Global Journal of Medicinal Plants Research ISSN 2169-303X

Abbreviated Key Title: Glob. J. Med. Plant Res.
ISSN 2169-303X (Print) & Open Access
Vol. 12: Issue 5, May, Pp: 13-22

Holistic Healing Through Herbs as a Meeting Point Between Science and Religion in Africa: An Example of Senna Didymobotrya among the Nandi Community, Kenya

[1]Pascaline Jeruto, [2]Seraphine Chepkosgei and [3]Nyamwamu Nyarang'o Charles

***Corresponding author: Nyamwamu N.C.** **Accepted:** 20/5/.2024 | **Published** 24//5/2024

[1]School of Science, Department of Biological Sciences, University of Eldoret, P. O. Box 1125 Eldoret, Kenya. Email; pjeruto@uoeld.ac.ke or pasjeru@gmail.com

[2]School of Arts and human Development, Department of Communication Languages and Literature, University of Eldoret, P. O. Box 1125 Eldoret, Kenya. Email; seraphinekerich@yahoo.com or seraphinekerich@uoeld.ac.ke

[3]School of Science, Department of Biological Sciences, University of Eldoret, P. O. Box 1125 Eldoret, Kenya. Email; nyamwamucharles@gmail.com

Abstract: African communities held certain shrubs in reverence due to their medicinal and religious role. Religion and belief in a supreme being are central to human existence, and in additional African communities, they inform their way of life. The belief that all life originates from the supernatural puts plants at the centre of the natural cosmos. Senna didymobotrya is a shrub that the Nandi community of Kenya uses to treat various ailments and incorporates into several religious and cultural rituals. The Nandi community of Kenya passed on the knowledge of herbal medicine from one generation to another, and gained expertise through the practical application of this knowledge. Both men and women in the medical field possessed psychological, social, and spiritual wisdom, which guaranteed a comprehensive treatment of a patient, as evidenced by the patient's recovery following the application of this medicine. Therefore, we can conclude that a patient's ability to heal or recover relies more on their psychological and cultural beliefs than on the perceived quantity or quality of the medicine they receive. This paper argues that the scientifically proven efficacy of Senna didymobotrya in treating various ailments underscores the importance of harnessing these herbs for holistic healing of both body and soul. This serves as a meeting point between science and religion in African communities' socio-cultural and religious activities.

Keywords: Medicine, Culture, Religion, Senna didymobotrya

Published by GJMPR

INTRODUCTION

This paper investigates how African societies achieved holistic healing by utilizing herbs perceived to have medicinal, cultural, and religious functions. This is due to the harmonious coexistence of plant, animal, and human life in Africa, where plants served as both food and medicine for both humans and domestic animals. Therefore, it was man's responsibility to domesticate plants that served as remedies for human ailments and animal diseases. The Nandi community of Kenya used Senna didymobotrya as an example of a medicinal plant in this paper.

Botanical description of Senna didymobotrya

S. didymobotrya is a shrub native to the tropics, with only a few species found in temperate regions. It produces golden yellowish flowers (Plate 1) with a distinct peanut butter scent that emerges from brown buds [46]. It is usually a multiple-stemmed shrub or small tree. It measures 0.5 to 5 (-9) m tall [44]. Its branches are terete, striate, pubescent to villous, and rarely subglabrous [46].

The leaves are evergreen and open with brown buds. They are 14–50 cm long, pinnate, and have more than 30 leaflets [57]. The leaves are simple, bipinnate, narrowly oblong-eelliptical, and 10–50 cm long. The stipules are broadly ovate–cordate, 6–17 mm x 8–10 mm, acuminate, palmately veined, reflexed, and tardily caducous; the petiole is terete, 1–8 cm long, and the rachis can be up to 40 cm long, both pubescent and glandular; petioles can be up to 3 mm long; the leaflets are chartaceous, elliptical–ooblong, 2–6.5 cm x 0.5–2.5 cm, 2–3 times longer than wide;

the base is oblique; the apex is rounded but mucronate; the leaflets are pubescent to glabrescent; the marginal vein is clear [15].

We group the flowers into 10–20 inflorescences. Inflorescences are bright yellow, and flower stalks are long [15]. The inflorescences are spike-like, axillary, and 10–50 cm long, with 20–30 flowers. The peduncle is straight, 5–8 cm long, and hairy, and the bracts are broadly ovate, 8–27 mm x 5–15 mm, black-green, and first intertwined around the flower buds. The plant lacks bracteoles, has a slender, 3–10 mm long pedicel that is densely pubescent, and has 5 subequal, oblong–obovate, 9–14 mm long, puberulous, and green in color sepals.

The flower has five petals that are slightly different from one another. The petals are ovate to obovate, 17–27 mm x 10–16 mm, and have a thin, about 1 mm long claw that is glabrous, bright yellow, and finely veined. The stamens are 10 and their filaments are shorter than the anthers. The anthers have two lower stamens that are 9–11 mm long, three upper stamens that are staminodial, and five median stamens that are about 5 mm long. The ovary and stipe are velvety and pubescent; the style is slender, glabrous, recurved, and about 1 cm long; the stigma is punctiform [24].

[46] said that the fruit was flat, linear–oblong, 7–12 cm x 1.5–2.5 cm, glabrescent, short-beaked, dehiscent or not dehiscent when dry, depressed between the seeds, with raised sutures that were blackish–brown. Seed flattened, oblong, apiculate, 8–9 mm x 4–5 mm x 2.5 mm, smooth, pale brown; areole elliptical, 3–4 mm x 0.7–1.5 mm

.

Plate 1: *Senna didymobotrya*

Ecology and geographic distribution of *S. didymobotrya*

African countries such as Angola, Ethiopia, Mozambique, Sudan, Uganda, and Kenya are home to Senna didymobotrya. It can be defined as an invasive plant that grows wildly along the roads, in riverine areas, and on fallow land. Diseases rarely attack it [37]. This plant is leguminous in nature and has a distinctive golden, yellow flower (Plate 1) with a distinct peanut butter scent that opens from brown buds [46, 56]. It can be defined as a shrub because it grows to a height of 0.5–5 metres [44].

