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Ethnobotanical survey and propagation of some endangered medicinal plants from south Nandi district of Kenya.

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Ethnobotanical, Endangered, Medicinal, Vegetative Propagation, Auxin.

1 SUMMARY

The studies were conducted at the department of Botany and Horticulture Maseno University, Kenya to investigate the ethnobotanical and chemical characterization of selected medicinal plants growing in South Nandi District in the year 2004 and 2005. Subsequently, propagation studies were carried out on the identified endangered medicinal plants. Local communities who use medicinal plants were interviewed. Ethnobotanical data on families, plant species, botanical name, local name, part (s) used, popular ethnobotanical medicinal use, forms of preparation and applications of the herbal remedies were collected. Plants were collected, pressed, dried, preserved, mounted and identified through available literature and voucher specimens at the University of Nairobi and National Museum Laboratories. From the surveys carried out it was observed that the endangered plants were Asystasia *schimperi, Carissa edulis, Toddalia asiatica* .These were propagated using stem cuttings subjected to different concentrations of auxin in a polypropagator in a completely randomized design experiment. It was found that as auxin concentration increased from 100 ppm to 500 ppm, there was increase in rooting and growth in the decreasing order of *Asystasia schimperi, Carissa edulis and T. asiastica*. The treated cuttings were planted in polythene pots, which were placed in a non-mist propagator. The duration of the experiment on propagation was four months and the data taken were number of rooted plants, plant height, and number of leaves. The data on propagation was subjected to analysis of variance and Least Significant Difference (LSD = P≤ 0.05) separation of means. The results showed that hormone concentration, species and date of sampling significantly (P≤ 0.05) affected the number of leaves, plant height, and number of rooted cuttings. *A. schimperi* had the best rooting and subsequent growth followed by *Carissa edulis* and lastly *Toddalia asiastica*. It is concluded that *Asystasia schimperi* and *C. edulis* can be easily propagated by stem cuttings hence introduced to the farmers of South Nandi District.

2 INTRODUCTION:

Man uses plants in many different ways to meet his basic needs food, clothing and shelter. Wild plants supply medicine, crafts and cosmetics to rural and urban communities.. In addition, wild

plants are sources of income and employment to the rural areas (Kokwaro, 1976 and 1993, Olembo *et al.,* 1995, Balick *et al.,* 1996 and Karori, 2003). Important herbal products are spices, herbal teas, functional food ingredients, medicinal raw materials, aromatic plants, essential oils, flavouring, fragrant products and dietary supplements. Plants have also been used as medicine for thousands of years by people all over the world. WHO estimates indicate that 80% of the population (mostly in developing countries still relies on plant-based medicines for primary care WHO (1978).

In Kenya, the role of plants as sources of herbal products has been recognized and as scientific knowledge on the medicinal values of indigenous plants increases (Rukangira, 2001). There is a proportional increase in demand for herbal products both locally and internationally. The demand for herbal products is caused by population increase, poverty, increasing awareness of herbal products, high cost of modern medicine and limited access to trained doctors. It is estimated that about 80% of the rural dwellers get treatment from traditional healers according to the 1978 World Health Organization report. About 80% of the African populations rely on traditional medicine for primary health care (Karori, 2003). During periods of food scarcity in the dry areas of Kenya or during famines the poor rural communities harvest wild plants, including fruits and leaves for food (Elizabetsky, 1991). The type of plants and parts removed vary from one locality to another and their use depends on the local indigenous knowledge and experience accumulated over centuries.

Due to high human population growth in South Nandi District (G.O.K., 2002) demand for indigenous tree products is increasing and some of the important plants have been over harvested reducing the inventory of those wild resources (G.O.K., 1993). Deforestation caused by the need for human settlement and allied infrastructure development and cultural expansion, charcoal production, timber sales and overgrazing have further caused the shortage of herbal plants (Biketi, 2001). Deforestation directly reduces the biodiversity of wild plant resources and indirectly so through the loss of the habitat areas as well as other organisms important for ecosystem function (Repetto, 1989).

Demand for herbal products however, is on the increase, exerting a lot of pressure on the remaining indigenous medicinal plants. This calls for the need to devise strategies to increase the supply of these resources as well as protecting the source habitats. This could be achieved through practicing sustainable harvesting techniques and by raising selected plant species either i*n situ* or *ex situ*. *In situ* conservation through encouraging natural regeneration or enrichment planting has the advantage that plants are already adapted to the environment (Cunningham, 1997, UNESCO, 1997). However, it may not be possible to raise sufficient materials *in situ* and domestication of indigenous plants *ex situ* has not been widely practiced for various reasons including the assumption that supply from the wild would be insufficient and therefore no incentive to domesticate (Cunningham, 1990, 1993).

As the exploitation pressure mounts and the potential for earning high prices from the wild herbal resources increase the need for domestication is urgent hence the purpose of present study on propagation techniques to increase the supply of medicinal herbal products.

Although many studies concerning the use of medicinal plants in Kenya have been carried out targeting the different groups / tribes and localities (Heriz, 1962, Johns, 1990, Maundu *et al*, 1991, Omino *et al*., 1991, Njoroge, 1994 and 2006, Masinde, 1996, Stiles *et al*, 1999,). The ethnobotany of South Nandi is scarcely known and so are the propagation techniques to be used to ensure sustainable production of the endangered medicinal plants. Thus, the main objective of this study is to carry out an ethnobotanical survey and propagation of some endangered medicinal plants used in South Nandi district. The objectives of the present study were: To document indigenous knowledge of medicinal plants in South Nandi,

district and to identify propagation methods for the endangered medicinal plants.

3 METHODOLOGY

Sixty traditional medicine practitioners were interviewed who depend on wild plants as sources of medicine. Fifty percent (50%) of the participants were renowned herbalists (30 years and above). They were selected using purposive random sampling and interviewed using semi-structured questionnaire. The plants were collected, identified at the Department of Botany University of Nairobi and authenticated at East Africa Herbaria and the voucher specimens were deposited in the Botanical Garden herbarium of Maseno University.

3.1 Propagation studies: The endangered plants namely: *Carrisa edulis* (M_1), *Asystasia schimperi* (M_2) and *Toddalia asiatica* (M_3) were propagated at the Botanic Garden of Maseno University, Kenya in a non-mist polyprogator and later transplanted for *ex situ* conservation and eventual dissemination to the local communities. Juvenile stem cuttings were harvested from the different medicinal plant species from the wild in South Nandi district and transported to Maseno University where they were kept in a refrigerator. One (1) to four (4) node cuttings were used depending on species (about 50 - 60mm long) to facilitate handling and with a leaf area of about 50cm^2. In large leaved species, leaf areas were reduced by trimming prior to severance to reduce water loss and to allow photosynthesis to take place. The basal end of the cuttings were cut at right angles and treated with different hormone concentrations before being planted into the media. They were dipped 12 hours in root hormone – S solutions (0.3% Indole butyric acid (IBA)) to a depth of about 2.5mm before they were planted in a non-mist propagator.

To minimize stress, the cuttings were inserted in the non-mist polypropagator as soon as they were dry. The plant cuttings were then planted in polythene tubes (17cm by 16cm) filled with a mixture of sterilized forest and sandy soils (50:50). An American electric pressure steam sterilizer (Model No. 25) was used at 250^{0}F. The soil media was removed and spread to cool for two hours then transported to the experimental site where the cuttings were planted erect onto the soil. After planting, the cuttings were watered using a watering can and subsequently twice a day (morning and evening). A bi weekly assessment was carried out on the cuttings starting two weeks after planting. At each assessment, the number of leaves and heights were recorded on a tagged plant until the end of the experiment. Also the number of plants rooted in each pot was recorded. Temperatures and humidity values were also taken twice a day (morning and evening) using a wet and dry thermometer. In all instances, the propagator temperature was between 22 – 27^{0}C. Three plant species with growth hormones at different concentration level (0ppm, 100ppm, 200ppm, 300ppm, 400ppm, 500pp) were used in a completely randomized design (CRD) with factorial arrangement. The treatments were replicated three times.

The non-mist propagator used is based on that of Howland (1975), modified by Leakey and Longman (1988), and modified further so that it does not require daily watering. It comprises a wooden frame enclosed in clear polythene so that the base is water tight (Leakey, 1989). The frame also provides support for the enclosed volume of water. The polythene base of the propagator is covered in a thin layer of sand to prevent the polythene from being punctured by the large stones (6 – 10cm), which are placed to a depth of 10 – 15cm to a total depth of 20cm. The gravel provides support for the rooting medium, which is the upper most layers, while the spaces between the stones are filled with water (Leakey, 1990). The rest of the frame is covered tightly with a single piece of clear polythene and a closely fitting lid is attached.

4 RESULTS

4.1 Ethnobotanical studies: The results of the present study provide information about some therapeutic uses in different traditional precipices of 152 plant species in 57 families (Table 1).

