

An Inventory of Medicinal Plants used to Treat Gynaecological-Obstetric-Urino-Genital Disorders in South Nandi Sub County in Kenya

*P. Jeruto^a, E. Too^a, L. A. Mwamburi^a and O. Amuka^b

^a University of Eldoret, School of Science, Department of Biological Sciences, Po Box 1125-30100, Eldoret, Kenya

^b Maseno University, Department of Applied Plant Sciences, P.O. Box 333- 40105 Maseno, Kenya

Abstract

This survey aims at identifying plants that may contribute to the identification and development of new drugs. An ethnomedicinal survey was conducted among the communities in Aldai Division, South Nandi Sub County, Kenya. A total of 56 plants were documented with 30 families are included. The majority of species belong to the families namely Euphorbiaceae, Lamiaceae, Apocynaceae and Fabaceae. Over half of all plants recorded are used treat infections, while ¼ for used labour-child birth and copulation disorders.

Keywords: Ethnomedicine, gynaecological-obstetric-urinary, medicinal plants, Nandi.

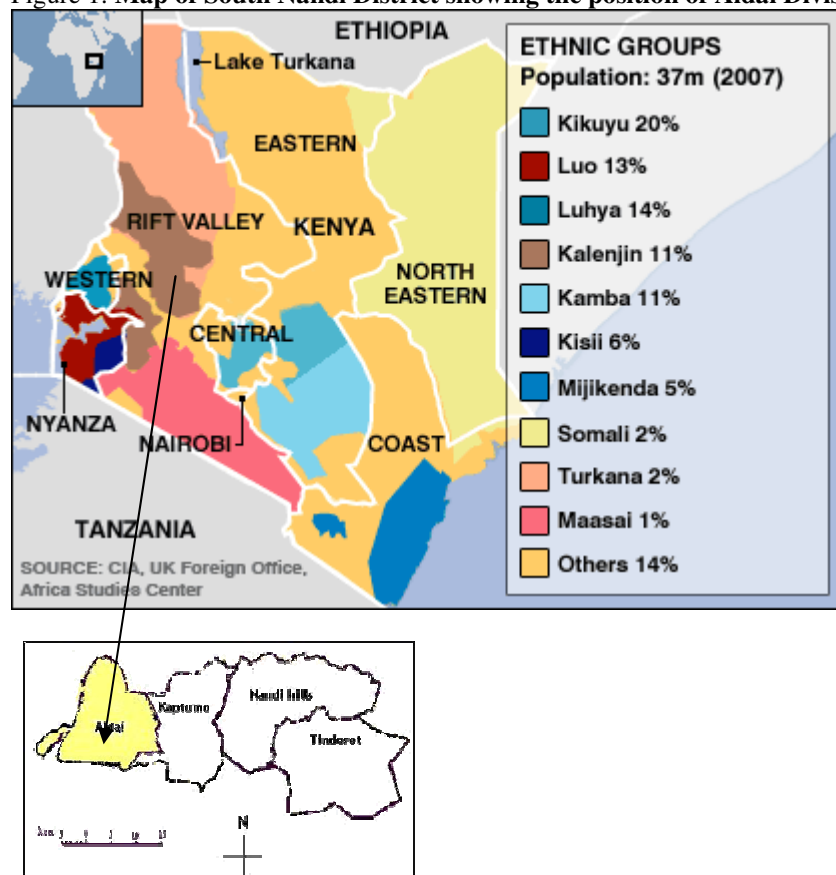
Introduction

The South Nandi community is located in afforested area, of an extension of tropical rainforest modified by altitude to form Afromontane climate, and because it lies between the open grassland to south there is also a transition zone of mixed flora of the lowland and tropical rain forest. Due the density of the vegetation and lack of both technical and social infrastructures, people mostly rely on folklore medicine for their survival. This fact coincides with the world statistics that > 80% of the world's population still depend on traditional medicine for their survival (Busia, 2005). The survey was conducted to establish a baseline inventory of the local flora that is used to treat gynaecological, obstetrics, and urino-genital disorders in South Nandi Sub County in Kenya. It is a representative sample of the Nandi, a subset of the Kalenjin community that occupy a large portion of the North Rift Valley of Kenya. There has also been an extensive review, for comparison purposes, of similar or closely related species on their ethnomedicinal use elsewhere in the world. One of the shortcomings is that the rural people are fastidious and suspicious of strangers. The always want to restrict the traditional knowledge to a few individuals within the family set up. This makes surveys rather difficult and sometimes unreliable.