The wide variety of species and ecological adaptations makes at least a handful of Sennas suitable for any climate warmer than cool [57]. S. didymobotrya is common in deciduous bush land, along lake shores, streams, rivers, and other damp localities, in grassland and woodland, from sea level up to 2500 m altitude [44]. Old plantations and hedges near buildings occasionally harbor it [4].

S. didymobotrya typically inhabits riparian montane wooded grassland or evergreen bush land in its natural habitat. It tolerates light frost [44, 57], and its biophysical limit at altitude is between 900 and 2400 m. Researchers have found the plant to be exotic in India, Indonesia, Malaysia, and Sri Lanka. Australia and parts of America have naturalized S. didymobotrya [57]. People grow the plant indoors or in frost-free climates with well-drained soils. It is common in undisturbed areas, grows rapidly, and is widely distributed in tropical and subtropical regions [30].

Ethnobotany of *S. didymobotrya*

Ethnobotany is a science that covers both historical and current plant usage [49]. Ethnobotanical studies reveal how human beings utilise plants for a wide

diversity of primary survival and aesthetic purposes. It aids in the identification of locally important plant species for the development of crude drugs.

Additionally, these surveys have shed light on the process of domestication, a significant evolutionary force that shapes various plant forms through human selection. Additionally, they serve as a valuable resource for identifying useful plants for domestication, which can boost revenue and expand product availability for healers and other resource users [49].

In medicine, Sennas have, for millennia, played a major role in herbalism and folk medicine. The Ababdah peoples in Egypt have grown Alexandrian Senna (S. alexandrina) for commercial purposes, traditionally along the middle Nile but more widely in many regions around the north-western Indian Ocean. In South Africa, among the Vha-VVendas, its roots are used to treat sexually transmitted infections [50].

1. *S. didymobotrya* (Fresen.) Irwin & Barneby and *S. occidentalis* are used to treat worm infestations, ring worms, and eruptive skin conditions [43]. *S. fistula* L., *S. spectabilis* DC. and *S. podocarpa* (Guill. Et Perr.) posses' laxative and antimicrobial activities [1]. *S. occidentalis* is used for treatment of mycosis (skin infection) while the leaves of *S. nigricans* are used for treating skin diseases such as ringworms [2].

The flowers, roots, and stems have both antibacterial and antifungal properties [30]. [12] also reported that extracts of both *S. didymobotrya* and *S. occidentalis* have antifungal activity by inhibition of mycelial growth and aflatoxin formation.

2. S. didymobotrya has been used for many of its useful products since ancient time. It is widely used as a medicinal plant, especially in East Africa, where a decoction or infusion from the leaves, stems and roots is drunk as a laxative and purgative for the treatment of abdominal pains, while in large quantities it is taken as an emetic [57].

In Uganda, Rwanda, and Burundi it is also taken to expel intestinal worms and to treat ringworms. The concoction may make the patient weak and if this happens the patient should drink milk. When treating children, young leaves are cooked in banana leaves and given orally. In Kenya and Uganda an infusion made from the roots is drunk to treat diarrhoea [7].

In DR Congo, Rwanda, Burundi, Kenya, Uganda and Tanzania a root decoction of *S. didymobotrya* is drunk for the treatment of malaria, other fevers and jaundice [44]. The powder of the root or leaf mixed in water or a decoction of the fresh plant parts is taken to treat abscesses of the skeletal muscles and venereal diseases [44]. In Mozambique, the roots are used traditionally against infectious diseases like diarrhea, fevers, abscesses of the skeletal muscles and venereal diseases [27].

3. Uganda has widely used S. didymobotrya as a herbal medicine [58]. In Eastern Uganda, *S. didymobotrya* has been used to treat poultry diseases [5]. Macerated leaves are used for management of cattle conditions such as helminthiasis and bacterial related infections [19]. In western part of Uganda, the *S. didymobotrya* stem is of great cultural and social use associated with good journey, weeding and against witchcraft [17]. A survey on medicinal plants used in the treatment of fungal and bacterial infections in western Uganda documented sixty seven plants and *S. didymobotrya* leaves and roots were utilized [18]. [58] indicated its use in treatment of malaria.

In Kenya, people use pounded leaves and young stems to treat skin diseases. The pulp is applied to the skin [8]. The leaf sap is diluted in water and orally taken to treat diarrhoea, dysentery. It is also taken as a diuretic, laxative, and emetic. A decoction made from the roots is used as an antidote for poisoning, to expel a retained placenta, and to treat East Coast fever and blackleg in livestock. The plant has been used for management of sexually transmitted diseases, fungal infections and malaria in Central Province of Kenya [38, 39, 40].

In Central Province, Kenya, people take a decoction from the leaves orally to treat tonsils [39]. *S. didymobotrya* is widely used by traditional healers among the Embu and Mbeere to treat ring-worm and other skin diseases [3]. In their studies in Central Province of Kenya, they reported that ringworm and candidiasis were the most common fungal infections. In the same survey *S. didymobotrya* was one of the most highly utilized plant species for management of various skin conditions.

In Makueni and Samburu counties (Kenya), *S. didymobotrya* has been utilised for treatment against malaria [35]. Extracts from its fruits / seeds is used to treat stomach problems and malaria. Its leaves are also used as household vegetable [31]. *S. didymobotrya* leaves are used for typhoid in Makueni and Kitui areas [59]. [20] reported the use of *Senna* leaves for managing malaria, worms in animals and humans, fungal infections and ring worms among the Embu and Mbeere people in Kenya.