The survey reveals that the commonly utilized taxonomic families used as herbal medicines are compositae (12.5%), Leguminosae (7%), Lebiatae (6.5%), Acanthaceae (5.2%), Euphobiacease (5.9%), Solanaceae (3.2%) and Rabiaceae (3.2%) (Table 1 and 2).

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Table 2: Diversity of medicinal plant species in South Nandi District.

Plant Families	**Number of medicinal plant species**	**Percentage of total species mentioned as medicine.**
Acanthaceae	8	5.2
Amaranthaceae	4	2.6
Anacardiaceae	2	1.3
Aloaceae/Liliaceae	1	0.6
Araceae	1	0.6
Araliaceae	1	0.6
Asclepiadaceae	**2**	1.3
Aspiadiaceae	1	0.6
Apocynaceae	4	2.6
Asparagaceae/Liliaceae	1	0.6
Basellaceae	1	0.6
Bignonaceae	2	1.3
Boraginaceae	1	0.6
Campanulaceae	1	0.6
Cyperaceae	1	0.6
Canellaceae	**1**	0.6
Compositae/Asteraceae	**19**	12.5
Capparadiceae/Capparaceae	2	1.3
Crassulaceae	**1**	0.6
Cucurbitaceae	5	3.2
Verbenaceae	1	0.6
Euphorbiaceae	**9**	5.9
Flacourtiaceae	4	2.6
Gramineae	3	1.9
Guttiferae	1	0.6
Labiatae/Lamiaceae	10	6.5
Leguminosae subfam. Papilionoideae	**5**	3.2
Leguminosae subfam. Caesalpinioideae	1	0.6
Leguminosae subfam. Mimosoideae	5	3.2
Myrtaceae	1	0.6
Meliaceae	**2**	1.3
Myrsinaceae	2	1.3
Moraceae	3	1.9
Musaceae	1	0.6
Malvaceae	5	3.2
Melianthaceae	1	0.6
Melastomataceae	**1**	0.6
Menispermaceae	1	0.6
Oleaceae	1	0.6
Oxalidaceae	2	1.3
Polygonaceae	2	1.3
Phytolacaceae	1	0.6
Passifloraceae	1	0.6
Proteaceae	1	0.6
Rutaceae	**3**	1.9

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Plant Families	Number of medicinal plant species	Percentage of total species mentioned as medicine.
Ranunculaceae	**1**	0.6
Rhamnaceae	1	0.6
Rosaceae	3	1.9
Rubiaceae	**5**	3.2
Solanaceae	5	3.2
Sapotaceae	1	0.6
Sterculiaceae	1	0.6
Tiliaceae	1	0.6
Umbelliferae	2	1.3
Urticaceae	2	1.3
Vitaceae	1	0.6
Verbenaceae	4	2.6
TOTAL = 57	**152**	**100**

Table 3: Plant parts utilized in herbal medicines

Part utilized	Frequency	Percentage (%)
Roots	38	25.00
Leaves	32	21.05
Root/ leaves	31	20.39
Root /bark	14	9.21
Bark	10	6.58
Seeds	8	5.26
Whole plant	7	4.61
Bark/leave	3	1.97
Flowers	3	1.97
Fruit	2	1.32
Bulb	2	1.32
Sap/latex	2	1.32
Total	**152**	**100**

4.2 Propagation

4.2.1 Rooting percentage: The date of measurements significantly ($P \leq 0.05$) affected the rooting of cuttings and the subsequent growth of the plantlets which depended on the species type. The interactions between species type and weeks after planting were significant. At week 8, the data was unaffected by the duration of taking the measurements in M_1 and M_3 but M_2 was significantly affected. The number rooted plants decreased the first two weeks and then at week 10 it increased and was maximum at week 12, then decreased up to week 14, then decreased sharply up to week 16 (Table 4 and Fig. 1).

Table 4: Means for weeks after planting by species interaction on root cuttings. Least Squares Means

wap	Species	Rootcut LSMEAN	Standard Error	Pr > |t|
8	m1	0.44444444	0.26871214	0.0992
8	m2	4.77777778	0.26871214	<.0001
8	m3	0.44444444	0.26871214	0.0992
10	m1	0.44444444	0.26871214	0.0992
10	m2	4.33333333	0.26871214	<.0001
10	m3	1.16666667	0.26871214	<.0001
12	m1	0.27777778	0.26871214	0.3021

12	m2	4.55555556	0.26871214	<.0001
12	m3	1.33333333	0.26871214	<.0001
14	m1	0.16666667	0.26871214	0.5356
14	m2	4.50000000	0.26871214	<.0001
14	m3	1.38888889	0.26871214	<.0001
16	m1	0.38888889	0.26871214	0.1489
16	m2	4.50000000	0.26871214	<.0001
16	m3	1.33333333	0.26871214	<.0001

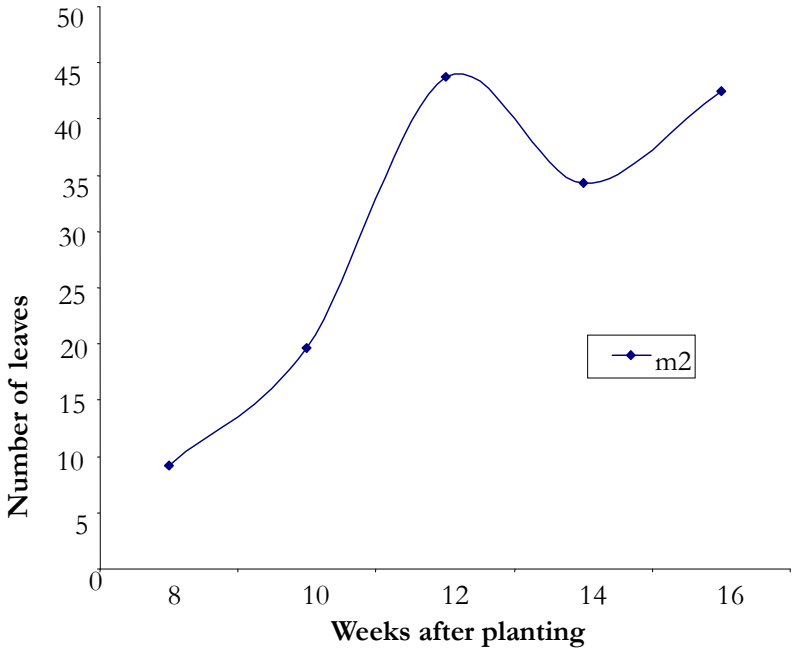

Figure 1: The effect of weeks after planting on leaf number of species m2

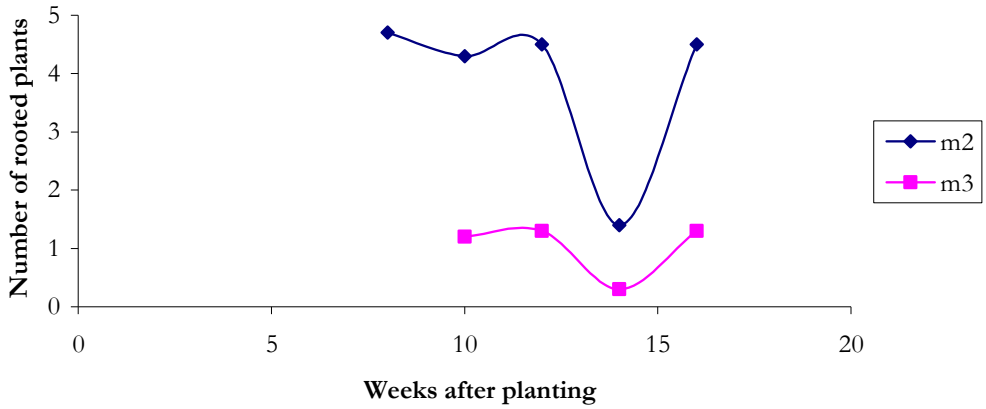

Figure 2: Effects of species and weeks after planting on the rooting of cuttings of m2 and m3.

Conversely, M_3 started at week 10, then increased slightly, maximized at week 12 then decreased up to week 14 then increased sharply again (Figure 2 and Table 4). The rooting of M_1 was not affected significantly by the date of sampling (Table 4 and Figure 2). At week 10 and 12, M_2 and M_3 were significantly affected. M_2 had significantly ($P \leq 0.05$) higher rooting percent than M_3 at week 10. The same trend continued up to the end of the sampling date (Table 4 and Figure 2). Hormone concentration affected percent rooting of cuttings and this was independent of weeks after planting (Figure 3, Table 5) but depended on species type.

