

Research Report

Indigenous systems of forest conservation: a tool for traditional medical practices in Akyem Abuakwa traditional area of Ghana

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Abstract - Forest conservation is a very important concept across the world. It is not only crucial for climate change but also very critical for the survival of humanity. In Africa, forests have always been an important aspect of nature that is regarded with uttermost reverence and care. Importantly, discussions on health, healthcare, culture, economics and other factors have been associated with forests. Part of this benefit is the use of herbs from the forests for local medicinal purposes. The current study sought to ascertain the value of conserving forests resources for indigenous herbal medicine among the Akyem Abuakwa people of Ghana. Among other things, it aimed at exploring the indigenous means or methods of conserving forests in Africa. The study adopted a purely qualitative research approach, with a blend of interviews and secondary materials. From the current discourse, it was revealed that African traditional medicine, both spiritual and physical, make very good use of the forests. From earliest times, several strategies and indigenous knowledge systems were deployed to ensure a proper means for the protection of herbal plants, trees and animal parts to enhance the practice of traditional medicine in Akyem Abuakwa. Based on the findings and discussions arising from the research, we argue that rigorous education and orientation programmes toward the protection and sustenance of the forest environment should suffice. However, the discussions and debates surrounding African indigenous forest conservation and its contribution to African medicinal resources appear to be complex. Such puzzlement must be resolved with continuous research beyond this current contribution.

Key words: Forest, Conservation, Traditional, Indigenous Medicine, Akyem Abuakwa, Ghana

Introduction

Forest is a very important part of the ecosystem across the world. Forests do not only contribute to making the environment beautiful but they also enhance rainfall and affect climate change. Globally, forests have been reported to “provide habitats for 80 percent of amphibian species, 75 percent of bird species and 68 percent of mammal species (UNEP 2020: 16). Importantly, about 60 percent of vascular plants are found in forests (UNEP 2020).

In Africa, forests and trees are essential for the continent’s economic and environmental security. Effective use of these resources is closely associated with food security, energy needs, poverty alleviation, and environmental protection. To this end, forests make significant contributions to economic development, preservation of biological resources and maintenance of natural systems.

Over the years, African forests have played a pivotal role in the practice of traditional medicine on the continent. Many African people, especially the poor, depend on this resource for their livelihoods. In Africa, forests serve both spiritual and physical purposes; some of the forests are used as sacred grooves, shrines including other religious purposes (Khumbongmayum *et al.* 2004; Ntiamoa-Baidu 2008; Barre *et al.* 2009).

The notable usefulness of the forests in Africa is the generation of herbal medicinal components. Since time immemorial, Africans have depended on their surroundings for herbs to treat all kinds of illnesses (Abdullahi 2011). A report by the World Bank indicates that, the use of Traditional Medicine in developing countries has increased since the 1990s. Scholars agree that across Africa, more than 80% of the population rely on traditional medical practices and herbs cannot be dissociated from same (Abdullahi 2011). Like other continents, African countries have pluralistic systems of healthcare. In this context, modern medical practices coexist with other non-conventional health systems (Twumasi 1975). These include a variety of indigenous systems based on traditional practices and beliefs (Twumasi 1975).¹ These practices have existed for centuries and continue to have relevance in contemporary times (Adu-Gyamfi *et al.* 2020).

¹ According to Twumasi, in contemporary Africa, there exist two major medical systems: indigenous and scientific or orthodox medicine. The indigenous medical system is believed to be an old tradition and approach to health that incorporate holistic approach to healthcare. It involves both physical and irrational or spiritual healing practices. On the other hand, scientific medicine was introduced into the country by Europeans and has been associated with those that rely on the germ theory towards disease

Irrespective of the benefits gained from forest resources in Africa, the continent is reported to have been witnessing unprecedented rates of deforestation, eroding a resource base that covers about 24 percent of the total land area (Sayer *et al.* 1999; UNEP 2020). In the long run, this is undermining economic growth, exacerbating poverty, and contributing to environmental degradation (Sayer *et al.* 1999).

Prior to the influx of Europeans, Africans had varied means of preserving their forests for various future uses. Preservation methods ranged from cultural to religious strategies; where deliberate attempts were made to conserve special forests for use (Benson 2021). During the advent of Europeans, Africa shifted from the traditional notions of forest conservation to a more scientific method. The conservation of African forest by both scientific and indigenous means has co-existed to aid the practices of traditional medicine in Africa and Ghana in particular (Benson 2021).

