AFRICAN TRADITIONAL MEDICINE AND BIODIVERSITY CONSERVATION: HARNESSING NUTRACEUTICALS FOR SUSTAINABILITY IN AFRICA

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Abstract

This research aims at examining the potentials of African Traditional Medicine, especially nutraceuticals and the need to conserve and harness nutraceuticals for sustainability in Africa. The term "African traditional medicine" can be referred to the indigenous medicine of Africa, based on traditional indigenous knowledge systems and passed down, by word of mouth, from generation to generation within the particular indigenous community. This system of medicine had long existed before the advent of modern medicine (Orthodox), and it is used for the treatment of diseases and illness by African indigenous people. Despite being the oldest system in the world, African traditional medicine has remained the least established, informal and most rudiment traditional medicine system in the world. This paper attributes some limitations and challenges confronting African Traditional Medicine (ATM) to poverty, rapid loss of the natural habitats of some of these medicinal plants due to anthropogenic activities, lack of scientific credibility and facilities and health services, lack of overall public acceptance and lack of governmental support. This paper observes that the reasons behind the lack of acceptance of ATM generally is because of the old belief that it is founded on mysticism and superstition, and secondly Africans do not largely domesticate and conserve the medicinal plants and animals used for production of traditional medicine in Africa. The questions that propel this research are; why do Africans perceive ATM as inferior and archaic, and what has prevented Africa from developing and harnessing the use of ATM? What has African leaders done to ensure strict conservation of these medicinal plants in Africa? Employing the methods of philosophical analysis and hermeneutics, this paper critically analyzes some key concepts for clarification, debunks the assertion that African traditional medicines are founded on mysticism, magic, witchcraft etc., and argues that nutraceuticals a brand of ATM, commonly referred to as functional foods which are derived from food sources like fruits, vegetables, and medicinal plants, rely on traditional knowledge and have curative and preventive measures without negative effects unlike orthodox medicines. This research submits that for healthcare services to enjoy sustainability and tremendous progress, African countries as a matter of urgency must make conservation of the herbs, medicinal plants and animals the number one priority.

Keywords: African Traditional Medicine, Biodiversity Conservation, Nutraceuticals, Africa

Introduction

Before the advent of modern hospitals and pharmaceuticals, that is before westernization, civilization and colonialization took over in Africa, African traditional medicine has been the dominant healthcare system. It is the oldest, and perhaps the most assorted of all therapeutic systems. In fact, African societies depended largely on herbalists, diviners, midwives, bone setters and traditional healers for healthcare services. The significant thing about African traditional medicine is that it is always available, fresh, affordable easily accessible, natural and culturally trusted. Despite some criticisms and condemnations made to discard the use of African traditional medicine, African traditional medicine remains the best natural healthcare system one can take that is devoid of chemicals and side effects. However, this is not to say that African traditional medicine is hundred percent good and recommendable. Lack of standardization, loss of indigenous knowledge, safety, overharvesting concerns, inability to conserve medicinal plants, the unscientific nature of traditional medicine and African belief system are factors affecting the sustainability of traditional medicine in Africa. No wonder (Onuh:2018) laments that; the documentation of medicinal uses of African plants and traditional systems is becoming a pressing need because of the rapid loss of the natural habitats of some of these plants due to anthropogenic activities and also due to an erosion of valuable traditional knowledge. He added that Africa is also notorious to have one of the highest rates of deforestation in the world. This paper concludes that African leaders must play vital roles to make their traditional medicines to standard and safe.

Definition of Key Terms

Traditional Medicine

Traditional medicine is also known as indigenous or folk medicine. In the words of (Onuh: 2018) Traditional Medicine comprises medical knowledge systems that developed over generations within various societies before the era of modern medicine. He maintains that herbal, Ayurveda, Siddha medicine, Unani, ancient Iranian medicine, Islamic medicine. Traditional Chinese medicine, acupuncture, muti, Ifa, and other medical knowledge and practices all over the globe are all practices known as traditional medicines. According to the World Health Organization (WHO), traditional medicine is the health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral-based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illness or maintain well-being. According to (Onuh:2018), "traditional medicine that has been adopted by other populations is often termed complementary or alternative medicine" (23).