Study area

South Nandi Sub-County, Aldai area, is located in the western part of Rift Valley province and an area of occupies 567km² latitude 0°5N to 0°2S and longitude 34°48E to 35°0 E (Kigomo, 1991). Figure I the location of the study area. The population of South Nandi has density of 285 persons /km² and a population growth rate of 2.9% (GoK, 1997). It is located in the Southern part of Nandi forest, an area inhabited by the Nandi community who are a distinct subset of the Kalenjin. The community relies a lot on the forest and forest resources for their livelihood, such as timber, logging, firewood, grazing, slash and burn for shifting cultivation and collection of crafts, herbal medicines, cosmetics, food and honey gathering (GoK, 1997; 2002).

Figure 1: Map of South Nandi District showing the position of Aldai Division



Although the Nandi Community have lived in harmony with nature the, documentation of their traditional medical practices have not been fully done. However, few evidence exist in records to validate their continued use without challenges. The human population pressure on the land has accelerated the rate of destruction of the vegetation cover consequently reduction in diversity of the flora. Furthermore, the people with the indigenous knowledge will soon leaving no documented information for the future generation.

Methodology

The survey was conducted during the period from 2010 to 2013. The data on indigenous knowledge of the plants was collected from 61 persons (40 women and 21 men all above 30 years old) through oral interviews based on a semi-structured questionnaire. Purposive sampling collected data was authenticated by confirmation from at least three informants. The plant materials of species cited by the herbalists were collected by the authors, and further authenticated by the East African Herbarium at the National Museums of Kenya in Nairobi Voucher specimens were deposited in the Maseno University Herbarium where they are held to date for future references. Local names were cross-checked using available literature and then translated into scientific ones (Maundu and Tengnas, 2005; Beentje, 1994; Agenew, 2013). The different subcategories of the diseases were adapted from Cook (1995)

Results and Discussion

Table 1. Medicinal plants used in the treatment of gynaecological- obstetric-urinary disorders by the people of South Nandi Sub-County.

| Family (latex-Containing Members placed in bold) | Scientific Name (Local Name) | Plant Habit and (Parts used) | Ailments Treated , (Preparation Methods) |
|--|---|------------------------------|---|
| Apiaceae | <i>Centella asiatica</i> (L.) Urb. (Mungutab beliot ne sing'ortot) | Herb(Leaves) | Abdominal Pains; (About 100g of freshly picked leaves are pounded into paste, then 20g applied on the painful part externally 3times daily) |

| | | | |
|--------------------|--|---|---|
| | | | till recovery) |
| | <i>Hydrocotyle manii</i> Hook. f. Mungutab beliot ne chabai | Herb (Leaves) | Abdominal Pains;. 100g of fresh leaves soaked in 1litre of water overnight. 250 ml of the Infusion 3 times daily till recovery. |
| Apocynaceae | <i>Acokanthera schimperi</i> (A.DC.) Schweinf. Keliot | Shrub (Roots) | Venereal diseases Freshly collected roots (150g) and similar amount of <i>C. edulis</i> roots boiled in 2litres of water, cooled, decanted and 250 ml of the decoction taken orally twice daily till recovery. |
| | <i>Carissa edulis</i> (Forsk.) Vahl Legetetiot/ tamuryekiat | Shrub (Roots) | Venereal diseases Freshly collected roots (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily till recovery |
| | <i>Landolphia buchananii</i> Nyakinchwet | Shrub (Leaves) | Gonorrhea. 300g of fresh leaves soaked in 1litre of water overnight. 20 ml of the Infusion is applied externally on the affected area, 3 times daily till recovery. |
| | <i>Tabernaemontana stapfiana</i> Britten Mabondet | Tree (Bark roots) | Child delivery. Freshly collected stem bark and roots in the ratio of 1:1 about (300 g) boiled in 2 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Curroria volubilis</i> (Schltr.) Bullock Simatwet | Liana /climber (Bark) | Child delivery. Freshly collected bark (100g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily till recovery |
| | <i>Periploca linearifolia</i> Dill. & Rich Sinendet | Liana /climber (Roots/leaves milky latex) | Venereal diseases, warts, fertility. Freshly collected roots (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the 20 ml of decoction taken orally three times until recovery. The latex from the leaves are rubbed on the warts daily until recovery. |
| Asparagaceae | <i>Asparagus racemosus</i> Willd. Chesibaiyat | Shrub (Roots) | Venereal diseases, proper pregnancy, Fertility in women. Freshly collected roots (200 g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Asteraceae | <i>Acmella calirhiza</i> Delile (Syn. <i>Spilanthes mauritiana</i>) (Putputik) | Herb (Flower, leaves) | Venereal diseases. 100g of fresh leaves soaked in ½ litre of water overnight. 100 ml of the Infusion taken 3 times daily till recovery. About 2-3 flowers heads pounded and 10ml of water added, sieved and taken daily |
| | <i>Sonchus oleraceus</i> L.Kimogit | Herb (Leaves) | Prolongs vitality in men, impotency. 50g of fresh leaves soaked in ½ litre of water overnight. 50 ml of the Infusion 3 times, daily till recovery. |
| | <i>Vernonia auriculifera</i> (Welw.) | Shrub (Leaves, | Pregnancy. Freshly collected roots |