4. People also widely use S. didymobotrya to treat livestock diseases. A decoction made from the leaves, either alone or in mixtures, is used to treat external parasites like ticks [10, 38]. Decoctions from leaves and roots have been used among the Ameru community in health management of livestock against anaplasmosis and helminthiasis [10]. It is also used in traditional management of ear, nose and throat (ENT) diseases in humans in Central Kenya where a decoction from the leaves is taken orally for tonsillitis [40].

5. S. didymobotrya has been referred to as a milk tree since it has been used in various communities for milk treatment and preservation [34, 37]. The ash of burnt twigs is used to coat the inside of gourds that are to be used for storing milk, as it is said to improve digestibility and palatability. The milk can be kept in them for over a year [58]. According to [44], the pastoralists of West Pokot peel the bark, dry the stem and burn it into charcoal for preserving and flavouring milk.

6. S. didymobotrya is a source of wood for making handicrafts and firewood, while the leaves are used as mulch or green manure [57]. It is sometimes planted as a shade tree in tea plantations. Flowers, bark, leaves and pods can be used as a colorant for fibres and give a wide range of colours (yellow, orange, red). The bark is used in leather making for dehairing and tanning [57]. The leaves are used to ripen bananas by wrapping them around the bunch. The hot ashes are used to clean beer vessels.

7. S. didymobotrya has been used by the Nandi community for treatment of skin diseases, malaria, gonorrhoea, ringworms, cancer, emetic, and as purgative to remove excess bile. Its infusion from the leaves and the roots are used [14, 7]. In Kipsigis community, it's used in the management of opportunistic fungal infections, malaria, diarrhoea, skin infections in humans [4, 25] and widely used to treat livestock infections in Kenya as documented by [38].

Among the Kisii, root decoction is used for the treatment of malaria, other fevers, jaundice, and intestinal worms [28]. Root or leaf infusion is used to treat skeletal muscle and venereal diseases. The stem, leaves and roots of the plant are also used to treat fungal, bacterial, parasitic infections, hypertension, haemorrhoids, sickle cell anaemia and inflammation of fallopian tubes, fibroids and backache. Women use *S. didymobotrya* to stimulate lactation and to induce uterine contraction and abortion [28, 58].

The plant is associated with witchcraft among the Luo community in Siaya County (W. Obambo, personal communication, September 20, 2011). Apart from medicinal value, [46], has mentioned other uses of *S. didymobotrya* as an ornamental plant in Africa because of its bright yellow flowers and black - green bracts.

8. S. didymobotrya has been used as a soil improver in nitrogen fixation because of its above ground biomass grown as ground cover. In Sri Lanka, it was found to contain 0.7 g N per 100 g fresh material. It was introduced as a green manure and a cover crop in India, Sri Lanka, Peninsular Malaysia and Java [46].

Studies by [32] on *S. didymobotrya* root bark demonstrated a possible scientific rationale as a biopesticide for grain protection against bean weevil. It is used in diarrhoea management in cosmopolitan urban areas [41] and preservation of milk [34]. Previous studies by [47] reported that *S. didymobotrya* is capable of triggering germination in *Striga* seeds similar to that caused by the susceptible host crops. It has been reported to compact *Striga* infestations on maize fields [9].

It has the ability to induce the germination of *Striga* seeds thus its potential as a trap crop for inclusion in rotation with grain crops [9]. [57] highlighted the prospects of *Senna* as a ground cover and green manure crop. It is used as an alternative plant in locations where *Erythrina* is not growing and its potential as an ornamental pot plant is also being explored [57].

Common and local names of *Senna didymobotrya*

Common names include; African senna, African wild sensitive plant, peanut butter cassia [7], peanut butter tree, popcorn cassia, popcorn senna, and wild senna. English [48] and French [Séné africain] also refer to it as a candelabra tree. People call it popcorn senna because when fingers run through the leaves, they smell like freshly cooked buttered popcorn [7].

Mozambique refers to it as mudlayanhoka or nyocanyokani [27], while the Vha-VVendas in South Africa call it Tshiduwana. Different ethnic communities in Kenya use different vernacular names to describe the species. For instance, various ethnic communities in Kenya refer to the plant as Murao or Kirao in Meru [10], Senetwet in Nandi and Kipsigis [14], and Senetwo in Pokot [44]. Mwino/MMwinu in Kikuyu [39], Owinu/OOvino/OObino-LLuo, Ithaa/MMuthaa in Kamba [59] In Maasai, there are Osenetoi, Lubino/LLuvino-LLuhya, Esletoi, Mbinu/MMshua, Taita, and Atupa [24].

S. didymobotrya has been used as a medicinal plant

1. *Didymobotrya has been known to serve several medicinal purposes, both curative and for milk flavoring and preservation.* According to [46], the use of herbs for preservation has existed for many years, dating as far back as 3000 BC. This gives credence to [24], who argue that ethnobotanical studies carried out throughout Africa confirm that native plants are the main constituents of traditional African medicine.

This shrub's use as a purgative and an anti-malarial herb demonstrates its medicinal value [22].

The Nandi people in Kenya have used S. didymobotrya to treat fungal diseases [13]. The Nandi people used forty plant species for medicinal purposes, nine of which served as remedies for human gastrointestinal problems, according to an ethnobotanical study. The Nandi people used several species to treat colds and coughs, and they used five species to treat skin diseases [14]. Rural Luo mothers in Bondo, Siaya County, use S. didymobotrya to treat false teeth, mouth infections, labor pains, constipation, swelling, worms, and congested noses in children [11].

Reporting on the diversity and utilisation of antimalarial ethnophytotherapeutic remedies among the Kikuyus of central Kenya, [39] noted the use of both indigenous and introduced species, highlighting the dynamic nature of traditional practices in the region. The study identified 58 species in total, mentioning S. didymobotrya six times [39].

The study on traditional management of ear, nose, and throat diseases [40] revealed the use of 67 species from 36 families, including an oral decoction of S. didymobotrya leaves for tonsillitis. The study on ethnotherapeutic management of sexually transmitted disease and reproductive health conditions in Central Province revealed that 49 plant species belonging to 30

families were used in managing various STDs and their related conditions.