African Traditional Medicine (ATM)

Ezekwesili and Okaka (2019) define African traditional medicine as a form of holistic health care system that is organized into three levels of specialty, which include divination, spiritualism, and herbalism. (Onuh:2018) gave a descriptive definition of

African traditional medicine. For him, Traditional African medicine involves diviners, midwives, and herbalists. Diviners are responsible for determining the cause of illness, which in some cases are believed to stem from ancestral spirits and other influences. Traditional midwives make extensive use of indigenous plants to aid childbirth. Herbalists are so popular in Africa that a herb trading market in Durban is said to attract between 700,000 and 900,000 traders a year from south Africa, Zimbabwe, and Mozambique. Therefore, African Traditional Medicine involves the indigenous health knowledge and practices used by African communities to prevent, diagnose, and treat illnesses. It is said to be connected to African culture, values, the natural environment and spirituality. According to (Sifuna, 2022), "African traditional medicine is undeniably important in treatment and cure of diseases and illness in the rural areas which are characterized by widespread poverty as well as a shortage of health care facilities, health care workers and allopathic medicaments." He further states "one of the contributing factors for affordability of African traditional medicine is that it utilizes indigenous knowledge in the indigenous local communities to meet the health care needs of the people of these communities, and is based on community philanthropy of alleviating pain and suffering and achieving the public and community common good rather than profit-making." (Sifuna, 2022)

Who is a Traditional Healer?

One who provides medical care in the community that he lives, using herbs, minerals, animal parts, incantations, and other methods, based on the cultures and beliefs of his people is called a traditional healer (Ezekwesili &Okaka: 2019). A traditional healer must be seen to be experienced, versatile and competent.

Difference Between Western Medicine (Orthodox) and African Traditional Medicine

Western medicine also known as (Allopathic or orthodox medicine) is largely clinical in approach. It views disease in terms of organically malfunction. It is more biological and scientific in all its claims. African traditional medicine on the other hand is holistic in nature. It attempts to provide therapy for supernatural and spiritual etiological agents such as curses, evil spells and bad omen. However, currently, there are massive transformation in African traditional medicines. Traditional medicines are now undergoing scientific tests, overseen by agencies who are saddled with the responsibility of checking their standardization and safety. Nutraceuticals, brand of traditional medicines have dosages and prescriptions. Homeopathic doctors using nutraceutical products to treat sicknesses require lab tests before commencing treatment.

Categories of Traditional Healers in Africa

Herbalists: Adullahi cited in Bello and Babajide (2019), sees herbalists as people who use medicinal plants or parts known as herbs. These medicinal plants include: root,

stem, leaves, stem or root bark, flowers, fruits, rhizomes, bulbs, tubers, gums or seeds.

Bone setters: Traditional bone setting arose as an adaptive approach to injury care. It is the art of repairing fractures and other orthopedic injuries. A traditional bonesetter is an unqualified practitioner who did not receive any formal training in modern orthodox medical procedures. (Eze et. al:2022) Nwadiro cited by (Eze et. al, 2022)notes that a bonesetter manages fractures empirically or by experience acquired through pupilage without any formal education and modern principles of orthopedic practices. From the above definitions of a bonesetter given, it means that the knowledge of traditional bone setting is transmitted by oral tradition. Thus bone setting is perceived as a family practice, and training in the craft is by apprenticeship. Ude aki or elu aku (*Elaeis Guineensis*), eke (*Bivittatus), abuba* eke *(Laposh Organics*) and emida (*Hexalobus Monopetalu*)