Table 5: Means for species by hormone concentration interaction on root cuttings

		Rootcut	Standard	
Species	**hormone**	**LSMEAN**	**Error**	**Pr > |t|**
m1	v1	1.04166667	0.23271154	<.0001
m1	v2	1.33333333	0.23271154	<.0001
m1	v3	1.25000000	0.23271154	<.0001
m1	v4	1.16666667	0.23271154	<.0001
m1	v5	0.83333333	0.23271154	0.0004
m1	v6	0.45833333	0.23271154	0.0499
m2	v1	3.62500000	0.23271154	<.0001
m2	v2	3.91666667	0.23271154	<.0001
m2	v3	3.37500000	0.23271154	<.0001
m2	v4	3.20833333	0.23271154	<.0001
m2	v5	4.37500000	0.23271154	<.0001
m2	v6	3.62500000	0.23271154	<.0001
m3	v1	0.29166667	0.23271154	0.2111
m3	v2	1.58333333	0.23271154	<.0001
m3	v3	0.20833333	0.23271154	0.3714
m3	v4	1.20833333	0.23271154	<.0001
m3	v5	1.66666667	0.23271154	<.0001
m3	v6	0.25000000	0.23271154	0.2836

For M_2, there was an increase in rooting from 0 – 200ppm, and then there was a decrease up to 400ppm then an increase up to 500ppm. Similarly, there was an increase of up to 200ppm, and then more or less constant number of rooted plants then decreases up to 500ppm for M1. In contrast, M_3 had a small increase from 0 – 100ppm then a sharp increase to 200ppm then a sharp decrease to 300ppm and finally a steady increase up to 500ppm (Figure 3 and Table 6).

Table 6: Means for weeks after planting by species interaction on number of leaves

		Leaf no	Standard	
wap	**Species**	**LSMEAN**	**Error**	**Pr > |t|**
2	m1	1.2777778	2.8829495	0.6579
2	m2	3.2333333	2.8829495	0.2630
2	m3	0.2777778	2.8829495	0.9233
4	m1	4.0000000	2.8829495	0.1664
4	m2	4.1555556	2.8829495	0.1506
4	m3	0.3888889	2.8829495	0.8928
6	m1	3.3333333	2.8829495	0.2486
6	m2	5.3381702	3.0014759	0.0764
6	m3	0.2833333	2.8829495	0.9218
8	m1	1.2333333	2.8829495	0.6691
8	m2	9.2055556	2.8829495	0.0016

8	m3	0.5388889	2.8829495	0.8519
10	m1	2.0722222	2.8829495	0.4729
10	m2	19.5833333	2.8829495	<.0001
10	m3	1.8444444	2.8829495	0.5228
12	m1	1.6722222	2.8829495	0.5623
12	m2	34.8333333	2.8829495	<.0001
12	m3	2.8944444	2.8829495	0.3162
14	m1	1.5555556	2.8829495	0.5899
14	m2	34.3166667	2.8829495	<.0001
14	m3	3.7777778	2.8829495	0.1911
16	m1	1.3888889	2.8829495	0.6303
16	m2	42.5555556	2.8829495	<.0001
16	m3	1.9277778	2.8829495	0.5042

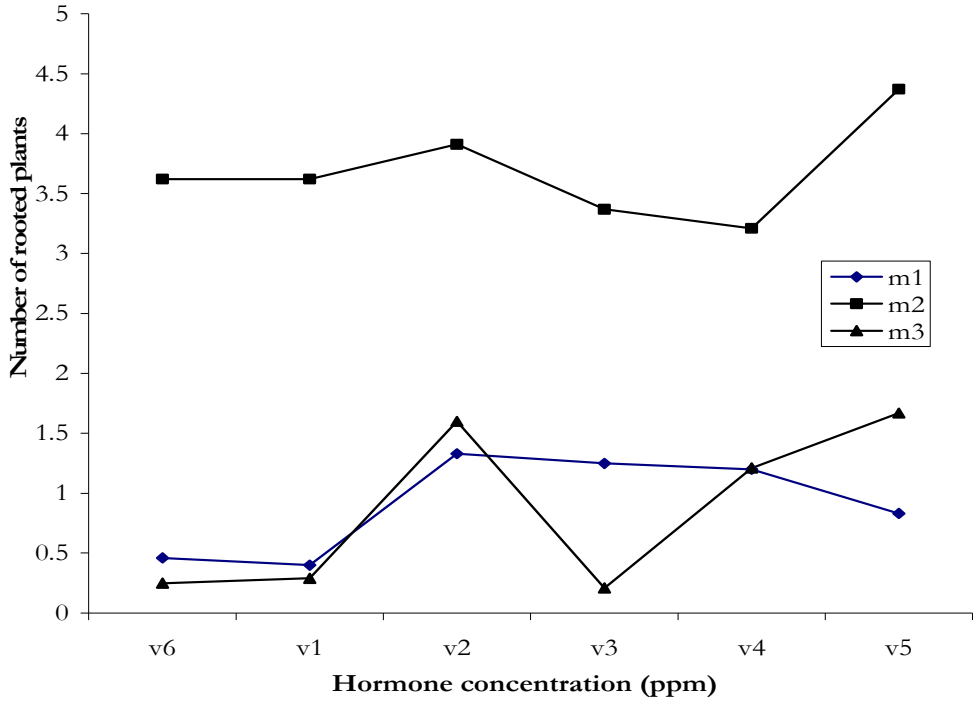

Figure 3: The interaction between species and hormone concentration on the rooting of m1, m2, and m3

As the hormone concentration increased from 100ppm to 200ppm there was an increase in rooting percent by about 150% and then a steady decrease up to hormone concentration of 400ppm then increase again and final decrease at the level of 500ppm (Table 5). There was no interaction between weeks after planting, species and hormone concentration.

4.2.2 Number of leaves: Time after planting of cuttings significantly ($P \leq 0.05$) affected the number of leaves. This depended on species type and hormone concentration (Fig. 1, Table 6) there was no interaction between time after planting of cuttings and species from week 2 to week 6. Conversely, at week 8, 10, 12, 14, 16 there was an interaction. M_2 had the highest number of leaves from week 8 up to the 16th week after planting than M_1 and M_3 (Fig. 1 and Table 6). There was no effect of hormone concentration on the number of leaves for M_1 except at V_3 (300ppm) (Table 7 and Figure 6).

Table 7: Means for species by hormone concentration interaction on number of leaves

Species	hormone	leaf no LSMEAN	Standard Error	Pr > |t|
m1	v1	1.2500000	2.4967075	0.6170
m1	v2	1.7500000	2.4967075	0.4839
m1	v3	5.9000000	2.4967075	0.0188
m1	v4	1.9166667	2.4967075	0.4433
m1	v5	1.0416667	2.4967075	0.6768
m1	v6	0.5416667	2.4967075	0.8284
m2	v1	13.2161276	2.5740764	<.0001
m2	v2	22.1666667	2.4967075	<.0001
m2	v3	17.9583333	2.4967075	<.0001
m2	v4	7.4708333	2.4967075	0.0030
m2	v5	40.8958333	2.4967075	<.0001
m2	v6	13.2083333	2.4967075	<.0001
m3	v1	0.1666667	2.4967075	0.9468
m3	v2	1.8791667	2.4967075	0.4523
m3	v3	0.1666667	2.4967075	0.9468
m3	v4	2.5083333	2.4967075	0.3159
m3	v5	4.0208333	2.4967075	0.1084
m3	v6	0.2083333	2.4967075	0.9336

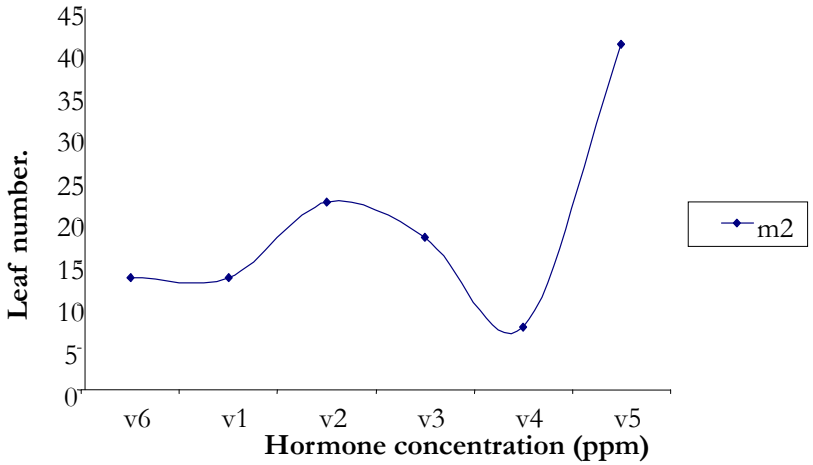

Figure 4: An effect of interaction of species and hormone on the leaf number

There was an increase in number of leaves from V_1 to V_2, from V_3 (300ppm) to V_4, decrease then increase at V_3 (300ppm), decrease at V_5 then increase for M_2. Conversely, there was no effect of hormone concentration on the number of leaves in M3. There was no 3-way interaction between weeks after planting, species and hormone concentration (Table 7 and Figure 4).