It is against this backdrop that the current research engenders a continuous dialogue and empirical studies concerning a more nuanced examination of indigenous means of conserving African forests and alignment of same with African traditional medicine. In addressing such hiatus, the current research highlights the concept of conservation as applied in the indigenous traditional knowledge systems. It also focused on discussing the African traditional medicine that relies on forest products. This includes those that have been preserved through indigenous means in Ghana and Akyem Abuakwa in particular.

Method

The current study used a qualitative research approach. Information was gathered from both primary and secondary sources. Primarily, oral interviews were the major strategies used to gather data for the study. Concerning the interview, the semi-structured interview format was deployed to interview seventy (70) participants. The semi-structured interview format allowed the researchers to probe further based on ascertaining new hints that could contribute to the objectives of the research.

Essentially, the respondents were carefully selected through a purposive sampling technique. Participants were selected based on their age and their experience concerning the conservation of forest for traditional medical practices. Most of the

informants were above seventy years. It is instructive to state that there were more male interviewees than their female counterparts. While most of the participants were interviewed in their homes, a significant number of them were interviewed in palaces and open spaces. Since the researchers were interested in the narratives concerning the indigenous means of forest conservation and their link with traditional medical practices, respondents were selected from a pool of traditional rulers, royals, traditional priests, herbalist, staff of herbal centres, land owners and elders of various families who are nuanced in traditional and customary issues in the Akyem Abuakwa traditional area.

Prior to the interviews, consent were sought from the various interviewees. During the exercise towards seeking consent, some of the interviewees declined to participate in the study. This notwithstanding, with no equivocation, the researchers duly anonymized all respondents. Also, the researchers studied the life experiences of persons, their actions toward the environment and their knowledge on indigenous medical practices. Similarly, there was a lacer focus on some notable villages in Akyem Abuakwa. The towns that were studied included Anyinam, Kwabeng, Begoro, Maase, Asiakwa, Abomosu and Enyiresi. These towns were chosen because the local people in these communities persistently adhered to the cultural practices of Akyem Abuakwa. Again, they were among some of the most developed and accessible towns in the Akyem Abuakw traditional area. At the time of the study, these areas also had a large concentration of traditional herbalists and herbal centres.

Concerning secondary sources, books, reports, journal articles and online materials were found useful. They were adequately and appropriately utilized in this study. In particular, sources that were used were very essential to the objects of the study. Information from earlier scholars concerning environmental conservation and indigenous medical practices were used as a basis for take-off in this current study. Significantly, information gleaned from the secondary sources has been used to corroborate the data derived from the interviewees among other sources and vice versa. These sources have been synthesized and analyzed thematically to present the conservation narratives on the Akyem Abuakwa traditional area, which has wider ramifications on the perseveration of medicinal plants that are useful for the production of traditional medicine.

Table 1: Background of Respondents

Category	Anyinam		Kwabeng		Maase		Sekyere Abomos		Enyiresi		Asiakwa		Begoro		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Traditional rulers	1	1	1	X	1	X	1	X	1	X	1	X	X	1	8
Royals	1	2	3	2	1	4	X	5	2	2	5	1	4	2	34
Traditional healers (IPHs, Herbalists)	1	1	1	X	1	1	1	1	2	X	1	X	X	X	10
Herbal clinic staff	2	1	1	2	1	1	1	1	2	1	1	1	3	X	18
Sub-Total	5	5	6	4	4	6	3	7	7	3	8	2	7	3	70
Total	10		10		10		10		10		10		10		

Findings and Discussions

Indigenous systems of forest conservation and traditional medical practices in Akyem Abuakwa

Belief system

In Akyem Abuakwa, there is a belief in the Supreme Being or creator as the God of the universe. References are made to Him as *Twedumpong Kwame* or *Onyankopong* (Addo-Fening 1980). To a lesser extent, *Asaaseyaa*, the mother of the earth is believed to give protection to the forest. Like all Akans, the people of Akyem believe in the existence of other deities or lesser gods who manifest in great rivers and serve as mediators between the earth and *Onyankopong*. The various deities are believed to be the gods who serve as custodians of the towns and villages. Historically, the worship of the Supreme Being was initiated through river gods and other agents such as shrines, spirits of lands at sacred places and caves (Opoku 1978). The belief in the elements above serves as a means of

conserving the forest through the protection of various species of plants, trees and herbs for the practice of traditional medicine.