Traditional Psychiatrists: These are indigenous healers and medicine men who diagnose and treat people with mental, emotional, and behavioral conditions. These healers adopt similar procedures in orthodox or Western psychiatry when diagnosing mental illness. They start by asking psychological investigative questions to determine whether the patient had committed some evil deeds and if so, persuaded the patient to confess his sins and make sacrifice (Amadasun: 2025).
Traditional Birth Attendants: These are known as traditional midwives that provide care for pregnancy and childbirth. They provide basic health care support during and after pregnancy. They are seen in medically underserved remote areas

Traditional Surgeon: This is a traditional health practitioner who performs surgical operations male and female circumcisions, tribal marks, cataract, whitlow, inguinal hernia, piercing ear-lobes, caesarian section, tooth abstraction etc., as part of a cultural initiation process. For instance, traditionally, cataract operation is done by dropping the juice from the leaves of an alkaloid-containing plant into the eye to desensitize it, and then with a sharp stick the cloudy lens removed. However, traditional surgical procedures currently are on a decline, as compared to modern allopathic medical surgeries. This is as a result of complications of procedures such as tetanus, meningitis and septicemia. Also, orthodox medicine's dominance chiefly contributed to the decline.

African Traditional Medicine in Pre-colonial, Colonial and Modern period
Africa is said to be the cradle of civilization with a rich and cultural diversity marked by regional differences in healing practices. The use of herbs for treatment and diagnoses in Africa is as old as mankind. African traditional medicine has long existed for thousands of years before the introduction of modern hospitals and medicines. In the olden days, before prescribing traditional medicines to people, traditional healers have their method of diagnosing diseases before using medicinal plants to treat the symptoms. These methods always work perfect for them, and the medicinal plants used have no negative

effects because they are all naturally made. In fact, Africa is blessed with many plants that can be used as medicines. These medicinal plants are used in the treatments of many illnesses. Again these plants are also symbolic and have spiritual significance. Traditional healers discovered healing properties from roots, fruits, seeds, bark, animal products, minerals and leaves. For instance, (Onuh : 2018) observes that *Securidaca longipedunculata* is a tropical plant found almost everywhere across Africa with different uses in every part of Africa. In Tanzania, the dried bark and root are used as a laxative for nervous system disorders, with one cup of the mixture being taken daily for two weeks. In East Africa, dried leaves from the plant are used in the treatment of wounds and sores, coughs, venereal diseases, and snakebites. In other parts of the continent, parts of the plant are used to cure skin diseases, malaria, impotence, epilepsy, and are also used as an aphrodisiac. (p.13). One of the importance of these medicinal plants is that they have the tendency to cure different diseases due to its ability to penetrate into the cells, arteries, and veins.

Examples of African Medicinal Plants and their method of preparation and uses

Bitter Leaf (*Veronia amygdalina*): This is West and Central African shrub used in local soups and teas. It is used for malarial treatment, Blood sugar control, Digestive support, and Appetite improvement. It is rich in antioxidants, contains flavonoids and vitamins, and anti-inflammatory properties.

Moringa (Moringa oleifera): This leaf is used for nutritional supplementation, immune support, treatment of malnutrition and energy enhancement. It is high in protein, rich in calcium, contains iron, vitamins A, C, AND E and potassium.

Neem (Azadirachta indica): This leaf is used for the treatment of skin disease, malaria and oral health care. It has antimicrobial, antifungal and anti-inflammatory properties.

Aloe *ferox* mill (Xanthorrhoeaceae)- Bitter Aloe or Cape Aloe: This is native to South Africa and Lesotho and is considered to be the most common Aloe species in South Africa. The bitter latex, known as Cape aloe, is used as laxative medicine in Africa and Europe. It has anti-inflammatory, antimicrobial, and anticancer properties. A. *ferox* has many traditional and documented medicinal uses. It has been reported that A. *ferox* gel contains at least 130 medicinal agents with anti-inflammatory, analgesic, calming, antiseptic, germicidal, antiviral, antiparasitic, antitumor, and anticancer effects.