4.2.3 Plant height: Time after planting of cuttings significantly affected plant height and this depended on species type and hormone concentration. As the time after planting increased, M_2 increased slightly up to week 14 then increased sharply up to week 16. M_3 had a slight increase in height from week 10 to week 16 (Figure 5 and Table 8). M_1 decreased up to week 8, and then died (Figure 5, Table 8).

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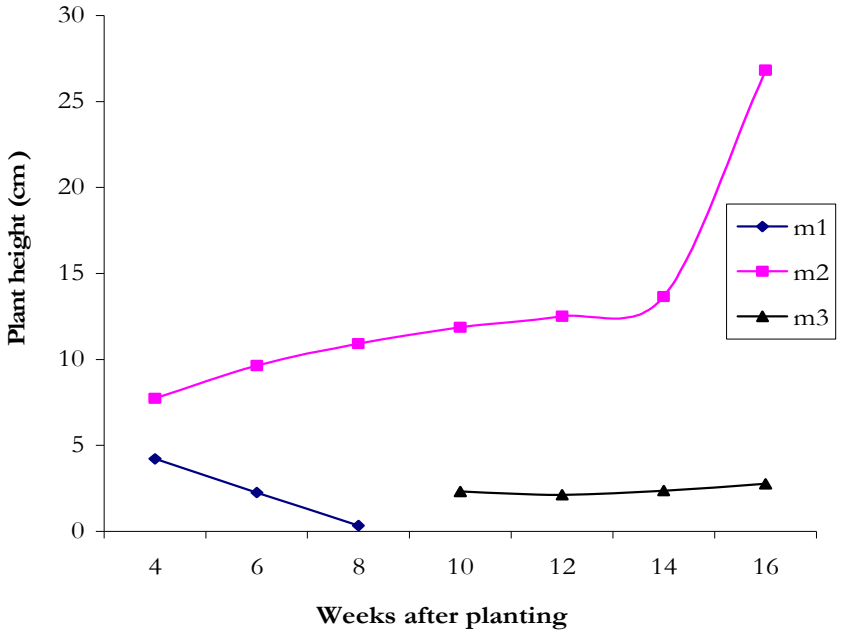

Figure 5: Effects of rooting hormone on plant height of three medicinal plants

Table 8: Means for weeks after planting by species interaction on plant height

wap	Species	plantht	LSMEAN	Standard Error	Pr > |t|
2	m1	0.9000000	1.1036795	0.4155	
2	m2	1.8833333	1.1036795	0.0890	
2	m3	0.3055556	1.1036795	0.7821	
4	m1	4.2222222	1.1036795	0.0002	
4	m2	7.7444444	1.1036795	<.0001	
4	m3	0.4777778	1.1036795	0.6654	
6	m1	2.2500000	1.1036795	0.0424	
6	m2	9.6500000	1.1036795	<.0001	
6	m3	0.8333333	1.1036795	0.4508	
8	m1	0.3362859	1.1490550	0.7700	
8	m2	10.9333333	1.1036795	<.0001	
8	m3	1.1388889	1.1036795	0.3030	
10	m1	1.3333333	1.1036795	0.2280	
10	m2	11.8777778	1.1036795	<.0001	
10	m3	2.3222222	1.1036795	0.0362	
12	m1	0.9666667	1.1036795	0.3818	
12	m2	12.5055556	1.1036795	<.0001	
12	m3	2.1333333	1.1036795	0.0542	
14	m1	1.0388889	1.1036795	0.3474	
14	m2	13.6500000	1.1036795	<.0001	
14	m3	2.3722222	1.1036795	0.0324	
16	m1	0.8722222	1.1036795	0.4300	
16	m2	26.8222222	1.1036795	<.0001	
16	m3	2.7722222	1.1036795	0.0126	

Hormone concentration affected plant height at 300ppm for M_1. However, for other concentrations there was no effect. M_2 was affected significantly up from V_1 to V_4, decreased, and then increased at V_4 to V_5. V_4 and V_5 significantly increased plant height up to V_5 then decreased for M_3 (Figure. 6 and Table 9).

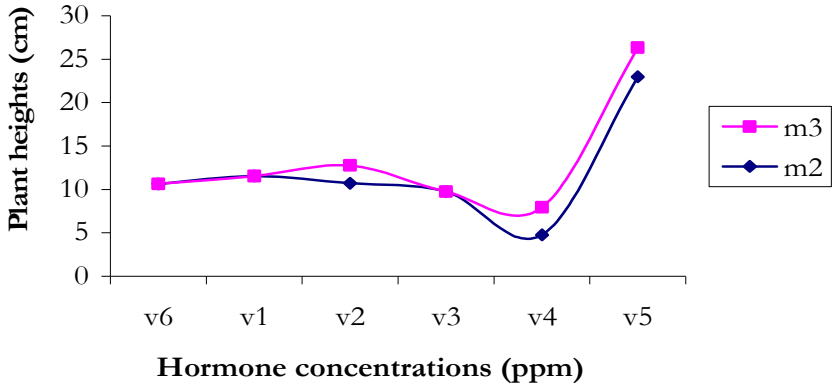

Figure 6: Effects of species by hormone interaction on plant heights of m2 and m3

Table 9: Means for species by hormone concentration interaction on plant height

Species	hormone	Plantht LSMEAN	Standard Error	Pr > |t|
m1	v1	0.8000000	0.9558145	0.4033
m1	v2	1.1375000	0.9558145	0.2350
m1	v3	4.3125000	0.9558145	<.0001
m1	v4	1.4730478	0.9854336	0.1361
m1	v5	0.4583333	0.9558145	0.6319
m1	v6	0.7583333	0.9558145	0.4282
m2	v1	11.5291667	0.9558145	<.0001
m2	v2	10.7083333	0.9558145	<.0001
m2	v3	9.7458333	0.9558145	<.0001
m2	v4	4.7500000	0.9558145	<.0001
m2	v5	23.9291667	0.9558145	<.0001
m2	v6	10.6375000	0.9558145	<.0001
m3	v1	0.1250000	0.9558145	0.8960
m3	v2	2.0375000	0.9558145	0.0339
m3	v3	0.4000000	0.9558145	0.6759
m3	v4	3.2041667	0.9558145	0.0009
m3	v5	3.3750000	0.9558145	0.0005
m3	v6	0.1250000	0.9558145	0.8960

5 DISCUSSION

The present research provides information about some therapeutic uses in different traditional precipices of 152 plants species rubbing to 57 families .The survey reveals that the commonly utilized taxonomic families as herbal medicines are Compositae (12.5%); Leguminosae (7%); Labiatae (6.5%); Acanthaceae (5.2%); Euphorbiaceae (5.9%); Solanaceae (3.2%) and Rubiaceae (3.2%) (Table 2 and 3). This may be a reflection of the high number of species found in these families worldwide; Asteraceae 19, 085, Papilionaceae 12,615, Lamiaceae 6,970 and Solanaceae 2, 900 (Masinde, 1996). This implies that they are the most available plants in the

biodiversity and is indicative of the richness of medicinal floristic diversity.

Medicinal plant species in this region is dominated by shrubs, contributing 35.526% (54 species), while herbs contribute 33.553 %(51 species), trees 19.737 %(30 species) and lianas 11.184% (17 species) (Table 1). This may be attributed to the high levels of destruction of trees for timber and due to over-grazing and over exploitation of the forests trees resulting in the low numbers of trees and lianas.

Although most plant parts were utilized for the preparation of herbal remedies, majority of the medicines were obtained from the roots (25%) followed by leaves and bark (Table 3). Except where the drugs are obtained from leaves, the use of bark, roots or uprooting the whole plant of a given species was found to be destructive means of obtaining the herbal remedies. These unfavorable extraction methods contribute to the loss of the forest trees.

Most methods of extraction of the active ingredients require crushing of the plant tissue and homogenizing it with water and boiling it in water to improve extraction. Application of crushed plant tissue without water is used but is not common. Comparison of the folk phytotherapeutical data in this study with data from other researches has revealed new medicinal uses of known medicinal plants. *Datura stramonium* was reported for the first time in the treatment of madness. In addition, new medicinal uses of *Ehretia cymosia* (used for epilepsy and mental problems) and *Conyza subscaposa* (for treating breast cancer and obesity) species have also been reported in this study. *Trimeria grandifolia, Fuerstia africana* and *Pentas longiflora* were reported to be used as antimalarials and antiseptics. The most frequently used drug preparations were concoction and decoction. Use of concoctions suggests that the drugs may only be active in combination due to synergistic effects of several compounds that are active singly (Gessler *et al*., 1994). It is possible that some of the compounds that are active *in vitro* could exhibit activity in *vivo* due to enzyme catalyzed transformation into potent derivatives and therefore are playing the role of prodrugs. This phenomenon has been demonstrated by *A. indica* extracts (Parida *et al., 2002*). The use of more than one plant especially for the bitter remedies may be to neutralize the poison (antidote).