A decoction from *S. didymobotrya* leaves was utilised [38]. A study on weed species as a source of traditional medicine in central Kenya identified 75 species being of importance. It was observed that *S. didymobotrya* was utilized for back pains, antihelmintic, anaplasmosis, malaria, pimples, pneumonia (cattle), skin rashes, STD's, stomachache, tonsilitis (man) and typhoid [43].

[41], through an ethnobotanical survey of traditional remedies for managing skin conditions found that the leaves of *S. didymobotrya* were boiled and a patient bath in it for treatment of pimples, scabies, warts and measles in Muranga, Nyandarua and Kiambu Counties.

An ethnobotanical survey carried out in Kiandutu and Kiang'ombe in Thika urban slums on herbal medicine found that *S. didymobotrya* was one of the 41 species identified that was used for management of diarrhoea. It's bark, sap, leaves and seeds were utilized [41].

Documentation on ethnobotanical information and traditional medicines investigated in Embu County and Mbeere sub-county in Kenya showed 40 commonly used herbal plants of which 25 were used as multi - purpose medicinal plants and 15 were used to treat one disease [21]. The authors reported that *S. didymobotrya* leaves were ranked as one of the commonly used for management of fungal infections and ring worms.

THE NANDI OF KENYA

The Nandi community, which belongs to the Highland Nilotic group, occupies the western part of Kenya's Rift Valley province. It is the largest sub-tribe within the Kalenjin community. Although widely dispersed across three major counties, namely Nakuru, Trans-Nzoia, and Uasin-Gishu, Nandi County serves as the community's cradle. The Rift Valley Province (Plate 2) situates Nandi County on its western side. It borders Kakamega County to the north, Uasin-Gishu to the north and east, Kericho to the south, Kisumu to the south, and Vihiga to the west (non-1997). It lies within latitudes 0 and 0 34" North and longitudes 34 44" East [23].

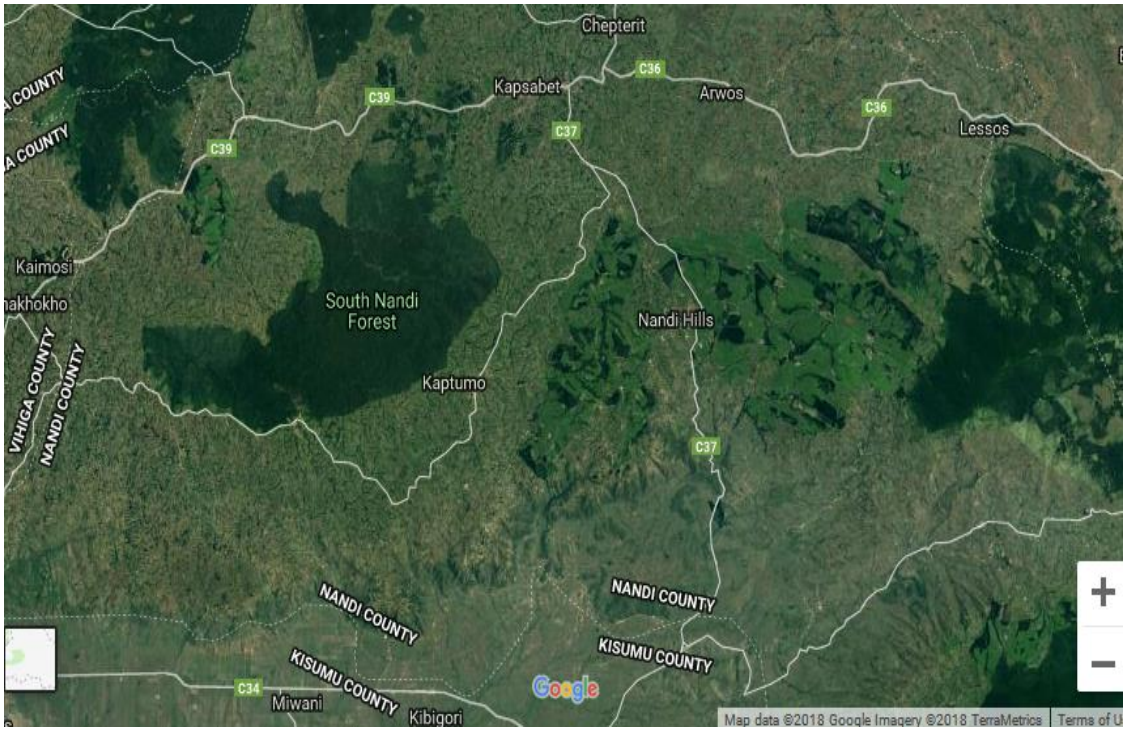

Plate 2: Map of Nandi County**: *Source;*** *Adopted from Google maps, (2024).*

This community is both pastoralist and agriculturalist. They also engage in different socio-economic activities. To be a medicine man or woman in the Nandi community, one had to undergo several years of training on the various herbs and what ailments they would treat. They also received training in the preparation, preservation, and administration of the herbs. In addition, they trained both men and women on the appropriate dosages for patients based on their age and overall health condition. Generations passed on their knowledge of herbal medicine, gaining expertise through practical application.

The psychological, social, and spiritual wisdom that medicine men and women possessed guaranteed a

comprehensive treatment of a patient, as evidenced by the patient's recovery following the use of these medicines. Therefore, we can conclude that the patient's psychological and cultural beliefs play a more significant role in their ability to heal or recover, rather than the perceived quantity or quality of the administered medicine.

Training and promotion of medicine for men and women

Traditional knowledge of medicine was the preserve of medicine men and their trainees preserved traditional knowledge of medicine [51]. These people were believed to connect in a unique way with a supreme being, and thus, they acquired their knowledge through apprenticeship and spiritual calling. They also preserved the gathering of medicinal plants.