| | | | |
|----------------------|--|--------------------------------|---|
| | <i>Hiern</i> (Tebeng'wet) | roots) | (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily. The young leaves are pounded, 250ml water added; sieved and 30ml taken thrice daily |
| Basellaceae | <i>Basella alba</i> L. (Nderemiat) | Liana /climber (Leaves, roots) | Removal of placenta after birth, Stomachache, increase milk production. Freshly collected leaves and roots each (300g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Boraginaceae | <i>Ehretia cymosa</i> Thonn. (Mororwet) | Shrub (Leaves, roots) | Venereal diseases. Aphrodisiac. 100g of fresh leaves and leaves soaked in 1litre of water overnight separately 250 ml of the Infusion is taken orally 3 times daily till recovery. |
| Campanulaceae | <i>Plantago palmata</i> Hoof.(Masiririet) | Herb (Roots) | Freshly collected roots (300g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily to treat venereal diseases |
| Capparidaceae | <i>Cleome gynandra</i> L (Isakiat) | Herb (Leaves, roots) | Facilitates placenta removal afterbirth. Freshly collected roots (100g) boiled in 1/2 litres of water, cooled, decanted and 100 ml of the decoction taken orally thrice daily |
| Clasuciaceae | <i>Garcinia buchananii</i> Bak. (Nderio)t | Tree (Roots) | Venereal diseases. Freshly collected roots (50g) boiled in 1 litres of water, cooled, decanted and 50 ml of the decoction taken orally thrice daily |
| Euphorbiaceae | <i>Bridelia micrantha</i> Hochst.)Baill.(Chemagaldet) | Tree (Bark) | STDs. Freshly collected stem barks (100g) boiled in 1 litres of water, cooled, decanted and 100 ml of the decoction taken orally thrice daily |
| | <i>Clutia abyssinica</i> Jaub.& Spach (Kurmenyat/ turmenyat) | Shrub (Leaves, Roots) | Venereal diseases, fertility in both humans. Freshly collected leaves and roots (100g) boiled in 1 litres of water, cooled, decanted and 70 ml of the decoction taken orally thrice daily separately |
| | <i>Ricinus communis</i> L(Imaniat) | Shrub (Roots, seeds) | Venereal diseases enhances fertility, Contraceptives. Freshly collected roots (100g) boiled in 1 litres of water, cooled, decanted and 50 ml of the decoction taken orally thrice daily. One seed is taken daily for three days |
| | <i>Tragia brevipes</i> Pax (Chemelet) | Liana /climber (Leaves, roots) | Enhances vitality. 200g of fresh leaves and roots burned in indirect heat, crushed to powder: 20 g of the ash taken thrice daily |
| Lamiaceae | <i>Ajuga remota</i> Benth. (Chelelgatiat) | Herb (Leaves, roots) | Treat after birth pains. Freshly collected roots (100g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily. Same as for the leaves |