The herbal remedies preparations were evidently prepared by different methods. These included decoctions, infusion, poultices, roasting, concoctions, paste, pomades, ointment of ghee and powder (ash). Preparation of compounds from dry parts of one plant or several plant drugs and ashes by using grinding stones. Burning, chewing, heating/roasting, pounding, and boiling or soaking in hot or cold water and milk and various other solvents in common like honey and this way, orally administered. This may be because the mode is convenient. Preparations for application to the skin such as ointments, liniments, foam to lotion, and baths. Application is frequently precutanaeous, by rubbing or covering (including poultices, by washing or baths, occasionally complimented by massage.

5.1 Propagation studies: The results of the present studies show that auxins promote the rooting of stem cuttings of the three medicinal plant species tested. Several workers have reported promotion of rooting by auxins in other plant species (Leakey *et al*., 1982; Hartmann *et al*., 1990; Haissing and Davies, 1994; Aminah *et al*., 1995, Tchoundjeu and Leakey, 1996; Copes and Mandel, 2000; Hartmann, *et al*., 2001 ;). The results also indicate that species M_1, M_2 and M_3 have different ranges of effective auxin concentration with the latter two having broader ranges than M_1. This agrees with Leakey, 1990 who reported that increase in auxin concentration increases rooting as in this study and that auxin or IBA has a broad range of activity. For species M_1, there was a range of increased rooting from 0ppm to 200ppm, then decrease up to 400ppm then increase. This implies that the rates 200ppm to 400ppm was too high and killed the cells. When auxin levels are too high, they are injurious to the cells (Tchoundjeu, 2002). High levels of IBA (300mg) were supraoptimal in the rooting of *Prunus africana* but 200ppm promoted rooting in M_1 while 300ppm to 400ppm was supraoptimal for rooting. For M_2 the range of root promotion was from 0ppm to 200ppm and at the rest of the concentrations, rooting decreased slowly. So it can be reasoned that the optimal levels of the auxin for root promotion was very small compared to the supraoptimal levels where rooting was reduced. It appears that it is a moderately difficult to root species (Hartmann *et al,* 2001). This contrasts sharply with M_3 where the ranges of auxin for root promotion were more than in M_1 and M_2. Therefore, M_3 appears to be an easy to root species (Hartmann *et al.,* 2001). It appears that M_1 and M_2, which are relatively difficult to root in the present study, may have endogenous rooting inhibitors (Brian and Halevy, 1973; Vert *et al*., 1987; Cuir *et al.,*

1993; Crow *et al.,* 1997). Such inhibitors have been reported to be phenolic compounds (Brian *et al.*, 1973), and Manganese (Jarvis, 1986). M_3 because it was easy to root in the present study did not have these inhibitors but had essential root promoting substances called morphogens and auxins which were lacking in M_1 and M_2 (Fad and Hartmann, 1967). For M_2 and M_3, there was an increase in rooting with date of planting of the cuttings up to week 14 then a decrease. This shows that the effect of the auxin or concentration was decreasing with time. This could be attributed to the breakdown of the auxin by microorganisms or effect of continuous watering of the cuttings, which may have leached it. In species M_2, increase in concentration of auxin generally increased the number of leaves and so was plant height, with few exceptions for M_2 and M_3 but not M1. This can be due to the mobilizations of carbohydrates and Boron from the leaves by the auxin. These substances promote growth activities (Patrick and Wareing, 1973, Altman and Wareing, 1975). With increased date of sampling, there was reduction in plant height in M_1, which eventually died. It appears that the auxin applied may have added to the endogenous auxins that killed the cells with time. For M_2 and M_3, it appears that the mobilization of carbohydrates and Boron increased with time and this promoted growth.

6 CONCLUSION:

The ethnobotanical survey has revealed 152 medicinal species in 57 families. Two new medicinal species and three new uses of already recorded medicinal species have been recorded for the first time. This reinforces the importance of these types of ethnobotanic survey. On propagation, it can be concluded that Indole Butyric Acid (IBA) can be used to root the stem cuttings of the plant species in this study at the concentration from 100ppm to 400ppm. It can also be concluded that the non-mist polypropagator be used to propagate these plant species because it promotes good rooting and it can be constructed from available and cheap materials.

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Table 1: Medicinal plants used in Aldai Division of South Nandi District.

LOCAL NAME	SPECIFIC NAME	FAMILY	HABIT	PARTS USED	PREPARATIONS	AILMENTS TREATED/ USES
CHEMURGUIWET	*Asystasia schimperi* T.Anders	Acanthaceae	Herb	Leaf	Infusion (internal)	Cough, skin diseases
CHEMURGUIWETAB SUSWEK	*Dyschoriste radicans* Nees	Acanthaceae	Herb	Leaves	Infusion (internal & external)	Skin diseases, wounds, eye infections
NYAMDUTIET	*Lepidagathis scariosa* Nees.	Acanthaceae	Herb	Leave	Infusion (internal)	Antidiarrhoea, wounds, `mireiwek', oedema, foot &mouth in livestock, pneumonia
CHEPERENET	*Barleria grandicalyx* Lindau	Acanthaceae	Herb	Leaves	Paste (external)	Snake bites
CHEPTERERET	*Thunbergia alata* Sims	Acanthaceae	Herb	Leaves	Infusion (internal & external)	Cough,`mireiwek',fopetus placement in the womb, backache
KIPKESIO	*Justicia betonica* L	Acanthaceae	Herb	Leaves, flower	Ash (internal)	Cough, anti-diarrhoea, orchitis
NDAKARIAT	*Acanthus pubescens* (Oliv.) Engl	Acanthaceae	Shrub	Leaves	Ash (internal)	Dry cough, pneumonia, chronic asthma, cancer, tonsils, flu,`mireiwek'
ROKORABCHEPKIMIS/ CHEPYOCHOIT	*Justicia flava* Vahl	Acanthaceae	Herb	Leave	Ash (infusion)	Soccery, charms, ulcers, pneumonia
TANGARATWET	*Aloe kedongensis* Reynolds	Aloeaceae	Shrub	Leaves, roots	Infusion (internal & external)	Typhoid, skin diseases, malaria, colds, ear problems, wounds, coccidiosis
CHESIRIMIOT/CHESIRIMTO	*Achyranthes aspera* L.	Amaranthaceae	Herb	Root	Ash (internal)	Cough
MBOGIAT	*Amaranthus graecizans* L	Amaranthaceae	Herb	Leaves	Paste (external)	Cancer, boils
NAMGWET	*Cyathula schimperiana* non Moq	Amaranthaceae	Herb	Leaves, roots	Decoction (internal)	Malaria, antidiarrhoea, fungal infections
NG'ATUMYAT	*Cyathula cylindrica* Moq	Amaranthaceae	Herb	Root	Decoction (internal)	Malaria, purgative, emetic
KIPNG'ETINGWET	*Lannea schimperi* (A. Rich.) Engl.	Anacardiaceae	Tree	Bark	Decoction (internal)	Diarrhoea, pain stomach, chest problems

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LOCAL NAME	SPECIFIC NAME	FAMILY	HABIT	PARTS USED	PREPARATIONS	AILMENTS TREATED/ USES
SIRIAT	*Rhus natalensis* Krauss	Anacardiaceae	Tree	Roots	Decoction (internal)	Venereal diseases, heartburn, abdominal pains, cold, cough, antidiarrhoea
KELIOT	*Acokanthera schimperi* (A.DC.) Schweinf.	Apocynaceae	Shrub	Roots	Decoction (internal)	Venereal diseases (syphilis)
LEGETETIOT/tamuryekiat	*Carissa edulis.* (Forsk.) Vahl.	Apocynaceae	Shrub	Roots	Decoction (internal)	Venereal diseases, epilepsy, malaria, heartburns, arthritis, sorcery, cancer, Typhoid, pneumonia, cough, ulcers, antidiarrhoea
MABONDET	*Tabernaemontana stapfiana* Britten	Apocynaceae	Tree	Roots, bark	Decoction (internal)	Pneumonia, chest problems, aids in delivery
NYAKINCHWET	*Landolphia buchananii*	Apocynaceae	Shrub	Leaves	Infusion (external)	Wounds, gonorrhoea, molluscides
CHEPNAMOBON/Kipnamobon	*Culcasia falcifolia* Engl.	Araceae	Liana/climber	Leaves	Ash (internal)	Dry cough, ECF, oedema, epilepsy
SOIYET	*Polyscias fulva* (Hiern) Harms	Araliaceae	Tree	Bark	Decoction (internal)	Obesity
SIMATWET	*Curroria volubilis* (Schltr.) Bullock	Asclepiadaceae	Liana/climber	Bark	Decoction (internal)	aid in delivery, malaria
SINENDET	*Periploca linearifolia* Dill. & Rich	Asclepiadaceae	Liana/climber	Roots, milky latex	Decoction (internal) & exudates (external)	Venereal diseases, warts, rituals, pneumonia, cancer, antidiarrhoea, fertility
TILALWET	*Pteridium aquilinum* (L.) Kuhn Bracken	Aspidiaceae	Shrub	Leave shoots	Infusion (external)	Skin diseases
NDEREMIAT	*Basella alba* L.	Basellaceae	Liana/climber	Root, leaves	Decoction (internal)	Removal of after birth, vegetable, stomach pains, increase milk production
RATINUET	*Kigelia africana* (Lam.) Benth.	Bignoniaceae	Tree	Bark, seed, root	Decoction (internal)	Skin diseases, ulcers, diabetes, purgative, diarrhoea

