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Traditional knowledge of people on plants used as insect repellents and insecticides in Raya-Azebo district, Tigray region of Ethiopia

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The study aimed to document and assess local knowledge on the use of insecticidal and insect repellent plants to manage disease-transmitting, nuisance and crop pests in Raya-Azebo district of Tigray region of Ethiopia. Ethnobotanical data were collected through semi-structured interviews conducted with purposively selected informants. Simple preference ranking exercises were conducted by ten informants to identify the most important insect repellent plants in the district. Samples of reported plants were collected, identified and deposited at the National Herbarium, Addis Ababa University. The study revealed the use of 35 plants, of which 22 (63 %) were used as insect repellents (mainly against mosquitoes), 12 (34 %) both as insect repellents and insecticides and 1 (3 %) as insecticide. *Olea europaea* subsp. *cuspidata*, *Klenia odora*, *Silene macrosolen* and *Aloe trichosantha* were the most preferred insect repellent plants as revealed by preference ranking exercises. The results showed a significant difference ($p < 0.005$) in the mean numbers of reported insecticidal and insect repellent plants between older and younger people where older people reported more number of plants. In the future, pharmacological and phytochemical evaluations should be conducted on the most preferred insect repellent plants in the District as revealed by informant consensus and preference ranking exercises.

Keywords: Traditional knowledge, Insecticidal plant, Insect repellent plant, Ray-Azebo, Tigray, Ethiopia
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Threats of insects as vectors of different pathogens and ectoparasites of humans and animals and as pests of different crops have been in existence since ancient times. Attempts have been made by humans to control such insects/pests through different means including the use of chemicals and environmental management. Use of chemicals is the most frequently applied method in the control of harmful insects. In earlier times, sulphur, arsenic, lead and mercury were the ones used to control insects, and later on, dichlorodiphenyltrichloroethane (DDT), Malathion and aldrins were also employed to control malaria vectors and crop pests. However, use of chemicals has often resulted in the emergence of chemical resistant insects and environmental contamination[1] because of their low degradibility and bioacumulation. Thus, we need to look for other alternatives including the use of plants that are traditionally used by different communities around the world to control insects and other pests to counter problems of insect resistance to chemicals and environmental pollution.

Since ancient times, plants have been used in different parts of the world, especially in rural communities, to control disease-transmitting insects and pests of agricultural importance. Insecticides and repellents, prepared and applied in different forms from plants, are considered to be effective, low cost, sustainable and environmental-friendly[2]. Studies have revealed the insecticidal and insect repellent properties of extracts of different plants[3-5] and some insecticides (e.g. pyrethrins from *Chrysanthemum cinerariaefolium*) and insect repellents (azadirachtin from *Azadirachta indica*) have even been developed for their commercial use[1].

There are indications of rich local knowledge on the use of insecticides and repellents in Ethiopia to manage disease-transmitting and nuisance insects as well as crop pests. However, very little of it has so far been documented[6-12]. There is only one study carried out in Tigray region focusing on mosquito repellent plants[12] which reported the local use of nine plants in Kolla Temben district, namely *Otostegia fruticosa*, *Otostegia integrifolia*, *Silene macroselene*, *Olea europaea*, *Melia azedarach*, *Calpurnia aurea*, *Dodonaea angustifolia*, *Eucalyptus globulus and Aloe* sp. So far, there is no report of an investigation

conducted in Raya-Azebo district to document local knowledge associated with the use of insecticidal and insect repellent plants. Thus, the purpose of this study was to document and assess local knowledge associated with the use of plants to kill or repel insects of disease vectors, nuisance and crop pests in Raya-Azebo district of the Tigray region of Ethiopia.

Materials and methods

Study area

Raya-Azebo, which covers an area of about 176,210 ha[13], is one of the eight districts in the Southern Zone of the Tigray Region, Northern Ethiopia. Southern Zone is geographically located at 12°15'and 13° 41' North latitude and 38° 59'and 39° 54'East longitude[14]. Raya-Azebo district is divided into 18 rural and two urban kebeles (the smallest administrative unit).