| | | | |
|---------------|--|-------------------------------|---|
| | <i>Leonotis mollissima</i> Guerke (Chuchuniat) | Shrub (Leaves, roots) | Venereal disease. Freshly collected leaves and roots (200g) boiled in 1 litres of water, cooled, decanted and 75 ml of the decoction taken orally thrice daily |
| | <i>Ocimum kilimandscharicum</i> Guerke Cherekeriot/chepchai | Shrub (Leaves, Roots) | Fertility in cows, venereal diseases, abdominal pains. Freshly collected roots and leaves each (200g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Ocimum lamiifolium</i> Benth. (Sisiyat) | Shrub (Roots) | Child delivery. Freshly collected roots (300g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Malvaceae | <i>Pavonia kilimandscharica</i> Gurke Chemanjililiet/ Chepsabuni | Herb (Roots) | Child delivery, Pregnancy. Freshly collected roots (100g) boiled in 1 litres of water, cooled, decanted and 100 ml of the decoction taken orally thrice daily |
| | <i>Sida cuneifolia</i> Roxb. Korkoriet/ Chepkorkoriet | Shrub (Roots) | Venereal diseases. Freshly collected roots (300g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Urena lobata</i> L Chemulmeswo | Herb (Leaves, roots) | Child delivery. Freshly collected roots and leaves each (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Meliaceae | <i>Ekebergia capensis</i> Sparrm. Teldet | Tree (Bark, roots) | Venereal diseases. Freshly collected roots and bark (300g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Moraceae | <i>Ficus sycomorus</i> L Mogoiwet | Tree (Roots) | Venereal diseases. Freshly collected roots (100g) boiled in 1 litres of water, cooled, decanted and 70 ml of the decoction taken orally thrice daily |
| Musaceae | <i>Ensete ventricosum</i> (Welw.) Chessman Sasuriet | Herb (Roots) | Enhances fertility/ vitality in men, child delivery Freshly collected roots (250g) boiled in 1 litres of water, cooled, decanted and 80 ml of the decoction taken orally thrice daily |
| Myrtaceae | <i>Syzygium guinneense</i> (Willd.) DC Lamaiyuet | Tree (Bark) | Painful menstruation. 100g of fresh stem barks soaked in 1litre of water overnight. 250 ml of the Infusion 3 times daily till recovery. |
| Papilionaceae | <i>Acacia hockii</i> De Wild. Tilatiliet | Shrub (Leaves) | Venereal diseases. 200g of fresh leaves soaked in 1litre of water overnight. 40 ml of the Infusion 3 times daily till recovery. |
| | <i>Albizia coriaria</i> Oliv. Musengertet | Tree (Whole plant) i.e. roots | Menorrhagia, threatened abortion, venereal diseases. |

| | | | |
|----------------|--|--------------------------------|---|
| | | and barks | Freshly collected parts of the plant in equal ratio's boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Entada abyssinica</i> Steud Kapkutuet | Tree (Stem bark roots) | Venereal diseases. Freshly collected roots and stem barks (150g) boiled in 1 litres of water, cooled, decanted and 100 ml of the decoction taken orally thrice daily separately |
| | <i>Erythrina abyssinica</i> DC.(Kakaruwet | Tree Stem bark, roots | Child delivery, venereal diseases Either Freshly collected roots or stem bark (250g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Passifloraceae | <i>Adenia gummifera</i> Harv.) Harms. Chepnyalildet | Liana climber Leaves Roots | Increases fertility in women 100g of fresh ash taken 3 times daily till recovery. |
| Rhamnaceae | <i>Rhamnus prinoides</i> L. Her Kosisitiet | Shrub Roots | Child delivery, urinary Problems. Freshly collected roots (200g) boiled in 1 litres of water, cooled, decanted and 75 ml of the decoction taken orally thrice daily |
| Rosaceae | <i>Prunus africana</i> (Hook.f) Scweinf. Tendwet | Tree (Bark, Leaves) | Prostate cancer. Freshly collected roots and leaves (200g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Rubus pinnatus</i> Willd Momoniat | Shrub (Roots) | Impotency in men Freshly collected roots (250g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Rubus steudneri</i> Scweinf. Momoniat | Shrub (Roots) | Impotency in men. Freshly collected roots (250g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Rubiaceae | <i>Spermacoce princeae</i> (K.Schum.) Verdc. (Chemurguiywet) | Herb (Leaves, Roots) | Venereal diseases. Freshly collected roots (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily The leaves are pounded into paste and 50ml of the paste applied externally twice a day |
| | <i>Pentas longiflora</i> Oliv.(Cheroriet) | Herb (Leaves, roots) | Urinary problems. Freshly collected roots (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily The leaves are pounded into paste and 50ml of the paste applied externally twice a day |
| | <i>Rubia cordifolia</i> L. (Chepsaleitet) | Liana /climber (Leaves, Roots) | Venereal diseases. 100g of fresh leaves and roots burned and 30g of the ash taken thrice a day |