Artemisia herba-alba: This plant is commonly known as wormwood or desert wormwood, and has been used in folk medicine by many cultures since ancient times. For instance, it is used to treat arterial hypertension and diabetes. In Tunisia, it is used to treat diabetes, bronchitis, diarrhea, hypertension, and neuralgias. It is used to stop stomach disorders and the herbal tea made from it has been used as analgesic, antibacterial, antispasmodic, and hemostatic agents in folk medicine.

Momordica charantia: This is also known bitter melon, a tropical vegetable grown throughout African. The leaf may be made into a tea called "cerassie," and the juice,

extracted from the various plant parts (fruit pulp, seeds, leaves, and whole plant) is a common folklore remedy for diabetes. (M Fawzi:2013)

African Traditional Medicine in Colonial Period

During the colonial period, traditional medicine which was the dominant medical system for millions of people in Africa began to lose its strength due to the establishment of science-based medicine. The arrival of the Europeans was a turning point in the history of ancient tradition and culture. Traditional medicine was discouraged by many colonial governments on the ground that it is primitive, archaic, unscientific, unsafe, lacks standardization and detailed documentation of traditional knowledge. In fact, some traditional practices were outlawed. According to (Ezekwesili and Okaka: 2019) "The importance of traditional medicine dwindled during the colonial period, whereby it was viewed as inferior to western medicine (Orthodox). It was banned completely in some countries due to its association with witchcraft/voodoo, supernatural, and magical implications, in which case, it was also termed "*juju*". In traditional African society, when a person falls ill, a traditional practitioner uses incantations to make a diagnosis. The incantations are thought to give the air of mystical and cosmic connections. Divination is typically used if the illness is not easily identified, otherwise, the sickness may be quickly diagnosed and a remedy prescribed. Sometimes the practitioner will advise the patient to consult a diviner who can give a diagnosis and recommend a treatment. (en.wikipedia.org)

Importantly, the use of animal sacrifices to appease the gods, and charms used to remove spells in some sickness like treatment of mentally ill patients equally contributed to why many people believe that traditional medicine is fetish. However, it is believed that contact with the spirit world through divination often requires not only medication but sacrifices.

Development of Traditional medicine and the Evolution of Nutraceuticals in Africa

Presently, transformations and development in traditional systems of medical care in Africa is now tremendous. Organizations such as the World Health Organization support research into medicinal plants. Many universities in Africa and research centers now study: Herbal medicine, phytochemistry, ethnobotany, nutraceuticals and drug discovery from plants. In fact, the wide spread of these viruses like Ebola, COVID-19, SARS and rapid increase of cancer, kidney and liver diseases in the world have given rise to the wide use of nutraceuticals, a modern classification of traditional medicine, mostly those promoted by the government. According to 2020 report on lung cancer which is said to be the second most frequent disease worldwide, with 2.21 million diagnoses and 1.80 million fatalities shows that nutraceuticals have greatly contributed to reducing the side effect of cancer.

The term nutraceutical was coined by Stephen DeFelice in 1989. He created the term

and reinterpreting aspects of Igbo traditional religion, often incorporating elements such as ancestral veneration, the revitalisation of various deities linked to different natural elements, seasonal festivals, and rites of passage (birth, marriage, death), sometimes adapted to modern contexts to accommodate contemporary life and perspectives (Isiani et al., 2022). Another significant feature is the veneration of Mother Earth, illustrated in the worship of the earth goddess. In traditional Igbo society, the earth goddess (*Ala*) occupies such a central role in the people's beliefs that any modern practice or revival of the pristine Igbo religion without reference to her seems illusory.