Younger men and women acquired a variety of skills through apprenticeship, including character development, listening skills, patience, tolerance, and the ability to be accommodating. People expected them to be hard-working and confident. Participation in ritual and religious activities also contributed to the acquisition of knowledge [53].

We put in place various checks to ensure that those involved in the gathering and processing of herbs adhered to taboos and social restrictions. The medicine men administered small doses of herbs at a time to assess their toxicity, and sometimes they provided mythical explanations to support or refute the medicine's efficacy. On other occasions, medicine men would apply their understanding of human psychology to induce a sense of efficacy of the herbs administered [45].

By imploring the understanding of the human mind, medicine men would occasionally collect information from relatives and neighbours of a patient and use the same information as an aid in administering a herbal treatment. Africans especially used this in situations where a disease persisted, as they believed that good health and diseases were not random events, but rather resulted from specific actions of men and changes in the social environment [36, 55].

According to [61], medicine men also practiced ritual healing, a practice that involved expiating a patient's sins and voluntarily submitting to the moral power of ritual, along with the resulting social unity and implied psychological therapy. At the end of the day, men and women in medicine acquired and utilised psychological, social, and spiritual wisdom that ensured holistic treatment of patients, as manifested in patients getting well after using such medicine.

Nature protection and environmental conservation

In order to preserve and safeguard these plants, the Nandi community, akin to other African communities, declared the forests where these plants originate sacred. Consequently, they conducted rituals in these areas, restricting access to only a specific group of people [26]. These people included medicine men.

How the use of herbal medicine promoted religious and medical complementarity

Members of the Nandi community share and accept a complex culture of ideas, beliefs, and customs [6]. Plants are prominently featured because of their religious and medicinal imports. Only a select few, mostly perceived to have a connection with the Supreme Being, possessed the knowledge of the medicinal value of herbs, leading them to these shrubs.

It is also believed that those who acted as intermediaries between the Supreme Being and humans were capable of acquiring knowledge of medicinal herbs. And the ability to administer these herbs gave the medicine men the requisite practical knowledge of what could be defined as traditional medicine. According to the World Health Organisation (WHO),

Traditional medicine can be defined as: *The sum total of the knowledge, skill and practices based on the theories, beliefs and Experiences indigenous to different cultures whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness*."

This community incorporates S. didymobotrya, locally known as Senetwet, into various aspects of its socio-cultural and religious life. *Several ceremonies, including weddings, circumcisions, and marriage proposals, have used Didymobotrya, locally known as Senetwet.* Its centrality is due to its acclaimed medicinal effectiveness and ritual place in the community's belief and taboo system [6].

This shrub held great reverence among the Nandi, as it was an integral part of the plants used in the traditional altar known as Kapkoros. This altar served as a platform for pure sacrifices offered to the Supreme Being during times of great festivity, during calamities, or when the community required special intervention. The Supreme Being received the sacrifice or offering known as Korosek. In addition to its role in this arrangement, the traditional high priest utilized its stem to prepare a gourd that contained milk for libations [26].

The stem used to prepare the gourd was subjected to hygienic treatment that entailed cutting the stem, de-barking, and stashing the stem out of reach of any physical contact that would otherwise expose it to contamination. We also cured the stem by smoke-drying it over an extended period, ensuring it was ready for the gourd preparation. We burn the well-cured stem until it smoulders during gourd preparation, emitting embers that produce activated charcoal [6].

Using a specially cured palm stem, rub the resulting charcoal into the gourd's walls, then brush out the

excess charcoal with a fly whisk. The scientific importance of activated charcoal is that it has a great capacity for absorbing and binding radical elements in milk, thereby pasteurizing, preserving, and enhancing its flavor [29]. Therefore, they offered the flavoured and pasteurised milk to the Supreme Being as a libation to appease them and seek intervention in their affairs.

Specific antioxidants imprecate the flavonoids that emanate from the charcoal of this shrub's cured stems, protecting humans against the damaging effects of free radicals. This supports the idea that we should delve into traditional knowledge about medicinal plants to improve and enlighten modern science, ensuring effective and efficient treatment for various diseases [16, 54]. In modern society, we preserve milk for athletes by using the burnt stems of S. didymobotrya. This is because, as per [52], flavonoids have a vasodilator activity that enhances blood circulation in the brain, leading to the belief that consuming more milk increases one's athletic chances.

During courtship, the man and his relatives would carry the twigs of Senna Didymobotrya, locally known as Senetwet, to the homestead of the lady they wished to ask for a hand in marriage. This shrub would be placed outside the back door of the girl's homestead at a site that would have been set aside as an altar (kapkopros) [6].

This site, which would bear the twigs of this shrub among other sacred twigs, would signify the ultimate sense of commitment by the in-laws to-be to offer the requisite gift of dowry as required by custom. It would also signify goodwill and gratitude of the two families to the Supreme Being for the gift of their children. To bind the two families into one, the customary priest or elder, would ensure that sour milk preserved using the coal from this shrub was shared and drank in one forum as assign of unity [26].

In other cultural events that were pertinent in the life of the Nandi community, milk pasteurized traditionally would be used during the naming ceremonies, where milk was used to cleanse and name the newborn, it was also used to feed women who had delivered and convalescence because it was believed to possess nutritive and medicinal value [6]. Before initiation, boys would be taken to medicine men who would prepare a concoction out of the roots of this shrub and administer it to them in order to cure them from any illness in anticipation for life responsibilities after initiation.

Modern research confirms that the roots of *S. didymobotrya* have a purgative effect; hence, it was used as a laxative for de-worming [13]. The leaves would also be boiled and given to the initiate's months before initiation as medicine against malaria. This is in line with what [46] has found out in his research on the use of *S. didymobotrya.* He confirms that the leaves and roots of this shrub contain a number of anthroquinones, choline and trisaccharides raffinose. Hence, it is possible to argue that *S. didymobotrya* can be interpreted and fruitfully applied in cultural, religious and contemporary science.