Malaria is the leading insect-borne disease in Raya-Azebo district causing high morbidity (unpublished data, Raya-Azebo District Health Office, 2015). African horse sickness, a disease that affects equids, is among the major animal health problems in the district and is transmitted by insects (unpublished data, Raya-Azebo District Agriculture and Natural Resources protection Office, 2016). In the District, ticks, lice and biting flies are among the reported ectoparasites of animals, and stalk borer, onion thrips, leaf miner, bollworm, grasshopper, shoot fly, aphids, white fly and cochineal are the major crop pests (unpublished data, Raya-Azebo Agriculture and Natural Resources Protection Office, 2016).

Selection of informants and data collection

Nine kebeles that were considered to inhabit better number of knowledgeable individuals on the use of insect repellent and insecticidal plants were sampled with the help of the District Administration Office from among 18 rural kebeles of the Raya-Azebo district. The kebeles were Hawelti, Bagie Delwo, Irba, Maru, Mechare, Hade Alga, Ulaga, Wargiba and Horda. A total of 180 informants (150 males and 30 females) thought to have better knowledge on insecticidal and insect repellent plants, 20 informants from each of the nine selected kebeles, were purposively selected with the help of kebele administrators and elders. The ages of informants ranged from 28 to 89 yrs.

Ethnobotanical data were collected between November 2013 and February 2015 mainly through individual semi-structured interviews conducted with the selected informants. The data collected included the name of the plant used as insecticide or repellent, plant part used, a method of preparation, mode of application, the name of insect targeted and the specific problem caused by each insect. Interviews were conducted in Tigrigna, the local language in the study district. Information on marketability was also collected during visits made to local markets in the towns of Mekoni and Weyra Wuha located in the study district. Plant samples for all reported plants were collected, identified and vouchers were deposited at the National Herbarium of the Addis Ababa University.

Simple preference ranking

Simple preference ranking exercises were conducted by involving ten informants who were randomly selected from among the 180 informants who participated in individual interviews. The ten informants were requested one after another, to rank six repellent plants, identified to be of the highest informant consensus following interviews carried out with informants, according to their perceived level of importance following the method of Martin[15].

Data analysis

Microsoft Excel spread sheet software was employed to organize the data. Descriptive statistical methods were employed to analyze and summarize the data. One-way ANOVA test was conducted to compare knowledge on insecticidal and insect repellent plants between females and males, younger (20 to 39 yrs of age) and older (≥ 40 years of age), and illiterate (those who do not read and write) and literate (those who read and write) informants.

Results and discussion

Plants used and insects managed

During the survey, a total of 35 insecticidal and repellent plants belonging to 27 genera and 23 families were documented in Raya-Azebo district (Table 1). Relatively higher number of insect repellents and insecticidal plants were recorded from the study district as compared to that of other districts of Ethiopia. Studies conducted in Bechobore Kebele of Jimma Zone of Oromia Region[10], Western Hararghe Zone of Oromia Region[11], Kofe Kebele of Jimma Zone of Oromia Region[8], Kolla Temben district of Tigray region[12] and Addis Zemen Town of South Gonder Zone of Amhara region[9] revealed the use of 23, 13, nine, nine and eight insect repellents plants,

Table 1—Plants used as insect repellent and/or insecticides in Raya-Azebo district