Neopaganism in Igbo society can be described as rooted in nature. Followers are convinced of *Ala*'s potency, and many avoid actions that might offend her designs (Onwuatuegwu & Mmadudiri, 2020). Although adherents believe in the transcendence of the sacred, which exists beyond every living creature in spiritual entities such as gods and goddesses, deities, and spirits, they also maintain that the sacred is present in every living being. They often perceive nature as sacred and interconnected with the divine. In their rituals, they utilise natural objects, animals, and living beings to connect with life, nature, and otherworldly entities. Rituals are, therefore, not merely performances but highly transformative events that can influence an individual through the power they are believed to invoke when performed.

There is significantly more involvement of the youth than the elders in Igbo Neopaganism. This can be attributed to factors ranging from their ease of adapting to change to the quest for exploring alternative spiritualities and the prevailing get-rich-quick syndrome within Igbo society, which is championed by the youth. Unlike their forebears, who showed genuine devotion to the gods, many of today's Igbo youth are attracted to Neopaganism due to promises of a brighter future and greater material wealth.

An offshoot of these beliefs is the infamous *Oke-ite* ("significant pot") ritual, which is believed to make someone who engages in it instantly rich. Here, traditional cultural practices of sacrifice and blood rituals, along with their potency, combine with the modern quest for quick wealth among Igbo youths. It is crucial to understand that this is not a traditional or accepted part of mainstream Igbo culture or religion (*Odinani*), but rather a dangerous and often criminal deviation within the current Neopaganism in society. The ritual consists of a charm or concoction prepared in an earthenware pot ("ite") using various ingredients. These ingredients are often reported to include bitter herbs, animal parts (such as dogs, elephants, monkeys, and bats), and, alarmingly, human body parts, sometimes specifically those of virgins or individuals who have not given birth (Nnatuanya, 2022; Mefor, 2025). The purported aim of the *Oke-ite* ritual is to bring sudden and immense wealth to the person who performs it, often without requiring hard work or legitimate means.

nutraceuticals which combines the concepts of nutrition and pharmaceuticals. Since then, foods with nutritional values have been referred to as nutraceutical. The term nutraceutical is self-defined and has no legal definition. It is often used interchangeably with bioactive, functional foods, or dietary supplement. Stephen DeFelice proposed the term nutraceutical to refer to any substance that can be consumed as food or a component of food that offers health or medical benefits, such as disease prevention and treatment. (Paras and Lalita:2025) Foods that have health or medicinal properties, including the ability to prevent and treat diseases are called nutraceuticals. They are also organic compounds obtained from food that assist human health and prevention of illness by offering physiological advantages. These foods or food ingredients are; superfoods, nutrients-rich foods like fortified cereals, phytochemicals, dietary supplements like vitamins derived from natural sources, and foods derived from genetically modified organisms. (Paras and Lalita:2025) It is the capacity and potentials nutraceutical have in the prevention or treatment of disease that set them apart from a functional food. What is a functional food? This is a traditional food that is enriched with bioactive ingredients that offers health benefits.

Categories of Nutraceuticals

Functional food: These are foods fortified with cereals and enhanced with additional nutrients.

Dietary supplements: These come in form of capsules, powders and tablets. They contain vitamins, minerals, or herbal extracts.

Herbal products: These products are used in traditional medicine systems. they are derived from plants, and they possess therapeutic properties.

Probiotics: These are live microorganism that provide health benefits by improving gut health.

Prebiotics: These are non-digestible food components that promote the growth of beneficial microorganisms in the intestines.