CONCLUSION

1. *Didymobotrya served the community for its religious, cultural, and medicinal purposes. Therefore, the reverence of S. didymobotrya, stemming from its acclaimed medicinal effectiveness and ritual place in the belief and taboo system of the Nandi community, anchored the spiritual and cultural unity around plants and animals that was central to the Nandi cosmos.*

For the Nandi community, no customary activity is complete without the consumption of culturally prepared sour milk called Mursik. *The Nandi community preserves Mursik in gourds, preparing it with charcoal from the burnt and charred stems of S. didymobotrya.* This fermented milk served a special function during circumcision, marriage, and naming ceremonies [33].
The shrub symbolised success in negotiating marriage, initiation, and harvest.

2. Didymobotrya also played a central role in the nutrition of the vulnerable groups, as it is believed that *Mursik* strengthens and boosts the immune system against common diseases [29, 33]. For holistic living, health and religion/healing were about integrating the cultural, religious, psychological, and medicinal components of the cosmos.

RECOMMENDATIONS

Cultural Preservation: We should make efforts to preserve and promote the cultural practices and beliefs associated with S. didymobotrya. This can involve documenting traditional knowledge, promoting cultural festivals, and educating younger generations about the importance of indigenous plants in cultural practices.

Community Engagement: In order to ensure the sustainability of *S. didymobotrya* and the cultural practices associated with it, it is important to engage the Nandi community in conservation efforts. This could involve collaborative projects between researchers, community leaders, and conservation organisations to promote the sustainable harvesting and cultivation of *S. didymobotrya*.

Education and Awareness: The Nandi community and the general public should both benefit from efforts to increase awareness about the cultural and medicinal significance of S. didymobotrya**.** This could involve educational programmes in schools, community workshops, and outreach campaigns to highlight the importance of indigenous knowledge in preserving cultural heritage and promoting holistic health.
By implementing these recommendations, stakeholders can help preserve the cultural heritage and traditional knowledge associated with *S. didymobotrya* while also

promoting its potential health benefits for the wider community.

REFERENCES

[1] Abo, K. A., Adeyemi, A. A., and Jadege, I. A. (2000). Spectrophotometric estimation of anthraquinone content and antimicrobial potential of some extracts of *Senna* species used in herbal medicine in Ibadan. *Science Forum*, *3* (2): 57 - 63.

[2] Abondo, A., Mbenkum, F. and Thomas, D. (2000). *Ethnobotany and the Medicinal Plants of the Kerup rainforest, Cameroon*: Traditional Medicinal Plants. Dar – es - Salaam University Press. Ministry of Health - Tanzania.

[3] Adongo S. O., Murungi, J. Wanjala, R. and Ndegwa, F. (2012). Analysis of selected essential elements of medicinal plants used by Chuka community, Tharaka Nithi County, Kenya. *The Scientific Journal of Science and Technology*, Special issue: 87 - 94.

[4] Bii, C., Ouko, T. T. and Kumon, K. (2003). The medicinal plants used among the Kipsigis community of Kenya and their potential use for management of opportunistic fungal infections. 24th African Health Sciences Congress. *Challenges and strategies in combating health problems in Africa, towards development efforts*. EHNRI / AU / AFHES / W. H. O, Addis Ababa, Ethiopia.

[5] Bukenya - Ziraba, R. and Kamoga, D. (2007). An inventory of medicinal plants used in treating poultry diseases in Jinja district, Eastern Uganda. *African Journal of Ecology*, *45* (Suppl. 3): 31 - 38.

[6] Cheptum, J. K. (2014). *Traditional Medicine among the Nandi Community of Kenya*.
Lambert Academic Publishing.

[7] Cherono, S. and Akoo, A. (2011, July 5). Kenya: Mursik not too sweet for plant. Daily Nation, p. 11.

[8] Gachathi, F. (1989). *Kikuyu botanical dictionary of plant names and uses*. Nairobi; Kenya: AMREF.

[9] Gacheru, E. and Rao, M. R. (2005). The potential of planted shrub fallows to compact *Striga* infestation on maize. *International Journal of Pest Management*, *51* (21): 91 - 100.

[10] Gakuubi, M. M. and Wanzala, W. (2012). A survey of plants and plant products traditionally used in livestock health management in Buuri district, Meru County, Kenya. *Journal of Ethnobiology and Ethnomedicine*, *8*: 39.

[11] Gessler, M. C., Harris, S. A. Prince, R. J., Olsen, A., Achieng' Odhiambo, R., Oketch - Rabah, H., Madiega, P. A., Andersen, A. and Molgaard, P. (2002). Medicinal plants used by Luo mothers and children in Bondo District, Kenya. *Journal of Ethnopharmacology*, *83*: 39 - 54.

[12] Humphries, J. M. and Hughes, S. J. (2006). Pharmaceutical, nutraceutical and industrial potential of temperate legumes. *CRC Salinity Bulletin.* No.1.

[13] Jeruto, P., Too, R., Wamalwa, H., Kimutai, A., & Oyugi, J. (2016). In vitro antifungal activity of methanolic extracts of different *Senna didymobotrya* (Fresen). H. S. Irwin & Barne by plants. African Journal of Traditional, Complementary and Alternative Medicines, 13 (6), 168-174.

[14] Jeruto, P., Lukhoba, C., Ouma, G., Mutai, C. and Otieno, D. (2008). An Ethnobotanical study of medicinal plants used by the Nandi people in Kenya. *Journal of Ethnopharmacology*, *116*: 370 - 376.

[15] Jeruto, P. (2009). *Ethnobotanical survey, phytochemical analysis, Bioassay and propagation of some endangered medicinal plants from Aldai division, South Nandi district of Kenya*. Msc Thesis submitted to Maseno University (Unpublished).