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LOCAL NAME	SPECIFIC NAME	FAMILY	HABIT	PARTS USED	PREPARATIONS	AILMENTS TREATED/ USES
SEBETAIYAT	*Spathodea campanulata* P. Beauv	Bignoniaceae	Tree	Sap	Infusion (internal)	Colds in children
MORORWET	*Ehretia cymosa* Thonn	Boraginaceae	Shrub	Leaves, roots	Infusion (internal)	Venereal diseases, pneumonia, epilepsy, dry cough, malaria, ECF, tonsils, mental problems, withcraft, asthma, typhoid, wounds, aphrodisiac
SENETWET	*Cassia didymobotrya* Fres.	Caesalpinioideae	Shrub	Leaves, roots	Infusion (internal)	Cancer purgative, skin diseases, malaria, gonorrhea, ring worms, emetic, eccess bile
MASIRIRIET	*Plantago palmate* Hoof.	Campanulaceae	Herb	Roots	Decoction (internal)	Tonsils, pneumonia, eye problems, venereal diseases, typhoid, antidiarrhorea
SOGET	*Warburgia ugandensis* Sprague	Canellaceae	Tree	Bark	Decoction (internal)	Pneumonia, tonsils, uvala problems, stomachache, constipation, fever
ISAKIAT	*Cleome gynandra* L	Capparidaceae	Herb	Leaves, roots	Decoction (internal)	Vegetable, malaria, facilitates &removes afterbirth, stomach congestion
CHEBARA/ CHEBARTET	*Sonchus aspera* (L.) Hill	Compositae	Herb	Bulb	Juice (internal)	Tonsils, cough, `mireiwek'
CHEMAMAIYAT	*Senecio discifolius* Oliv.	Compositae	Herb	Leaves	Infusion (internal)	Chronic asthma, eye infection, ring worm
CHEPILIBILIOTAB OINET	*Chrysanthemum americanum* (L.) Vatke	Compositae	Herb	Whole plant	Ash infusion (internal)	Dry cough
CHEPKURBET	*Solanecio mannii* (Hoof.f.) C.Jeffrey	Compositae	Tree	Roots	Decoction (internal)	Cancer, pneumonia, cough, epilepsy, typhoid
CHEPNG'OMBET	*Conyza subscaposa* O.Hoffm.	Compositae	Herb	Root, leaves	Decoction (internal)	Obesity, breast cancer, tonsils
CHEPNYOSORET	*Tagetes minuta* L	Compositae	Herb	Leaves	Ash (external)	Insecticide, wounds, ulcers

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LOCAL NAME	SPECIFIC NAME	FAMILY	HABIT	PARTS USED	PREPARATIONS	AILMENTS TREATED/ USES
KATABELELYAT	*Berkheya spekeana* Oliv.	Compositae	Shrub	Leaves, flower	Ash (internal)	Chest problems, chronic asthma, cough/cold, pneumonia, edema
KIMOGIT	*Sonchus oleraceus* L.	Compositae	Herb	Leave	Infusion (internal)	Prolong virility of gentlemen, impotency
KIMOGIT	*Sonchus luxurians* (R.E.Fries) C.Jeffrey	Compositae	Herb	Root	Decoction (internal)	Tonsils, stomach upsets, fever
KIPKOLEITET	*Bidens pilosa* L	Compositae	Herb	Roots, leaves	Infusion (internal)	Epilepsy, spinal cord, ear and eye problems, wounds, stomach-ache, heart burns
NAMKECHIR	*Ageratum conyzoides* L	Compositae	Herb	Bark, leaves	Ash (external)	Wounds, stops bleeding in cuts
NG'OSNG'OSIAT	*Conyza stricta* H.B.K	Compositae	Herb	Leaves, roots	Infusion (internal)	Dry cough, tonsils, uvala problems, toothache, sore throat
PILIPILIOTAB OINET	*Gutenbergia cordifolia* Oliv.	Compositae	Herb	Seeds	Decoction (internal)	Stomachache
PUTPUTIK	*Spilanthes mauritiana* (A. Rich.) DC	Compositae	Herb	Flower, leave	Infusion (internal)	Venereal diseases, cough, mouth problems, antidiarrhoea, toothache, ear ailments, insect repelant
RIRMOSOK / NANWAKET	*Microglossa pyrifolia* (Lam.) O.Kuntze	Compositae	Shrub	Roots, root	Decoction (internal)	Arthritis, skin diseases, cough, cancer, malaria
SERGUTIET	*Vernonia hymenolepis* A. Rich	Compositae	Shrub	Leave, flower	Paste (external)	Wounds
CHEPCHEGO	*Piloselloides hirsuta* (Forsk.) C.jeffry	Compositae	Herb	Bark, roots	Decoction (internal)	Typhoid, cancer
TABKWEI	*Dichrocephala integrifolia* O.Kuntze	Compositae	Herb	Leaves	Decoction (external0	Skin rashes
TEBENG'WET	*Vernonia auriculifera* (Welw.)Hiern	Compositae	Shrub	Root, leaves	Decoction (internal)	Pneumonia, cough, tonsils, pregnancy, anti-diarrhoea, footrot in people, fever

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LOCAL NAME	SPECIFIC NAME	FAMILY	HABIT	PARTS USED	PREPARATIONS	AILMENTS TREATED/ USES
KUSERWET/CHEBIBI	*Kalanchoe lanceolata* (Forsk.)Pers.	Crassulaceae	Herb	Leaves	Infusion (internal)	Rheumatism, stiff joints
CHEBOLOLET	*Cucurbita maxima* Duchesne ex Lam	Cucurbitaceae	Liana/climber	Seeds	Decoction (internal)	Deworming
SUMET	*Cucumis ficifolius* A. Rich	Cucurbitaceae	Liana/climber	Whole plant	Paste (external)	Ring worms, bruises, sprains
CHEPTENDERET	*Momordica foetida* Schumach	Cucurbitaceae	Liana/climber	Leaves, roots	Decoction (internal)	Chronic asthma, ear problems, soccery, athritis, burns, stomachache, fever, cuts, measles, intestinal worms, poultry fever, malaria
MANERERIAT/KIMANERERIT	*Zehneria minutiflora (Cogn.) C.Jeffrey*	Cucurbitaceae	Liana/climber	Roots, leaves	Decoction (internal)	Malaria, eye and ear problems, dry cough, ECF
SILAKWET	*Lagenaria siceraria* (Molina) Stanley	Cucurbitaceae	Liana/climber	Seed	Decoction (internal)	Purgative
BURBURETIET	*Kyllinga erecta* Schum.	Cyperraceae	Herb	Root	Decoction (internal)	Fungal infection (-ring worms)
USUET	*Euclea divinorum* Hiern	Ebenaceae	Tree	Roots, bark	Decoction (internal), tooth brush	Deworming, malaria, chest pains, purgative, toothache, stomachache, purgative
CHEMELET	*Tragia brevipes* Pax	Euphorbiaceae	Liana/climber	Leaves, roots	Ash (internal)	Dry cough, obesity, enhance virility, rituals, rheumatism, purgative
IMANIAT	*Ricinus communis* L	Euphorbiaceae	Shrub	Roots, seeds	Decoction (internal)	Venereal diseases, enhances fertility, contraceptives, typhoid, malaria
KULELWET	*Croton dichogamus* Pax.	Euphorbiaceae	Shrub	Whole plant	Decoction (internal)	Chest problems, malaria, typhoid, pneumonia, toothache, arthritis
KURMENYAT/ turmenyat	*Clutia abyssinica* Jaub. & Spach	Euphorbiaceae	Shrub	Roots, leaves	Decoction (internal)	Venereal and skin diseases, chest problems, cancer, fertility in both humans and cattle, pneumonia, witchcraft, cough, jaundice, malaria cancer, athritis