Some Health Benefits and potentials of Nutraceuticals

Nutraceuticals of Bacterial origin such as probiotics helps in the treatment and management of cancer, lactose digestion, gut health, obesity, pain alleviation, etc. Nutraceuticals of Fungal origin such as Cordyceps and Ganoderma lucidum. The health benefits of this include, anti-aging, kidney diseases and neurological disorders. Nutraceuticals of Algal and Cyanobacterial Origin Seaweeds, including Saragassum, Undaria Pinnatifida, and Dictyota. They contain antioxidant, anticancer, antiviral and anti-obesity properties. Nutraceuticals derived from plants. These plants have anti-inflammatory and antioxidant properties which have numerous health benefits for conditions like ulceration colitis and colorectal cancer. Moringa, lavender, garlic, cinnamon also offer antiviral and metabolic benefits. Other health benefits of nutraceuticals are; They reduce CVD burden by lowering total cholesterol due to polyphenols found in fruits, vegetables, cereals, legumes, tea, coffee, wine and cocoa. Again, nutraceuticals play various roles in the management of prediabetes and diabetes.

Polyphenols such as grape-derived polyphenols, have been suggested to lower blood pressure. Nutraceuticals promotes skin health, delay aging and have potential mechanisms for treating viral infections. They can help manage chronic diseases and could extend our lives. To say it all, nutraceuticals may be considered less likely to cause unpleasant side effects and more "natural" than conventional treatment.

Some examples of nutraceuticals are; Omega-3 fatty acids (found in fish oil), Curcumin (active compound in turmeric), Probiotics (found in Yogurts), green tea extract and Fiber supplements. One of the potentials of African traditional medicine is that those illnesses that have defied conventional medicine which are termed "incurable" like HIV\AIDS, mental illness, cancer, liver and kidney diseases and ulcer are cured by traditional medicine. ATM is largely non-prescription; in other words, it needs no prescriptions to be taken. So, they are easy to obtain and affordable.

Understanding the Difference between Traditional medicine, Nutraceuticals and Dietary Supplements

These three terms are closely linked together, but they have differences. While traditional medicine relies more on natural whole foods, and attempts to provide therapy for supernatural and spiritual etiological agents such as curses, evil spells and bad omen, nutraceuticals purify these active natural ingredients into pharmaceutical-like doses. Again, nutraceuticals encompass a broader spectrum of products, including functional foods, dietary supplements specifically refer to isolated nutrients or compounds. Importantly, we have traditional and modern nutraceuticals, the former has to do with natural unmodified foods e.g. ginseng, garlic or tomatoes. The later has to do with heavily processed or synthesized supplements e.g. omega-3 pills and curcumin capsules.

Regulation of Nutraceuticals

Nutraceuticals are regulated by various regions; The European Nutraceutical Association (ENA), The European Food Safety Authority (EFSA), while The Dietary Supplement Health and Education Act (DSHEA) and Modernization Act of 1997 (FDA) govern their oversight in the US. In Nigeria, nutraceuticals fall under the oversight of the National Agency for Food and Drug Administration and Control (NAFDAC).

Safety of Nutraceutical on Consumers

One of the advantages nutraceuticals have over conventional medicines is that nutraceuticals are accessible, safe, natural and affordable. Again, because it is naturally made, devoid of chemicals, it has the tendency to cure diseases without having any side effects on the patients. Nevertheless, misuse and overuse of nutraceuticals may pose health risks to human. In other words, people are advised to consult a doctor before taking these products to avoid self-medication and overdose. Because some African countries are still poor and underdeveloped, some of these product are to regulated

before introducing them to the public. This makes some people to feel that these products are more harmful to the kidney, liver and the heart. The truth of the matter is that people do not scrutinize these products to know the normal dose to be taken. Another important thing to know is that nutraceuticals are not considered drugs; so their sale is permitted, but the agents must provide evidence of safety before being licensed for use in the public.

Factors Affecting the sustainability of Nutraceuticals in Africa

Nutraceuticals face a lot of challenges and limitations that have continue to hinder their sustainability and standardization in Africa.