Scientific mame, family and local name	Habit	Parts used	Uses	Target insect	Application mode[1]	Voucher number
Acacia abyssinica Benth.; Fabaceae; *karora*	tree	R,S	RP	mosquito	House fumigation with smoke; body bathing with smoke.	MG-18-2013-15
Acacia asak (Forssk.) Willd.; Fabaceae; *sewansa*	tree	R,S	RP	mosquito	House fumigation with smoke.	MG-29-2013-15
Acacia etbaica Schweinf.; Fabaceae; *seraw, dodota*	tree	R,S	RP	mosquito	House fumigation with smoke; body bathing with smoke.	MG-28-2013-15
Acacia oerfota (Forssk.) Schweinf.; Fabaceae; *ajo*	tree	L,R,S	RP	mosquito	Chewing, stem bark and swallow the juice; use of stem bark as necklace; house fumigation with smoke; pound stem bark and drink juice.	MG-04-2013-15
Acokanthera schimperi (A.DC.) Schweinf.; Apocynaceae; *qararo, merez*	tree	L	RP,KL	bollworm, mosquito	Smoking the plant in sorghum field; house fumigation with smoke; body bathing with smoke.	MG-23-2013-15
Allium sativum L.; Alliaceae; *saeda shigurti*	herb	B	RP,KL	mosquito	Eating; juice spraying in the house.	MG-26-2013-15
Aloe trichosantha A.Berger; Aloaceae; *ure*	shrub	L,R,S	RP,KL	mosquito, house fly	House fumigation with smoke; applying juice on wound to repel fly; drink juice to repel mosquito, spraying juice in and around the house.	MG-35-2013-15
Asparagus africanus Lam.; Asparagaceae; *qasta ansto*	herb	S	RP	mosquito	Drinking juice.	MG-24-2013-15
Cadia purpurea (G.Piccioli) Aiton; Fabaceae; *shilen*	shrub	L,R,S	RP,KL	mosquito	Applying leaf paste on skin; house fumigation with smoke; body bathing with smoke.	MG-31-2013-15
Calpurnia aurea (Aiton) Benth.; Fabaceae; *cherenchah, hitswts*	shrub	L	RP,KL	tick	Applying paste on animal skin, spraying aqueous infusion around the house.	MG-13-2013-15
Carissa spinarum L.; Apocynaceae; *agam*	shrub	S,R	RP	mosquito	House fumigation with smoke; fumigating oneself with vapour of boiled leaf.	MG-03-2013-15
Chenopodium schraderianum Schult.; Chenopodiaceae; *sinihnih, hamedmado*	herb	AG,L, WP	RP,KL	chicken mites	Tying the head with the plant; house fumigation with smoke; fumigating chicken with smoke.	MG-33-2013-15
Cissus quadrangularis L.; Vitaceae; *anja afar, chewe*	herb	L,AG	RP,KL	weevil, flea	Spraying aqueous infusion on stored sorghum grains to kill weevils, applying juice on skin of cow to kill flea.	MG-06-2013-15
Dovyalis abyssinica (A.Rich.) Warb.; Flacourtiaceae; *mengolhats*	tree	F	RP	mosquito	Eating.	MG-20-2013-15
Euclea racemosa L.; Ebenaceae; *dedeho*	shrub	S	RP	mosquito	House fumigation with smoke; body bathing with smoke.	MG-14-2013-15
Euphorbia sp.; Euphorbiaceae; *hinzuqzuq*		R	RP	mosquito	Pound the plant part and drink juice.	MG-17-2013-15
Heliotropium cinerascens DC. & A.DC; Boraginaceae; *amam gimel*	herb	AG	KL	weevils	Spraying aqueous infusion on stored sorghum grains.	MG-05-2013-15
Justicia schimperiana (Hochst. ex Nees) T. Anderson; Acanthaceae; *shimeja*	herb	AG,R,L	RP,KL	weevil	Spraying aqueous infusion on field crops; fumigating oneself with vapour of boiled root; drinking juice.	MG-32-2013-15
Kleinia odora (Forssk.) DC.; Asteraceae; *bierir*	herb	S	RP	mosquito, house fly	House fumigation with smoke; body bathing with smoke; fumigating oneself with vapour of boiled stem.	MG-10-2013-15

(*Contd.*)

Table 1—Plants used as insect repellent and/or insecticides in Raya-Azebo district