| | | | |
|-------------|---|-------------------------|---|
| | <i>Vangueria volkensii</i> K.Schum Kimoluet | Shrub (Roots) | Venereal diseases. Freshly collected roots (250g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Rutaceae | <i>Toddalia asiatica</i> (L.) Lam. Kipkoskosit | Shrub (Leaves, Roots) | Urinary problems. Either freshly collected roots or leaves (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Zanthoxylum gillettii</i> (De.Wild) Waterman Sagawatiet | Tree (Stem bark, roots) | Venereal diseases. Freshly collected roots and stem bark each (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily separately |
| Salicaceae | <i>Trimeria grandifolia</i> (Hochst.) Warb Chepkererlong | Shrub (Roots) | Treats sterility in men. Freshly collected roots (250g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| | <i>Dovyalis abyssinica</i> (A. Rich.) Warb Nukchat/Nokok | Shrub (Leaves, Roots) | Fertility in cows, Gonorrhoea.. Freshly collected roots and leaves 350g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily separately till recovery |
| | <i>Chaetacmi aristata</i> (Burm.f.)Merrill .Tungururwet | Shrub (Stem bark roots) | Venereal diseases. Freshly collected roots and stem bark (150g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Tilliaceae | <i>Triumfetta macrophylla</i> K. Schum Meswot | Shrub (Roots) | Pregnancy. Freshly collected roots (300g) boiled in 1 litres of water, cooled, decanted and 250 ml of the decoction taken orally thrice daily |
| Solanaceae | <i>Solanum incanum</i> L. Labotwet | Herb (Leaves) | Freshly collected leaves (300g) pounded. 1 litres of water, decanted and 250 ml of the infusion taken orally thrice daily |
| Urticaceae | <i>Urera hypselodendron</i> (A. Rich) Wedd. Kipsotiet | Liana /climber (Roots) | Placenta, venereal diseases. 100g of fresh leaves are dried, burned using indirect heat, crushed into fine powder. 20 g of the taken 3 times daily till recovery. |
| | <i>Urtica massaica</i> Mildbr. Siwot | Herb (Leaves) | Enhances vitality. 100g of fresh leaves soaked in 1litre of water overnight. 100 ml of the Infusion taken 3 times daily till recovery. |
| Verbenaceae | <i>Clerodendrum myricoides</i> (Hochst.) Vatke Abetiot / Kabetiot | Shrub (Roots) | Proper positioning of foetus, gonorrhoea. Freshly collected roots (200g) boiled in 1 litres of water, cooled, decanted and 50 ml of the decoction taken orally thrice daily |
| Vitaceae | <i>Rhoicissus tridentata</i> (L.f) Willd & Drum. Torotwet | Shrub (Bulbs) | Fertility in cattle. 50g of bulbs , squeezed and 10ml of the juice mixed with 10ml of water and taken thrice daily |

(Families in bold have some latex-containing members)

Various plants parts were used by the community in preparation of the medicines. They ranged from seeds to roots, actually each and every plants were used in one way or the other. A summary is given in the Table 2.

Table 2. Plant parts used on family basis

| Part used | Flowers | Fruits/ seeds | Leaves | Stem bark | bulb/Root bark | Whole plant |
|----------------|----------|---------------|-----------|-----------|----------------|-------------|
| Family | | | | | | |
| Apiaceae | | | 2 | | | |
| Apocynaceae | | | 2 | | | |
| Asparagaceae | | | | | 1 | |
| Asteraceae | 1 | | 3 | | 1 | |
| Basellaceae | | | 1 | | 1 | |
| Boraginaceae | | | | | 1 | |
| Campanulaceae | | | | | 1 | |
| Cappridaceae | | | | | 1 | |
| Clasuciaceae | | | | | 1 | |
| Euphorbiaceae | | | | 1 | 2 | |
| Lamiaceae | | | 3 | | 3 | |
| Malvaceae | | | 1 | | 3 | |
| Meliaceae | | | | 1 | 1 | |
| Moraceae | | | | | 1 | |
| Musaceae | | | | | 1 | |
| Myrtaceae | | | | 1 | | |
| Papilionaceae | | 1 | 1 | 1 | 1 | 1 |
| Passifloraceae | | | 1 | | 1 | |
| Rhamnaceae | | | | | 1 | |
| Rosaceae | | | 1 | 1 | 2 | |
| Rubiaceae | | | 3 | | 3 | |
| Rutaceae | | 2 | | 1 | 2 | |
| Salicaceae | | | | | 1 | |
| Solanaceae | | | | | | |
| Urticaceae | | | 1 | | | |
| Verbenaceae | | | | | 1 | |
| Vitaceae | | | | | 1 | |
| Total | 1 | 3 | 19 | 6 | 31 | 1 |