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MASINEITET	*Croton megalocarpus* Hutch.	Euphorbiaceae	Tree	Bark	Decoction (internal)	Arthritis, whooping cough, intesinal worms
TEBESWET	*Croton macrostachyus* Del.	Euphorbiaceae	Tree	Roots, leaves	Decoction (internal)	Pneumonia, backache, cancer, dry cough, obesity, malaria, skin diseases, E.C.F, typhoid, sorcery, purgative
CHEMAGALDET	*Bridelia micrantha* (Hochst.)Baill.	Eurphorbiaceae	Tree	Bark	Decoction (internal)	E.C.F, joint ailments, stomachache, STD, tapeworms.
CHEPSAKAINA	*Erythrococca atrovirens* (Pax) Prain.	Eurphorbiaceae	Shrub	Roots	Decoction (internal)	Arthritis, cancer
CHEPKERERLONG	*Trimeria grandifolia* (Hochst.) Warb	Flacourtiaceae	Shrub	Roots	Decoction (internal)	Malaria, typhoid, cuts/burns, enhances sterility in men
KAPCHOBINIOT	*Dovyalis macrocalyx* (Oliv.) Warb	Flacourtiaceae	Shrub	Roots, leaves	Decoction (internal)	Pneumonia, arthritis, cancer, Oedema, typhoid, migraines, indigestion, epilepsy
SEGETETIET	*Phyllanthus fischeri* Pax.	Euphorbiaceae	Shrub	Fruit	Ash (internal)	Cough
NUKCHAT/NOKOK	*Dovyalis abyssinica* (A. Rich.) Warb	Flacourtiaceae	Shrub	Leaves, roots	Decoction (internal)	Cancer, pneumonia, athritis, tonsils, mental problems, fertility in cows, malaria, oedema, typhoid, gonorrheae, stomach-ache, fever, molluscides, malaria
TUNGURURWET	*Chaetacmi aristata* (Burm.f.)Merrill.	Flacourtiaceae	Shrub	Root, bark	Decoction (internal)	Pneumonia, typhoid, venereal, liver cirrhosis
BUNYERIAT	*Imperata ssp*	Gramineae	Herb	Leaves	Ash (internal)	Cough
KIPSONGIK	*Eleusine coracana Gaertn.*	Gramineae	Herb	Seeds	Powder (internal)	Anti-diarrhea
MOSONGIK	*Sorghum bicolor*	Gramineae	Herb	Seed	Powder (internal)	Anti-diarrhea
NDERIOT	*Garcinia buchananii* Bak.	Guttiferae	Tree	Roots	Decoction (internal)	Venereal diseases

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CHELELGATIAT	*Ajuga remota* Benth.	Labiatae	Herb	Leaves, roots	Decoction (internal)	Malaria, tonsil, antidiarrhoea, treat after birth pains, fever, toothache, dysentry, high blood pressure, tape worms
CHEPKARI	*Leucas martinicensis* (Jacq.) Ait.f.	Labiatae	Herb	Flowers, leaves	Infusion (internal)	Chronic asthma, eye problems, oedema, fever, stops vomiting due to fever
CHEPSAKITIET	*Satureia biflora* (D.Don) Benth.	Labiatae	Herb	Leave	Infusion (internal)	Anti-diarrhoea, skin diseases, cough/cold, migraines
CHEREKERIOT, chepchai	*Ocimum kilimandscharicum* Guerke	Labiatae	Shrub	Roots, leaves	Decoction (internal)	Cancer, athritis, fertility in cattle, venerial diseases, oedema, abdominal pains
CHERORONIT/cherungut	*Hoslundia opposita* Vahl.	Labiatae	Shrub	Whole plant	Decoction (internal)	Antidiarrhoea, wounds,`mireiwek',oedema,evil teeth,fever,stomach pains, wounds
CHUCHUNIAT	*Leonotis mollissima* Guerke	Labiatae	Shrub	Root, leaves	Decoction (internal)	`Mireiwek, venereal diseases, stomache, wounds, oedema, malaria
IRAKWET	*Plectranthus barbatus* Andr.	Labiatae	Shrub	Leaves, roots	Decoction & infusion (internal)	Cuts, skin diseases,`mireiwek',amoebic dysentry,gastrointestinal problems
NG'ARIAB SAWE/ birirwobsot	*Fuerstia africana* T.C.E.Fr.	Labiatae	Shrub	Leaves	Infusion (internal)	Eye problems, skin diseases, `mireiwek', stomach ulcers, tongue infection
NG'EJEPCHIAT	*Leucas calostachys* Oliv.	Labiatae	Shrub	Leaves, roots	Decoction (internal)	Wounds, dry cough, amoeba, heartburns, muscle pull, waterborne diseases, cough, kidney problems, pneumonia, malaria, stomach-ache
SISIYAT	*Ocimum lamiifolium* Benth.	Labiatae	Shrub	Roots	Decoction (internal)	Malaria, enhances delivery, cough

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KAPKUTUET	*Entada abyssinica* Steud.	Leguminosae	Tree	Roots, Bark	Decoction (internal)	Arthritis, venereal diseases, epilepsy, cough
MITIAT	*Crotalaria brevidens* Benth.	Leguminosae	Herb	Leaves	Decoction (internal)	Pneumonia, stomach pains & swellings
SEET	*Albizzia gummifera* (J.F.Gmel.)	Leguminosae	Tree	Root, bark	Decoction (internal)	Stomachache, skin diseases, malaria
TILATILIET	*Acacia hockii* De Wild.	Leguminosae	Shrub	Leaf	Infusion (internal)	Skin diseases, anti-fungal, hydatis, venereal,joint ailment
CHEBITET	*Acacia gerrardii* Benth.	Leguminosae	Tree	Roots	Decoction (internal)	Epilepsy
CHEMULMITIA	*Crotalaria laburnifolia* L	Leguminosae	Herb	Leaves, roots	Decoction (internal)	Arthritis
CHEPERENET	*Glycine wightii* (Wight & Arn.) Verdc.	Leguminosae	Liana/climber	Roots, leaves	Decoction (internal)	Pneumonia, spider bites
KAKARUET	*Erythrina abyssinica* DC.	Leguminosae	Tree	Bark, roots	Decoction (internal)	Malaria, enhances delivery, pneumonia, venereal diseases, cough, trachoma, chest problems, typhoid, liver cirrosis, diarrhoea, mumps, uvala problems
CHESIBAIYAT	*Asparagus racemosus* Willd.	Liliaceae	Shrub	Roots	Decoction (internal)	`Mieriwek', athritis, venereal diseases, cancer, asthma, pneumonia, cough, sore throat, purgative, proper pregnancy, stomach up-sets, fertility in women
CHEMULMESWO	*Urena lobata* L	Malvaceae	Herb	Root, leaves	Decoction (internal)	Aids in delivery
KORKORIET/CHEPKORKORIET	*Sida cuneifolia* Roxb.	Malvaceae	Shrub	Root	Decoction (internal)	Skin rashes, venereal diseases
MENJEIWET	*Sida cordifolia* L	Malvaceae	Shrub	Leaves	Infusion (internal)	Ear problems, malaria

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CHEMANJILILIET/Chepsabuni	*Pavonia kilimandscharica* Gurke	Malvaceae	Herb	Roots	Decoction (internal)	Malaria, enhances delivery, pneumonia, arthritis, pregnancy, cough, epilepsy
MONDILILIETAB SAOS	*Dissotis canescens* Taub.	Malvaceae	Herb	Leaves	Infusion (internal)	Worms
MANDILILIET/ CHEBSEBWET	*Tristemma incompletum* R.Br.	Melastomataceae	Shrub	Leaves	Infusion (internal)	Tonsils, stomach up-sets
MWARUBAINI	*Melia azedarach* L	Meliaceae	Tree	Leaves, barks	Decoction (internal)	Malaria, skin rashes, any other disease
TELDET	*Ekebergia capensis* Sparrm.	Meliaceae	Tree	Bark, roots	Decoction (internal)	Venereal diseases, pneumonia, cancer, typhoid, chest problem, skin rashes
KIBUIMETIET	*Bersama abyssinica* Fres.	Melianthaceae	Tree	Bark	Decoction (internal)	Toothache, kidney problems, muscle cramps, malaria
TABARARIET/BOROWA	*Stephania abyssinica* (Dillon & A. Rich.) Walp.	Menispermaceae	Liana/climber	Roots	Infusion (internal)	Witchcraft in children`` migraine"
MUSENGERTET	*Albizia coriaria* Oliv.	Mimosoideae	Tree	Whole plant	Decoction (internal)	Menorrhagia, threatened abortion, venereal diseases, sore eyes, ECF
CHILGATUET	*Ficus glumosa* Vahl.	Moraceae	Shrub	Root	Decoction (internal)	Epilepsy, cancer
CHOMISIAT	*Ficus exasperata* Vahl.	Moraceae	Tree	Bark	Decoction (internal)	Hiccups
MOGOIWET	*Ficus sycomorus* L	Moraceae	Tree	Root	Decoction (internal)	Venereal diseases
SASURIET	*Ensete ventricosum* (Welw.) Chessman	Musaceae	Herb	Roots	Decoction (internal)	Enhances reproduction in men, colds in children, enhances delivery
KIBABUSTANYIET	*Maesa lanceolata* Forssk	Myrsinaceae	Shrub	Root	Decoction (internal)	Epilepsy, dry cough, malaria, cancer, typhoid, `bad eyes', jaundice
KIBONG'ONG'INIK	*Embelia schimperi* Vatke	Myrsinaceae	Tree	Seed	Decoction (internal)	Deworming, malaria