Scientific mame, family and local name	Habit	Parts used	Uses	Target insect	Application mode[1]	Voucher number
Leucas abyssinica (Benth.) Briq.; Lamiaceae; *shewaqarni*	herb	WP	RP	mosquito, house fly	House fumigation with smoke.	MG-30-2013-15
Leucas sp.; Lamiaceae; *mitri meshfe*	herb	WP	RP	mosquito	House fumigation with smoke.	MG-22-2013-15
Melia azedarach L.; Meliaceae; *lin*	tree	L,F	RP,KL	mosquito, house fly	Place the plant part on dining table in the house.	MG-19-2013-15
Meriandra bengalensis (J.Koenig ex Roxb.) Benth; Lamiaceae; *mesaguh*	shrub	SB	RP	mosquito	House fumigation with smoke.	MG-21-2013-15
Mimuspos kummel Bruce ex A.DC.; Sapotaceae; *butign*	tree	S,R	RP	mosquito	House fumigation with smoke; body bathing with smoke.	MG-11-2013-15
Ocimum lamiifolium Hochst. ex Benth.; Lamiaceae; *demakese*	herb	WP	RP	mosquito	House fumigation with smoke.	MG-01-2013-15
Ocimum sp.; Lamiaceae; *ergogala*	herb	L	RP	mosquito, house fly	Washing clothes with pounded leaves.	MG-15-2013-15
Olea europaea subsp. cuspidata (Wall. & G.Don) Cif.; Oleaceae; *awlie*	tree	S,R,L	RP,KL	mosquito, house fly, flea	House fumigation with smoke; body bathing with smoke.	MG-09-2013-15
Pappea capensis Eckl. & Zeyh.; Sapindaceae; *tantaso*	tree	S	RP	mosquito	Body bathing with smoke.	MG-34-2013-15
Rhus natalensis Bernh. ex C.Krauss; Anacardiaceae; *atam*	shrub	S	RP,KL	mosquito	House fumigation with smoke; body bathing with smoke.	MG-07-2013-15
Ruta chalepensis L.; Rutaceae; *chena adam*	herb	F	RP	mosquito	Rubbing head with paste.	MG-12-2013-15
Senna singuana (Delile) Lock; Fabaceae; *acha guasa*	herb	R	RP	mosquito	Drink juice.	MG-02-2013-15
Silene macrosolen Steud. ex A. Rich.; Caryophyllaceae; *sarerosaero*	herb	UG,AG, WP	RP	mosquito	House fumigation with smoke; body bathing with smoke.	MG-27-2013-15
Terminalia brownii Fresen.; Combretaceae; *qorosma*	tree	S,R	RP	mosquito, house fly	House fumigation with smoke; body bathing with smoke.	MG-25-2013-15
Verbena officinalis L.; Verbenaceae; *atush*	herb	L	RP	mosquito	Drinking juice; applying paste on skin.	MG-08-2013-15
Withania somnifera (L.) Dunal; Solanaceae; *gulho*	herb	R	RP	mosquito	House fumigation with smoke; body bathing with smoke; fumigate oneself with vapour of boiled root.	MG-16-2013-15

[1]Please, note that body bathing with smoke in the study District was only practiced by women.
Note: R=root, S=stem, L=leaf, B=bulb, AG=aboveground, WP=whole plant, SB=stem branch, UG=underground, RP=repellent, KL=killer

respectively. Similar studies carried out in Akaki district of Eastern Shewa Zone of Oromia region[6] and Abitehnan district of West Gojjam of Amhara region[7] reported 18 and eight plants, respectively, used as insect repellents and/or insecticides. The current study showed that the families Fabaceae and Lamiaceae contributed seven and five species, respectively. The families Asteraceae and Apocynaceae contributed two species each. The remaining 19 families contributed one species each. The fact that the families Fabaceae and Lamiaceae contributed relatively higher numbers of insect repellent and insecticidal plants in the study

district could be attributed to their richness regarding number of species. Fabaceae and Lamiaceae are among the largest dicotyledonous families in the flora of Ethiopia consisting of 630 and 170 species, respectively[16,17]. Sixteen (46%) of the reported plants were herbs, 11 (31%) were trees and eight (23%) were shrubs. The common use of herbs could indicate their better abundance and ease of accessibility in the study district.

Literature survey shows that some of the plants documented in the current study are also used for the same purpose as insect repellents and/or insecticides elsewhere in Ethiopia and in other parts of the world. The plants *Olea europaea* subsp. *cuspidata, Silene macrosolen*, *Justicia schimperiana, Ocimum lamiifolium* and *Ruta chalepensis* were reported for their traditional use as insect repellents[6,8-11] and the plants *Allium sativum*, *Melia azedarach* and *Calpurnia aurea*[6-8,10,12,18] were indicated for their uses as insect repellents and insecticides.

Of the total plants, 22 (63 %) were used as insect repellents, 12 (34 %) both as insect repellents and insecticides and one (3 %) as insecticide only. The reported insecticidal and insect repellent plants were used against different insects of health and agricultural importance including mosquitoes, flies, bollworms, beetles, fleas, lice, mites, ticks and weevils.

The majority (19 species) of the recorded plants were used against mosquitoes, nine plants were used against both mosquitoes and house flies, and seven plants were used against different insects including bollworms, beetles, fleas, lice, mites, ticks and weevils, each plant used to manage a number of insects ranging from one to six. The common use of plants against mosquitoes may suggest malaria problem in the study district. According to recent data, malaria is one of the top ten causes of morbidity in the district (unpublished data, Raya-Azebo District Health Office, 2015).

