany Department. The analysis was done using Kew Quartiles. Among 56 people interviewed, 24 reported exercising traditional medicine for HIV/AIDS, which is a diverse manner of treatment. Lots of herbs were used (plant parts). Most of the medicinal plants treated other conditions. The usage of the HIV/AIDS plants is diverse. It is a challenge to come up with one strategy to draw the plants from across the country. Upon looking closely, the plants will reduce or keep the viral load down. HIV-positive people can make choices as to the plants to use, but little is known about the ingredients of several of these plants. There is therefore a need to screen these plants used in Lesotho, especially since many do not treat HIV/AIDS. Some may guard against poisons and side effects, but most have yet to be tested. Most not know the side effects may be putting themselves at risk. There is also a need to protect the rights of the plant and the plant knowledge in cases of commercialization [25, 26].

Regulatory Framework for Medicinal Plants

Medicinal plants should be regarded as drugs produced by nature, and hence need to be regulated. Countries need to sanction governmental organizations responsible for the regulation and evaluation of medicinal plants. In Brazil, the National Health Surveillance Agency (ANVISA) has created a legislative framework, registers and delineates regulations, as well as requires inheritance correspondence for the registration of herbal-based medicines. To guarantee the sound use of herbal medicines in Brazil, ANVISA set a timeline for regulating traditional medicines. In the European Union, complementary medicines sourced from plant materials are separately regulated from pharmaceutical medicines.

Medicinal plants used in medicines must be evaluated to determine their marketing authorization following EU Directives. It is not without benefits to execute measurements in many European Union Countries to make sure that the appropriate quality-controlled phytomedicines are available within health care systems. It is presently implemented in many Asia and Pacific countries that medicinal plant-based products used in medicines must exclusively pass through rigorous quality assessment, standardization, pre-clinical studies, and clinical trials to ascertain efficacy and safety. The FDA should set up international workshops for experts to make provisions on indication, internal use, and source descriptions of the medicinal plant species. In China, a pharmacopoeia on medicinal plants should be developed based on field studies, each medicinal plant would be provisioned with illustrations on its biology, chemistry, pharmacology of extracts, potential clinical side effects, post-marketing complaints, diagnosis third-party product quality checks to help speed up the medication development of quality controlled medicinal plants with research/patents on herbal medicine usage by physicians. DOIW should be assigned to each plant in the pharmacopoeia to reserve originality and establish a market for medicinal plants and their cosmetics/herbal products in readiness for globalization [27, 28].

Future Directions in Research

The majority of globally used medicines originate from the natural world, with traditional knowledge of medicinal plants playing a vital role in healthcare. Traditional medicine is essential in many countries, reflecting a complex interplay of factors influencing its use by individuals and communities. Among the notable traditional treatments for HIV/AIDS is the reliance on traditional remedies, especially in resource-limited nations where antiretroviral therapy is scarce. Estimates suggest that a considerable percentage of people in these regions turn to traditional remedies for health issues, with medicinal plants comprising up to 80% of available treatments. Anecdotal evidence supports the effectiveness of certain plants against HIV/AIDS-related ailments. Despite some progress, bioprospecting for widely used antiretroviral plants has only recently gained traction due to heightened scrutiny following notable adverse events. This contribution aims to spotlight research on southern African plants used for HIV treatment, aspiring to identify potential lead compounds for future antiretroviral drug development. Emphasizing the importance of scientifically validating traditional knowledge, the research seeks to encourage broader acceptance within the communities utilizing these plants, which may ultimately lead to discovering new functional medicines. The insights presented aim to inform and guide future investigations [29, 30].

CONCLUSION

HIV-related gastrointestinal disorders represent a significant clinical and public health burden, particularly in regions with limited healthcare infrastructure. Traditional remedies, especially those derived from medicinal plants, have played and continue to play an essential role in managing these complications among HIV-positive populations. These remedies offer locally accessible, culturally acceptable, and often nutritionally beneficial alternatives or complements to biomedical treatments. The therapeutic potential of plants such as *Sutherlandia frutescens*, *Withania somnifera*, and *Aloe ferox* reflects a valuable indigenous knowledge system rooted in generations of empirical use. However, to safely integrate traditional medicine into mainstream HIV care, rigorous scientific validation through phytochemical analyses, clinical trials, and toxicity testing is essential. Collaboration between traditional healers, researchers, and healthcare providers can ensure that the benefits of these remedies are fully realized while minimizing risks. A holistic approach that combines ART with safe, effective traditional practices may improve patient outcomes and support the long-term management of HIV/AIDS, especially in resource-limited settings.

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