Recognition is also given to ancestral spirits due to the belief in life after death. Certain areas such as cemeteries, sacred groves, shrines, waterfalls and caves among others are strictly prohibited. This is a way of showing respect to the spirits that dwell in these places. To a larger extent, these rules ensure the conservation of forest for traditional medical practices in the Akyem Abuakwa area.

In Akyem Abuakwa, forests are deemed to be dwelling places for spiritual forces such as *mmoatia* (dwarfs) and *Sasabonsam* (devilish spirit), among others. Among other things, it has been noted that these gods abhor actions that upset the harmony of the community (Opoku 1978). In response to such actions, punishments are administered to culprits in the community.

Indigenous methods of forest conservation in Akyem Abuakwa

The protection or conservation of environmental resources has been practiced since time immemorial. These practices were informed by various degrees of motivations and reasons. It has been noted by Asante (2011) that among the Asante, forests were highly revered because they were considered as places of abode of the gods and ancestors. To that extent, farming, indiscriminate felling of trees and other anthropogenic activities that affected the quality of forests were forbidden (Benson 2021). It was believed that any abuse of the forest and the entire ecosystem attracted punishment from deities and local authorities (Benson 2021).

Similarly, the indigenous people of Akyem Abuakwa resorted to the use of various means to conserve their environment. Several traditional medical practitioners believe that their power to heal is not only based on their knowledge of medicinal plants or animal parts in the traditionally conserved forest but the relationship between the healer and the gods who are the spiritual custodians of the forest. The indigenous people resorted to the use of varied methods to ensure the conservation of their forests resources and broadly, their physical environment as a whole. This is crystallised in terms like sacred groves and totems among others.

To begin with, the concept of sacred grove is based on the preservation of forest resources. In Ghana, sacred groves are reserved lands, which have been made to remain in its original habitat. According to scholars, sacred grove is associated with terms such as “*Nananompow*”, ancestral grove or royal mausoleum ([Adarkwa 1997](#); [Amoako-Atta 1998](#)). Such forests of various dimensions were partially or fully protected by local socio-religious and cultural systems. They are maintained through complex traditional institutions that sometimes do not require the involvement of national government ([Ntiemoa-Baidu 2008](#)). Its importance ranged from ecological, socio-cultural, medicinal, religious and ecotourism prospects ([Bempong and Nsiah 2010](#)). In an interview, it was revealed that individuals could be punished severely when seen within the confines of a sacred grove. Indeed, these sacred groves were and continue to be important refuge for rare and useful local biodiversity, and sources of herbs for medicinal, social and religious purposes ([Ntiemoa-Baidu 2012](#); [Nganso et al. 2012](#)). In Ghana, there are estimated 2,000-3,200 sacred groves. Eighty per cent (80%) of these sacred groves are within the southern half of the country ([Nganso et al. 2012](#)).

Another cultural value and practice which has been used by the people of Akyem Abuakwa as indigenous means of forest conservation has been the concept of totem and totemism. Totems are believed to be animals or any other objects that are revered by individuals or particular group of people as sacred ([Benson 2021](#)). It can also be any natural object believed to be ancestrally related to an ethnic group, clan or family. As a sacred and revered entity, individuals from the group are not expected to harm their totems. These animals or natural entities are widely believed to be important elements of people’s history and culture ([Benson 2021](#)). Interviewees revealed that totems have been a way of conserving the culture, history, and the environment of a group of people.

As already reported, aside from animals, totems, plants or natural objects are believed to be ancestrally related to a clan or family as tutelary spirits ([Ntiemoa-Baidu 2008](#); [Benson 2021](#)). For this reason, the members do not eat, kill or trap such animals, birds, or fish. It was reported by a participant that:

When a totem dies, members of the clan who consider it as their totem would show respect through mourning and burying. It is just like the case of the passing away of human beings. Totemism is not necessarily a religion

but a family pride that provides an indelible lesson on traditional ways of preserving wildlife species.