Plants parts used, modes of preparations and applications

The reported insecticidal and/or insect repellent plants were sought for their different parts including roots or stems (6 species), stems (5 species), leaves (5 species), roots, stems or leaves (4 species), roots (3 species), whole plant (3 species), fruits (2 species), aboveground part (2 species), above ground part or leaves (1 species), leaves or flowers (1 species), roots, above ground part or leaves (1 species), whole plant, above ground part or leaves (1 species), and whole plant, underground part or above ground part (1 species). A study conducted in Kolla Temben district of Tigray region, Ethiopia, also shows the common use of stem parts as insect repellents and insecticides[12]. The frequent use of root and stem parts in the study district may pose a threat as it could affect the survival of individual plants.

The majority (54 %) of the insecticidal and insect repellent plants were harvested and used while they were fresh, whereas 12 of the plants (34 %) were prepared from either fresh or dried parts and 4 (12 %) were used alternatively either in their fresh or dried forms. The use of fresh plant parts is advantageous when the sought insecticides and insect repellents contain volatile oils, the concentrations of which could deteriorate on drying. Of the total, only four insecticidal and insect repellent plants (*Kleinia odora*, *Olea europaea* subsp. *cuspidata*, *Silene macrosolen* and *Terminalia brownii*) were reported to be stored for future use. These could be one of the mechanisms devised by the local community to overcome the shortage of plants of limited occurrence. Three (*Calpurnia aurea*, *Olea europaea* subsp. *cuspidata* and *Terminalia brownii*) of these four plants were reported by informants to have a rare or limited occurrence in the past few years in the study district.

The plants were prepared using different methods including burning (49 %), crushing (26 %), burning or boiling (7 %), burning or crushing (3 %), chewing or crushing (3 %), chewing (3 %), burning or tying (3 %), crushing or boiling (3 %) and placing on a dining table (3 %). Fumigation is the commonly used mode of processing plant parts for their use as insect repellents in Ethiopia as indicated in reports of the previous studies[8-12]. Most preparations (51 %) are applied by fumigating the house or bathing individuals, mostly females, with the smoke produced. The fact that females commonly fumigate themselves with smoke of plants could be related to the common use of these plants for their cosmetic purposes in addition to their use as insect repellents. Few other preparations were administered orally (14 %) and topically (9 %) to protect humans and their domestic animals from bites and disturbance by insects. Orally taken preparation may emit some volatile chemicals through the mouth that could repel insects. Preparations of the remaining plants (26 %) were administrated alternatively in many different ways, among others, including wearing and spreading them on grains of stored crops or plantations of field crops.

Marketability of insecticidal and insect repellent plants

Analysis of the interview data shows that only five (*Acacia etbaica*, *Allium sativum*, *Kleinia odora*, *Olea europaea* subsp. *cuspidata* and *Silene macrosolen*) of the reported insecticidal/insect repellent plants were sold in local markets in the study district. A market survey made by the investigator in Mekoni and Weyra Wuha towns of Raya-Azebo district also confirmed the marketability of these plants. The less practice by people in the district in marketing insecticidal and repellent plants could be due to their limited market demand as most are readily and freely harvested by users from the immediate environment.

Abundance and cultivation practice of insecticidal and insect repellent plants

The majority of the insecticidal/repellent plants were reported to have a common occurrence in the study district, whereas six were indicated to have a rare or limited occurrence due to over exploitation for their uses as firewood (*Calpurnia aurea*, *Olea europaea* subsp. *cuspidata* and *Rhus natalensis*), construction materials (*Cadia purpurea* and *Terminalia brownii*), and insect repellents and insecticides (*Kleinia odora*). The high market demand, as reported by informants, for the plants *Olea europaea* subsp. *cuspidata* and *Kleinia odora* could have contributed towards their overexploitation and consequently limited abundance.

Of the total insecticidal and insect repellent plants, only five were reported to be cultivated in homegardens in the study district. Of these, two (*Kleinia odora* and *Silene macrosolen*) were cultivated primarily for their use as insecticides and insect repellents, whereas the other three were mainly cultivated for other purposes, *Allium sativum* for its use as a spice, *Melia azedarach* for its use as a shade plant and *Aloe trichosantha* for its use as a hedge plant. Some studies conducted elsewhere in Ethiopia show that most of the locally used insecticidal and insect repellent plants are harvested from the wild, and few of them are primarily cultivated for different other purposes[19].