[16] Johnson, R. S., & Smith, L. K. (2020). Harnessing traditional knowledge for modern healthcare: A perspective on Artemisia annua. *Pharmacognosy Reviews, 14*(28), 42-53.
[
17] Kakudidi, E. K. (2004). Cultural and social uses of plants from and around Kibale National Park, Western Uganda. *African Journal of Ecology*, *42* (Suppl. 1): 114 - 118.

[18] Kamatenesi - Mugisha, M., Oryem-Origa, H., & Olwa-Odyek. (2008). A survey of medicinal plants used in the treatment of fungal and bacterial infections in western Uganda. *Journal of Ethnopharmacology, 115*(1), 124-130.

[19] Kamoga, D. (2010). Some pharmacological activities of selected medicinal plant species used for treating cattle diseases in Kabira sub - county, Rakai District. A dissertation submitted to the School of Graduate Studies for the award of a degree of Master of Science (Botany) of Makerere University.

[20] Kareru, P. G., Kenji, G. M., Gachanja, A. N., Keriko, J. M. and Mungai, G. (2007b). Traditional medicines among the Embu and Mbeere peoples of Kenya. *African Journal of Traditional, Complementary and Alternative Medicines*, *1*: 75 – 86.

[21] Kareru, P. G., Kenji, G. M., Gachanja, A. N., Keriko, J. M. and Mungai, G. (2007b).
Traditional medicines among the Embu and Mbeere peoples of Kenya. *African Journal of Traditional, Complementary and Alternative Medicines*, *1*: 75 – 86.

[22] Kigen G, Some F, Kibosia J, Rono, H, Kiprop E. (2014). Ethnomedicinal Plants Used by the
Keiyo Community in Elgeiyo Marakwet County, Kenya. *J. Biodivers Biopra & DEVI:132*: doi 10.4172/2376-0214.1000132.

[23] Kigomo, B. N. (1991). Data In Kenya; A Historical Perspective on Local Knowledge. Nairobi: KIFCON; 1991. *Indigenous Forests, Ecosystem dynamics and Tree Volume*.

[24] Kokwaro, J. O. (2009). *Medicinal plants of East Africa*. 3rd Edition. Nairobi, Kenya: University of Nairobi Press; *2009. ISBN 9966 – 846* – 84 - 0.

[25] Korir, R. K., Mutai, C., Kiiyukia, C. and Bii, C. (2012). Antimicrobial activity and safety oftwo medicinal plants traditionally used in Bomet district of Kenya. *Research Journal of Medicinal Plant*, 1 - 13. ISSBN 1819 – 3455 / DOI: 10.3923 / rjmp.2012.

[26] Koskei, J. K. (2009). *Cultural and Ethnobotanical Studies of Medicinal and Ritual PlantsAmong the Nandi Community of Kenya*. Unpublished PhD Thesis, Kenyatta University.

[27] Madureira, A. M., Ratmalhete, C., Mulhovo, S., Duarte, A. and Ferreira, M. (2012). Antibacterial activity of some African medicinal plants used traditionally against infectious diseases. *Pharmaceutical Biology*, *50* (4): 484 - 489. ISSN 1388 - 0209 print / ISSN 1744 - 5116 0nline. DOI:10.3109/13880209.2011.615841.

[28] Maobe, M. A. G., Gatebe, E., Gitu, L. and Rotich, H. (2013). Preliminary phytochemical screening of eight selected medicinal herbs used for the treatment of diabetes, malaria and pneumonia in Kisii region, Southwest Kenya. *European Journal of Applied Sciences*, *5* (10): 1 - 6.

[29] Mathara, J. M. (1999). Studies on Lactic acid producing microflora in *Mursik & Kule naoto*traditional fermented milk from Nandi & maasai communities in Kenya. MSc. Thesis, UON Kenya. Retrieved on 21st November, 2023.

[30] Mazumnder, P. M., Percha, V., Farswan, M. and Upaganlawer, A. (2008). *Senna*: A wonderful gift of medical sciences. *International Journal of Community Pharmacy*, *1* (2): 17 - 38.

[31] Mbuvi, D. and Boon, E. (2009). The livelihood potential of non - wood forest products: The case of Mbooni division in Makueni district, Kenya. *Environment Development Sustainability*, *11*: 989 - 1004. DOI 10. 1007 / s10668 - 008 - 9163 - 2. Springer.

[32] Mining JK. (2008). Bioactive metabolites of selected Kenyan plants used as biopesticides against *Acanthoscelides obtectus* in Bungoma district Kenya. Unpublished MSc Thesis submitted to Jomo Kenyatta University of Agriculture and Technology library; SB 951.145M56.

[33] Muigei, S. C., Shitandi, A, Muliro P, Bitonga, O. R. (2013), Production of Expolysaccharides in the Kenyan fermented Milk, Mursik. *Int. J. Sci.Res.2* (12):79-89.

[34] Mureithi, W., Biggelaar - Den, C., Wesakania, E. W., Kamau, K. and Gatundu, C. (2000). Management of trees used in *mursik* (fermented milk) production in Trans - Nzoia District, Kenya. *Journal of Ethnobiology*, *20* (1): 75 - 91.

[35] Nanyingi O., Mbaria, M., Lanyasuya, L., Wagate, G., Koros, B., Kaburia, F., Munenge, W. and Ogara, O. (2008). Ethnopharmacological survey of Samburu district, Kenya. *Journal of Ethnobiology and Ethnomedicine*, *4*: 14.

[36] Ngubane, H. (1977), *Body and Mind in Zulu Medicine.* NewYork. Academic Press.

[37] Ngule, C. M., Swamy, T. A. and Obey, J. K. (2013). Phytochemical and bioactivity evaluation of *Senna didymobotrya* Fresen Irwin used by the Nandi community in Kenya. *International Journal of Bioassays*, *2* (7): 1037 - 1043.