The above is consistent with the research of [Campbell \(2004\)](#), which argued that one of the major traditional conservational tools that have helped to conserve many wildlife and plant species for several purposes is the totem ([Campbell 2004](#)). In Akyem Abuakwa traditional area, all the clans have their totems which are animals in the forest. The beliefs associated with totems aid the conservation of the animals as well as the areas where these animals or totems are located. Some of the animals are leopard for Bretuo clan, buffalo for the Ekuona clan and the falcon for the Oyokuo clan ([Benson 2021](#)). The protection of these animals in native forest reserves have preserved many species of plants and animals that are used for traditional medicines in Ghana and Akyem Abuakwa in particular.

Taboos were and are still observed as socio-cultural values strictly observed in the Akyem Abuakwa traditional area. They established the frameworks for which several actions were deemed acceptable or detestable within the local community ([Ntiamoa-Baidu 2008](#)). It was considered as a mystical error to break a taboo. The consequences included the local community suffering from calamities such as famine, drought and death as a punishment from the local deities ([Ntiamoa-Boadu 2008](#)). Consequently, rituals or sacrifices had to be made to appease the deities and cleanse the land from such abomination. Most of the taboos in the Akyem Abuakwa Traditional area stress on a strong relationship with the environment and its acceptance and adherence are seen as a forest protection tool. In some Akyem Abuakwa communities such as Begoro, Tafo, Bansa and Anyinam, there are certain virgin forests reserves, which have been declared as a highly restricted area, prohibiting the activities of chainsaw operators, hunters and farmers.² These are areas that contain very important sacred trees that serve useful purposes for the local communities.

Another important indigenous means used to preserve environmental resources in Akyem Abuakwa are proverbs and songs. Across Africa, proverbs and songs have been used to translate and transfer valuable indigenous knowledge on social realities to the indigenous population. Since ancient times, proverbs have been one of the ways African

² Taboos, locally referred to as *musuo* have been very useful in the organization of indigenous socio-political structures. Among the Akyem Abuakwa, once an area is declared as a sacred grove, it is reserved for the ancestors. It becomes a taboo for mortals to indulge in farming, lumbering and hunting in this area.

traditional societies transmit ideas, including those concerning the existence of God (Yankah 1989). It is believed to be “wise sayings” that give moral lessons. Proverbs need to be interpreted for a better or an elaborate understanding. Among the Akyem, people preach moral lessons to the indigenous population to inculcate in them the need to protect their forest or environment. Awuah-Nyamekye (2009) has argued that native Asante songs are easily sung by every member of the society. Subconsciously, the song teaches people the expected codes and laws of the respective local communities. To emphasize, before the present times, people naturally learnt the importance of natural resource conservation through proverbs and songs.

Traditional proverbs and songs enhanced communities’ efforts to protect their resources and ensured that they were mindful of the consequences of destroying the forest. In an interview, it was reported that:

If you hear proverbs such as *Adidi daa ye kyen adidi preko* , which means “it is not good to consume all that you have in a day”, *duako gye mframa a ebu* , meaning “if a tree stands in the path of the wind alone, it falls” and *dua ko ntumi nye kwae* , literally translated as a single tree cannot make a forest and songs including “*ɔkɔm beba o, ɔkɔm beba o, wo sum brɔdeɛ a sum kwadu na ɔkɔm beba*” translated as “it is important to preserve both plantain and banana for moments of scarcity”, you will always be conscious about sustainability and not involve yourself in any activity that will destroy the forest.

Myths and stories are yet another mechanism used as forest conservational tool in Akyem Abuakwa. In several African traditional societies, myths are used to communicate important aspects of life among generations (Apter 1987). Myths are traditional sacred stories which throw light on people’s belief about God and certain historic features (Frobenius and Fox 1999). For instance, a Yoruba myth hints that creation started at Ile-Ife in Nigeria (Apter 1987). There is also a myth which says that the Almighty God was near to the earth but retired to the present abode because an old lady was hitting him with a pestle as she incessantly pounded her fufu (Apter 1987). These myths and stories are told by the older people in the community in Akyem Abuakwa to give members the conviction to protect the forest for useful purposes.

Conservation for medicine

The conservation of the environment in Akyem Abuakwa has rich history. Specifically, the stakeholders have various motivations for protecting the environment through the means that have been discussed in the previous sections. Among other things, the various reasons for conserving the environment included the provision (or protection) of natural resources for medical practices. In the paragraphs that follow, the researchers have discussed how the conservation of forests through indigenous means were translated into the protection of medical resources.