Conservation: It is quite unfortunate that after colonization, some African countries that are predominantly farmers left their occupation and diversified into oil, depending on imported products. Cultivation of medicinal crops and domestication of medicinal animals begin to decline. This is chiefly due to negligence, deforestation, and lack of conservation of biodiversity. Water pollution, climate change, erosion and flooding have also contributed to the low cultivation and harvesting of these medicinal plants in large quantity. (Sifuna, 2022) listed the uses of wild animals in African traditional medicine: sniffing of burned ash of the rhino horn to arrest noise-bleeding; swallowing a mixture of crushed powder of the horn with milk to cure asthma; ingestion of crushed rhino horn as an aphrodisiac; applying of crocodile body fat on human body to cure skin ailments; the private parts of a female crocodile are cooked and mixed any food and secretly fed adulterous husbands to wean them from adultery; smearing of the lion's body fat on one's body to keep away their creditors as it is believed that the scent evokes ab aura of fear; drinking of the elephant's urine to cure asthma etc.

Absence of Technology: Some African countries like Nigeria, where there is lack of technology, people still find it difficult to develop their traditional medicines. They still rely on allopathic medicine which is based on science, infrastructure and costly hospital-based curative care despite its unaffordability. this lack of technology is one of the things that have held traditional medicines to compete with western medicine. Again some Africans have good knowledge about traditional medicines but inability to purchase expensive technology to set up the industry remains a great challenge. The governments of these poor countries also contribute in making things difficult for their masses because they fly out to the developed countries for medical care.

Lack of Education and Professional training: This is the most common among the limitations of traditional medicine. Most people who are into African traditional medicine lack proper education and training. Some of the things they produce are not clinically tested, and some of them lack knowledge of how to prescribe those drugs to patient. Inability to pass down the knowledge of medicine to others is also one of the perturbing issues in Africa that has contributed to the limitation of African traditional medicine. Again, traditional medicine has more practitioners than conventional

medicine, but their major challenge is that they have less professionals, hence it is prone to quackery and deceit.

Lack of documentation: Sometimes, the prescription, dosage, compositions, side effects, expiring date and the descriptions of African traditional medicines are undocumented and even unknown. This is why people are discouraged to take it. Again, as informal medicines, they are usually not subjected to prior or pre-administration toxicity evaluations. Traditional medicine is prone to inaccuracies in diagnosis because of lack of educational requirement.

Incentive structures and government support: Government of these poor African countries are not supporting and encouraging their citizens to develop. Rather they extract the resources meant for developing their countries citizens to enrich themselves, creating poverty in these countries.

Conservation of Nutraceuticals in Africa

Conservation of nutraceuticals in Africa requires preserving these foods, species, leaves, medicinal animals and plants used in making nutraceuticals. For instance, deforestation of medicinal plants should be totally avoided if Africa truly needs sustainable development in health sector. sustainability. Again, planting of more trees can help restore ecosystems where medicinal plants grow naturally. Importantly, there is a need for careful harvesting of herbs, allowing regeneration periods and avoid harvesting immature plants and uprooting entire plants. Documentation of indigenous knowledge is very necessary and should be recorded through books, academic research and community education. Finally, African societies should be carefully educated on the proper herb usage, development of safe nutraceutical products, environmental protection and method of conservation.

Conclusion

African traditional medicines still play vital roles in healthcare system in Africa because of its accessibility to the poor, ability to prevent and cure different illnesses without side effects. Nutraceuticals is different from traditional medicine because it is a combination of nutrition and modern scientific processing to promote health. However, there are many obstacles that need to be dealt with and addressed for its full potential to be actualized as the effective treatment of diseases. The number one factor is lack conservation of medicinal plants and animals. In Africa, these natural God-given gifts are not properly protected. A lot of things have been attributed to the cause of the decline in cultivation of these medicinal herbs in Africa. Absence of technology, insecurity, flooding, bad leadership, erosion, oil spillage etc. all contributed to the low cultivation of medicinal plants in Africa. Therefore, for sustainability in take place in healthcare system in Africa, conservation, documentation of indigenous knowledge, government support and public education are essential to ensure these herbs remain available for future development.

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