[38] Njoroge, G. N. and Bussmann, R. W. (2006a). Herbal usage and informant consensus in ethnoveterinary management of cattle diseases among the Kikuyus (Central Kenya). *Journal of Ethnopharmacology*, *108* (3): 332 - 339.

[39] Njoroge, G. N. and Bussmann, R. W. (2006b). Diversity and utilization of antimalarial ethnophytotherapeutic remedies among the Kikuyus (Central Kenya). *Journal of Ethnobiology and Ethnomedicine*, *2*: 8.

[40] Njoroge, G. N. and Bussmann, R. W. (2006 c). Traditional management of ear, nose and throat (ENT) diseases in Central Kenya. *Journal of Ethnobiology and Ethnomedicine*, *2*: 54 - 62.

[41] Njoroge, G. N. and Kibunga J. W. (2007). Herbal medicine acceptance, sources and utilization for diarrhoea management in a cosmopolitan urban area (Thika, Kenya). *African Journal of Ecology*, *45* (suppl.1): 65 - 70.

[42] Njoroge, G. N. and Bussmann, R. W. (2009). Ethnotherapeutic management of sexually transmitted (STDs) and reproductive health conditions in Central Province of Kenya. *Indian Journal of Traditional knowledge*, *8* (2): 255 - 261.

[43] Njoroge, G. N., Bussmann, R. W., Gemmill, B., Newton, E. L. and Ngumi, W. (2004). Utilization of weed species as sources of traditional medicines in Central Kenya. *Lyonia a Journal of Ecology and Application*, *7* (2): 71 - 87.

[44] Nyaberi, M. O., Onyango, C. A., Mathoko, F. M. Maina, J. M. Makobe, M. and Mwaura, F. (2013). Bioactive fractions in the stem charcoal of *Senna didymobotrya* Freasen Irwin and Barney used by pastoral communities in West Pokot to preserve milk. *Natural Resource Management*: 16: 980 - 985.

[45] Okpako, E. (2019). Traditional Medicine and Healing Practices: A Review of Current
Knowledge and Perspectives. *African Journal of Traditional, Complementary and Alternative Medicines*, 16(2), 22-33.

[46] Orwa C, Mutua A, Kindt, R., Jamnadass, R. and Simons, A. (2009). Agroforestree Database: a tree reference and selection guide version 4.0 (http: // www. worldagroforestry. org / sites / treedbs / treedatabases. asp) downloaded on 7 / 10/10.

[47] Rao, M. R. and Gacheru, E. (1998). Prospects of agroforestry for *Striga* management. *Agroforestry Forum*, *9* (2): 22 - 27.

[48] Rehm, S. (1994). *Multilingual dictionary of agronomic plants*. Kluwer Academic Publishers, Netherlands.

[49] Reyes - García, V., Marti, N., McDade, T. W., Tanner, S. and Vadez, V. (2007). Concepts and methods in studies measuring individual ethnobotanical knowledge. *Journal of Ethnobiology 27*: 108 - 203.

[50] Samie, A., Tambani, T., Harshfield, E., Green, E., Ramalivhana, J. N., and Bessong, P. O. (2010). Antifungal activities of selected Venda medicinal plants against *Candida albicans*, *Candida krusei* and *Cryptococcus neoformans* isolated from South African AIDS patients. *African Journal of Biotechnology*, *9* (20): 2965 - 2976.

[51] Scudder, T. (1985). *Management Systems for Riverine Fisheries* IDA Report.

[52] Sharma, A., & Sharma, N. (2006). Flavonoids: A therapeutic potential in Athletes. *Journalof Sports Sciences, 24*(9), 1027-1037.

[53] Smith, J. (2001). The Role of Apprenticeship in Traditional Medicine Practices. *Journal of Traditional Healing, 5*(2), 112-125. DOI:10.1234/jth.2001.5.2.112.

[54] Smith, A. B., Jones, C. D., & Thompson, E. F. (2018). Exploring the therapeutic potential oftraditional medicinal plants: A review. *Journal of Ethnopharmacology, 214*, 476-488.

[55] Straugard, F. (1985). *Traditional Medicine in Botswana:* Traditional Healers. Gaborone,
Ipelegeng Publishers.

[56] Soladoye, M. O., Onakoya, M. A., Chukwuma, E. M. and Sonibare, M. A. (2010 a) Morphometric study of the genus *Senna* Mill. in South - Western Nigeria. *African Journal of Plant Science*, *4* (3): 044 - 052. ISSN 1996 - 0824. Http: // www. academicjournals. org / ajps. *Academic Journals*.

[57] Sunarno, B. (1997). *Senna didymobotrya* (Fresenianus) Irwin & Barneby. In Faridah Hanum, I. and van derMaesen, L. J. G. (Eds.): *Plant Resources of South - East Asia*. No. 11. Auxillary Plants. *Prosea Foundation, Bogor, Indonesia: 229* – 231.

[58] Tabuti, J. R. S., Kukunda, C. B., Kaweesi, D. and Kasilo, O. M. J. (2012). Herbal medicine use in the districts of Nakapiripirit, Pallisa, Kanungu, and Mukono in Uganda. *Journal of Ethnobiology and Ethnomedicine*, *8*: 35.

[59] Wagate, C. G., Mbaria, M. J., Gakuya, D.W., Nanyingi, M. O., Kareru, P. G., Njuguna, A., Gitau, N., Macharia, J. K. and Njonge, F. (2012). Screening of some Kenyan medicinal plants for antibacterial activity. *Phytotherapy Research*, *24*: 150 - 153. Wiley InterScience.

[60] World Health Organization (n.d) *Traditional, Contemporary & Integrative Medicine*
Definitions. Geneva: World Health Organization. Available at: https://www.who.Int/traditional-complementary-Intergrative-medicine/about/en/.
Accessed on April 12, 2024.

[61] Zuesse, E. M. (2008). ‘‘Ritual, M. Eliade. *Pattern in Comparative Religion*. New York: Macmillan P. Co. 1959p 406.