Most popular/important insecticidal and insect repellent plants

Insect repellent plants with the highest informants consensus include *Olea europaea* subsp. *cuspidata*, *Klenia odora*, *Silene macrosolen*, *Aloe trichosantha* and *Cissus quadrangularis*, reported by 148, 38, 21, 16 and 14 informants, respectively. *Cissus quadrangularis* had the highest informant consensus for its use as insecticide reported by 13 informants, followed by *Calpurnia aurea* cited by eight informants. Previous ethnobotanical studies conducted elsewhere in Ethiopia reported the same uses of *Olea europaea* subsp. *cuspidata*[8-12] and *Silene macrosolen*[9,11,12]. The high consensus among informants in the study district and repeated use in different communities of these two plants as repellents may suggest their better efficacy as compared to the other reported plants. It is reported that plants that are repeatedly used for the same purpose are likely to contain biologically active constituents[20]. *Olea europaea* subsp. *cuspidata* was previously evaluated for its mosquito repellent property and was reported to be active[21]. Insecticidal and/or insect repellent plants, reported by two or more informants each, are given in Table 2.

Preference ranking exercises conducted on six plants with highest informant consensus (*Olea europaea* subsp. *cuspidata*, *Kleinia odora*, *Silene macrosolen*, *Aloe trichosantha*, *Withania somnifera* and *Acacia oerfota*) for their use as insect repellents revealed *Olea europaea* subsp. *cuspidata* as the most preferred repellent plant, followed by *Kleinia odora*

Table 2—Insecticidal and/or insect repellents reported by two or more informants in the Raya-Azebo District

Scientific name	No. of informants reporting insect repellent use	No. of informants reporting insecticidal use	Total No. of reports
Olea europaea subsp. *cuspidata*	148	3	151
Kleinia odora	37	1	38
Silene macrosolen	21	0	21
Aloe trichosantha	14	2	16
Cissus quadrangularis	1	13	14
Calpurnia aurea	1	8	9
Acokanthera schimperi	5	4	9
Withania somnifera	8	0	8
Acacia oerfota	6	0	6
Chenopodium schraderianum	3	2	5
Carissa spinarum	5	0	5
Cadia purpurea	3	2	5
Justicia schimperiana	3	1	4
Acacia etbaica	4	0	4
Verbena officinalis	3	0	3
Terminalia brownii	3	0	3
Acacia abyssinica	3	0	3
Mimusops kummel	2	0	2
Allium sativum	1	0	1
Senna singuana	2	0	2

and *Silene macrosolen*. The fact that these three plants are the most preferred ones could indicate their relatively better repellent activity as compared to the other reported plants. The plants *Aloe trichosantha*, *Acacia oerfota* and *Withania somnifera* were ranked 4th, 5th and 6th, respectively.

Knowledge of insecticides/repellents among different social groups

Analysis of the data shows that there was a significant difference ($p < 0.005$) between older and younger people in the mean numbers of reported insecticidal and insect repellent plants. Older people of 40 yrs of age and above reported two plants on average, whereas younger people between the ages of 20 and 39 yrs reported one plant on average. This result may indicate a problem in the transfer of knowledge on the use of insect repellent and insecticidal plants from the older generation down to the younger generation. The low level of knowledge on plants with insecticidal and insect repelling properties among the younger generation in the study district could be due to lack of interest to learn and practice traditional medicine as a result of the influence of the Western culture. Studies carried out in different parts of Ethiopia and elsewhere in the world also showed the lower level of knowledge on insecticidal/insect repellent and other medicinal plants among the younger generation as compared to the older generation[11,22-25]. On the other hand, there was no significant difference ($p > 0.05$) on the mean numbers of insecticidal and insect repellent plants reported in the study district between groups of two literacy levels and between males and females.

Conclusion

The study revealed the use of 35 plants by people in Raya-Azebo district to manage insects that transmit diseases, attack crops and those that are nuisance to humans and domestic animals, the majority of which were employed as repellents. More than half of the plants were used only against mosquitoes. The plants *Olea europaea* subsp. *cuspidata*, *Klenia odora*, *Silene macrosolen*, *Aloe trichosantha* were the ones with the highest informant consensus for their use as insect repellents. They were also found to be the most preferred plants as revealed by the preference ranking exercises conducted by selected informants. Priority should, therefore, be given to these plants to scientifically evaluate their potential for their wider and better uses.

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