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LAMAIYUET	*Syzygium guinneense* (Willd.) DC	Myrtaceae	Tree	Bark	Infusion (internal)	Chest problems, painful menstruation
KAPIKERIET	*Schrebera alata* (Hochst.) Welw	Oleacea	Tree	Leave	Infusion (internal)	Cough, soccery/charms
NYONYOEK	*Oxalis corniculata* L	Oxalidaceae	Herb	Whole plant	Infusion (internal)	Eye problems, arthritis, fever, mouth freshener
NYONYOEKAB SUSWEK	*Oxalis obliguifolia* A. Rich	Oxalidaceae	Herb	Leaves	Infusion (internal)	Blood disorders, mouth sores, sore throat
TILYAMOOK	*Rhynchosia hirta* (Andrews) Meikle & Verdc.	Papilionaceae	Liana/climber	Root	Decoction (internal)	Ulcers, cancer, malaria
CHEPNYALILDET	*Adenia gummifera* (Harv.) Harms.	Passifloraceae	Liana/climber	Roots, leave	Ash (internal)	Venereal, diarrhoea in children, urinary problems, virility, typhoid, coccidiosis, wounds, enhances fertility in women
CHEPKOROTIT	*Polygonum salicifolium* Willd.	Polygonaceae	Herb	Roots, leaves	Ash (internal)	Athritis, mental problems, nasal and eye problems, tonsils, cough, soccery
MANDAWET	*Rumex usambarensis* (Dammer) Dammer	Polygonaceae	Shrub	Root	Decoction (internal)	Cough, scabies
BATKAWET	*Phytolacca dodecandra* L Hiern	Phytolaccaceae	Liana/climber	Leaves	Ash (internal)	Chronic, asthma, pneumonia, backache, cough, ring worms, jaundice
SUMEIYOT	*Protea gaguedi* J.F.Gmel.	Proteaceae	Shrub	Leaves	Paste (external)	Wounds
SASSIAT	*Clematis hirsuta* (Perr. & Guill.)	Ranunculaceae	Shrub	Whole plant	Infusion (internal)	Chronic asthma, mental problems, nasal problems, pneumonia, burns, diarrhoea, purgative, cancer, soccery
KOSISITIET	*Rhamnus prinioides* L. Her	Rhamnaceae	Shrub	Roots	Decoction (internal)	Cancer,,pneumonia,malaria,child delivery,urinaryand chest problems

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MOMONIAT	*Rubus steudneri* Scweinf.	Rosaceae	Shrub	Roots	Decoction (internal)	Impotency in men
MOMONIAT	*Rubus pinnatus* Willd.	Rosaceae	Shrub	Roots	Decoction (internal)	Athritis, cure impotency in men, cancer
TENDWET	*Prunus africana* (Hook.f) Scweinf.	Rosaceae	Tree	Bark, leave	Decoction (internal)	Prostate cancer, Ulcers, ECF, malaria, stomachache, liver, coccidiosis, pneumonia, indigestion
CHEMURGUIYWET	*Spermacoce princeae* (K.Schum.)Verdc.	Rubiaceae	Herb	Roots, leaves	Decoction (internal) & paste (external)	Chronic asthma, cancer, wounds, eye problems, mastitis in cows, venereal, skin diseases, pneumonia, typhoid, caterpillar bites, antidiarrhoea
CHEPKURWET	*Tarenna graveolens* (S.Moore) Brem	Rubiaceae	Shrub	Roots	Decoction (internal)	Pneumonia
CHEPSALEITET	*Rubia cordifolia* L.	Rubiaceae	Liana/climber	Roots, leaves	Ash (internal)	Venereal, pneumonia, cough/cold, tonsils, uvula problems, asthma, purgative, ``mireiwek'', nose bleeding, ulcers, athritis, kidney, hypertension, diarrhea
CHERORIET	*Pentas longiflora* Oliv.	Rubiaceae	Herb	Leaves, roots	Decoction (internal) & paste (external)	Skin diseases, malaria, cancer, urinary problems, cough,`mireiwek', sore eyes
KIMOLUET	*Vangueria volkensii* K.Schum	Rubiaceae	Shrub	Roots	Decoction (internal)	Venereal diseases
KIPKOSKOSIT	*Toddalia asiatica* (L.) Lam.	Rutaceae	Shrub	Roots, leaves	Decoction (internal)	Cancer, chest and urinary problems, chronic asthma, cough/cold, pneumonia
						Typhoid tonsillitis, athritis malaria
NOIYWET	*Fagaropsis angolensis* (Eng.) H.M.Gardner	Rutaceae	Tree	Roots	Decoction (internal)	Cancer, malaria

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SAGAWATIET	*Zanthoxylum gilletii* (De.Wild) Waterman	Rutaceae	Tree	Bark, roots	Decoction (internal)	Venereal, pneumonia, cough/cold, tonsils, uvala problems, toothache,
						Waterborne diseases, athritis, cancer, malaria, snake bites,
LOLWET	*Mimusops bagshawei* S.Moore.	Sapotaceae	Tree	Bark, roots	Decoction (internal)	Athritis, cirrosis
CHEBO KIMAGUN	*Datura stramonium* L.	Solanaceae	Shrub	Seeds, leaves	Ash (internal)	Toothache, ear problem, nervous system, madness
LABOTWET	*Solanum incanum* L.	Solanaceae	Herb	Leaves	Ash (internal)	Cough/cold, chest problems, removal of after birth, venereal diseases
PILIPILIOT	*Capiscum annuum* L.	Solanaceae	Shrub	Seed	Ash (external)	Pneumonia, coccidiosis, kills aphids in plants, acaricide
SIGOWET	*Solanum micranthum* Schltdl	Solanaceae	Shrub	Root, seed	Decoction (internal)	Pneumonia, Arthritis, Cancer, chronic asthma, oedema, ECF, epilepsy, udder problems in cattle, antidiarrhoea in children, ulcers
ISOCHOT	*Solanum nigrum* L.	Solanaceae	Herb	Fruits		Pneumonia, aching teeth, stomache-ache, tonsillitis, tonic, ring worms
SILIPCHET	*Dombeya torrida* (J.F.Gmel) P.Bamps	Sterculiacea	Shrub	Root	Paste (external)	Cuts, burns
MESWOT	*Triumfetta macrophylla* K.Schum	Tiliaceae	Shrub	Root	Decoction (internal)	Pregnancy, muscle pull
MUGUNGETAB BELIOT -ne chabai	*Hydrocotyle mannii* Hook.f.	Umbelliferae	Herb	Leave	Infusion (internal)	Ear problems, antidiarrhoea, headache, abdominal pain
MUNGETAB BELIOT -ne sing, ortot	*Centella asiatica* (L.) Urb.	Umbelliferae	Herb	Leave	Paste (external)	Wounds, skin diseases, abdominal pain

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KIPSOTIET	*Urera hypselodendron* (A. Rich) Wedd.	Urticaceae	Liana/climber	Roots	Decoction (internal)	Enhances reproduction in men, urinary problems, expels placenta
SIWOT	*Urtica massaica* Mildbr.	Urticaceae	Herb	Leaves	Infusion (internal)	Foot and mouth disease, enhance virility, arthritis
ABETIOT/KABETIOT	*Clerodendrum myricoides* (Hochst.) Vatke	Verbenaceae	Shrub	Roots	Decoction (internal)	Epilepsy, athritis, malaria, diabetes, typhoid, cough/cold, eye problems, proper position of fetus, tonsillitis, rheumatism, gonorrhoea, ECF,
BAIWAB TARIT	*Lantana trifolia* L.	Verbenaceae	Shrub	Roots	Decoction (internal)	Chest problems, chronic asthma, cancer, tonsils, pneumonia, indigestion
MWOKIOT	*Lippia javanica* (Burm.f.) Spreng	Verbenaceae	Shrub	Leave	Infusion (internal)	Cough, nasal congestion, chest congestion, termite repellant
SINGORUET	*Clerodendrum johnstonii* Oliv	Verbenaceae	Shrub	Leaves	Infusion (internal)	Tonsils, malaria
TOROTWET	*Rhoicissus tridentata* (L.f) Willd & Drum.	Vitaceae	Shrub	Bulbs	Juice (internal0	Diabetes, malaria, fertility in cattle, epilepsy