To begin with, protection of the environment ranged from the protection of lands, animals, rivers and forests. Concerning river Birim, it was noted for being a major source of water for drinking purposes. A participant hinted that:

...The forests and rivers in Akyem have provided various levels of support for the community. Concerning rivers, they have served as the main source of drinking water for the surrounding communities in the Akyem Abuakwa traditional area such as Kade, Kyebi, Oda, and Anyinam. Again, the forests provide both timber and non-timber forest products such as bush meat, snails, mushroom, chewing sticks and plant medicine.

In Akyem Abuakwa, rivers such as Birim and Abonkyira are regarded as deities. It was hinted that as a deity:

Our ancestors have days for worshipping them. As a result, during these days of worship, people are prohibited from fishing, swimming and/or even crossing them. Also, people were banned from staying at the source of these rivers that were thought of spiritually as deities. I also believe there was no spiritual relation. Basically, as a major drinking source, our ancestors were bound to protect it at all cost.

The strict adherence to this native custom in Akyem Abuakwa translated into the conservation of rivers. It can be inferred that the prohibition of the erection of settlements and of swimming during sacred days were to protect the rivers against all forms of pollution and make them hygienic for consumption. In an interview, it was revealed that:

The tendency to protect rivers from pollution re- echoes a popular adage in Ghana, among the Akyem Abuakwa in particular. The adage is rendered:

“*Akyemkw aa onom Birim* ³”. The people believed that the conservation of the river Birim also protected the forest around it... In turn, they received double impact: habitation for fishes from the river and meat from the animals in the forest.

On one hand, the prohibition of settlement around water bodies ensured the protection of plant species around the rivers for the traditional medical practitioners to use to cure diseases. Placing a ban on fishing on some days helps to protect fishes from extinction. It might be contemplated that pre-modern people in Akyem Abuakwa were ignorant of the minerals obtained from sea foods. However, conserving rivers translated into protecting fish species, which were important sources of medicine for man (TeAho 2019). Based on the field research, it was found that the conservation of river Birim led to the preservation of exceptional number of plant species that are not found elsewhere. These include *Leptaspisochleata* and *miliciaexcelsa* (Lovett et al. 1988).

As already hinted above, the people of Akyem Abuakwa traditional area have been guided by some notable taboos since pre-modern times. Significantly, these taboos were used as a means of social control in the community (Ntiama-Baidu 2008). In some Akyem communities -such as Anyinam, Tafo and Kwabeng- there are various forest reserves, termed as virgin forests. An interviewee revealed that:

In these forests, most people are restricted from entering. Mostly, chainsaw operators are forbidden to cut trees; hunters are forbidden to undertake hunting activities. To a lesser degree, it is even a misnomer to see people clearing or weeding some of these places for farming... the area is declared as a sacred grove for the ancestors hence, it is a taboo for any of these activities to be done there.

Also, in an interview with an herbalist, it was hinted:

We (the people of Akyem) have been using taboos to regulate our societies since the discovery of our lands. In the past and even today, people are forbidden to cut trees in some areas... for instance, it is a taboo for an individual to cut trees along the river bank of Birim...Those trees are supposed to be reserved to sustain the green environment of the river. They were reserved to provide a source of medicine for our forefathers and the generations to come.

³ *Akyemkw aa onom Birim* is a local adage that means “every Akyem from the traditional area drinks from the Birim River”

Herbal medicine has been a major source of medical support for Africans since time immemorial ([Feierman and Janzen 1992](#)). Scholars support the idea that indigenous medical practices, which herbal medicine forms a core part, was the only known medical system in Africa prior to other influences from the outside world and European colonization in particular ([Feierman and Janzen 1992](#); [Flint 2008](#)). Information gleaned from the interviewees suggests that it was mainly due to the maintenance of the green environment along the banks of rivers that prompted the local communities in Akyem Abuakwa to prohibit the cutting down of trees. Also, it can be inferred that the conservation of specific areas including their resources have served as a major space for the production of herbal medicine to meet the health needs of the local population. Contemporary evidence suggests that about 28,000 plant species found in forest ecosystems across the world have varied pharmacopoeia contents ([UNEP 2020](#)).

Arising from the field interviews, several animals are considered sacred by the inhabitants of Akyem Abuakwa. It is significant to emphasize that it is also a taboo to hunt and kill certain animals such as monkeys and leopards. Again, an elder of the Abomosu community emphasized that:

...such animals are believed to have played a vital role in the formation of our town. Essentially, they are believed to be the totems of some clans. In the past, stakeholders declared their abode as a no-go area with the hope to protect them from being hunted or killed by people for consumption.

The attribution of the living soul to plants and other natural objects has been used to protect the extinction of several plants species and animals across Africa. Essentially, the practice has been used within the Akan indigenous culture including Akyem Abuakwa to preserve and conserve nature ([Ntiemoa-Baidu 2008](#)). This practice emphasizes the preservation of nature to ensure the preservation of humanity for a longer period.

Additionally, the animistic view is captured by several scholars. [Danquah \(1968\)](#) referencing [Frazer \(1910\)](#) argued that the present and future generations owe much to their ancestors because of their ability to conserve the environment through the concept of animism and totemism ([Frazer 1910](#)). From the current study, we argue that animism and totemism were basically aimed at conserving the environmental resources for the preservation of traditional medical practices. Most traditional or indigenous healers

received their potions and drugs from some animals and plants. In support of the above argument, an elder argued that during the colonial era;

Medicine was holistic; it was not obtained from plants alone. There were several substances that were used by our ancestors, and are used currently, for healing purposes... *mmotor* and *oninirade*⁴ for instance, were obtained from the remains of some animals. These animals were not to be hunted for human consumption... Our fathers resorted to protecting them for the purposes of future medication.

It has been emphasized in the literature that herbalists do not only use herbs for their activities; some of them rely on other natural products such as animal parts and minerals to treat their clients (Asante 2010). In their treatment of bones, traditional bone setters are noted for the manipulation of bones with herbs and animal parts (Asante 2010). They use these resources to treat dislocation and fracture. From the field data, it could be inferred that animism and totemism sought to conserve natural resources for the continuous usage by the present and future generations of the Akyem Abuakwa community. This could be traced to the efforts of the ancestors of the respective traditional communities that have been studied empirically. Indeed, they made efforts to preserve their natural habitats; plants, water and animal species among other things for their perpetuity and also for the sake of posterity.

Conclusion

The discussion and debate surrounding African indigenous forest conservation and its contribution to African medicinal resources appear to be complex. The current study paid attention to the nexus between forest conservation in Akyem Abuakwa and African traditional or indigenous herbal practices. From this study, it has been revealed that African traditional medicine cannot be separated from discussions on forest conservation strategies. From earliest times, several efforts were made to conserve the existing forests. These were done, willy-nilly, to protect the herbal plant species, trees and animal species and parts for the practice of traditional medicine in Akyem Abuakwa.

⁴*Mmotor* is an indigenous drug that was administered into the human body mainly through incision. They had the proclivity to cure many afflictions. Also, concerning the *oninirade*, it is obtained from snakes for the treatment of inflammation and other diseases.

In Akyem Abuakwa, the concept of totems, taboos, sacred groves proverbs and songs among others have been used to conserve forest resources for future utilization. In contemporary times, these factors have been threatened in various ways due to social change and westernization. Irrespective of the absence of legal backing, rules set for indigenous conservation of the forest have been obeyed by members of the traditional community. To a larger extent, they are still pivotal in ensuring the conservation of environmental resources to provide products for indigenous medicine.

Based on the findings and discussions arising from same, it can be argued that rigorous education and re-orientation programmes toward the protection and sustenance of the environment must be emphasized. Particularly, it can be argued that the degradation of environmental resources have resulted in a decline of most indigenous herbal therapies. To adequately maintain the environment for the preservation of herbs, there is the need to continuously engage stake holders in the local communities and revisit the motives that underpinned indigenous forest conservation philosophies or ideals.

Similarly, governmental bodies, including district assemblies and local councils in the traditional area as a matter of urgency, must integrate cultural values into their policies and programmes at the local levels. This should aim at encouraging the preservation of environmental resources. Also, organizations such as the Environmental Conservation and Management Foundation (ECOMAF) and the Environmental Protection Agency (EPA) in Ghana, must be supported by stakeholders. This support should be complemented by research activities that aim at protecting medicinal plant species.

Conflicts of Interest: The authors declare no conflict of interest

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