A total of 56 plants species occurring in 30 families are used in the treatment of 8 different subcategories of gynaecological-obstetric and urino genital health conditions. The highest plant parts used was the bulbs/roots; which is sustainably unfriendly given that it involves uprooting whereby regeneration of the species is less guaranteed as compared to any other plant parts. This has resulted in reduction of species diversity or elimination of certain ones whose roots are the vital source of medicines. However, this is closely followed by the leaves whose utilization which has less deleterious consequences on the specific species in question.

The family with the highest number of species that are used in the community was Euphorbiaceae (8 species) the immediate former Family has a characteristic of milky latex that has been exploited for medicinal purposes and scientific screening of some species from the family have demonstrated antimicrobial activities (Pandey, 2006; Parekh and Chanda 2007; Uduak, 2010.). Among the plants used there are 24 shrubs, 15 herbs, 12 trees and 7 lianas or climbers. Roots were the most frequently used plant part (55%), followed by leaves (28%) and bark (12%) (Figure 2). (With 7 species from Apocynaceae which is usually negatively mentioned as being toxic (Attah *et al.*, 2013). The two families were however, the largest found to possess latex. Some researchers have even suggested threat of such toxic plant species could find themselves being used as biological weapons (Khajja *et al.*, 2011).

In the sub-categories for which the highest number of species were employed were: treatment of infections especially STDs (30 species), labour and child birth conditions (15 species) and copulation disorders (13 species) (Figure 3, Table each). It was observed that ¼ of all the recorded families include several latex –producing species (Table 1).The majorities of species, mentioned by the community are also being used elsewhere as

traditional medicine. If not the actual species then its relative in the same genera. On closer survey of the uses elsewhere in the World, based on specific family/genera, evidently the uses were as given herein:

Apiaceae: *Centella asiatica*, the plant species is variously mentioned in prehistoric Ayurvedic medical practice. Crushed plant parts are used to treat conjunctivitis and other eye injuries, stomachache, and flatulence (Sajem and Gosai, 2006). There are several citations which are similar to presented one and does not change the information in any way. It is an important medicinal herb widely used in the orient and popular in the West for its wide therapeutic actions for wound healing and the treatment of various skin conditions such as leprosy, lupus, varicose ulcers, eczema, psoriasis, diarrhea, fever, amenorrhea, diseases of the female genitourinary tract and also for relieving anxiety and improving cognition (Kashmira et al., 2010). In Bangladesh, whole plant is utilized by Kavirajes (a community of Chalna area, Bangladesh) to treat multiple ailments like dog bite, asthma, carminative, itching, leucorrhoea, malaria, tumour and wounds (Rahmatullah et al., 2010). *Centella asiatica* has been used in China as weight Loss Tea for sliming, Gotu kola (*Centella asiatica*) firms and lifts skin (Sakshi et al., 2010).

Hydrocotyle manii *Hydrocotyle manni* leaves have been used in illnesses related to the sensory nervous system among the Bench and Sheko ethnic groups of Ethiopia (Giday et al., 2009). The maceration or a decoction of the whole plants of *Hydrocotyle manni* has been used against livestock diseases like gastroenteritis, bilharziosis, schistosomiasis in the Bushi area, Democratic Republic of Congo Chifundera (1998).

Apocynaceae: they are known negatively as being toxic (Attah et al., 2013). Some researchers have even suggested threat of such toxic plant species could find themselves being used as biological weapons (Khajja et al., 2011) as in the case of

Ackocanthera schimperi is used to manage dermatological conditions in Ethiopia (Gebre-Mariama et al., 2006). Prior to the colonial times the Kalenjin community to which the Nandi belong were known have been using *Acokanthera schimperi* latex in the preparation of arrow poisons (Bruce, 1985) *Carissa edulis* has been used in Ethnomedicine across the continents for various medical conditions ranging from epilepsy, headache gonorrhoea, syphilis, sickle cell, antidiuretic chest related complaints rheumatic fever among others (Nedi et al., 2004; Ya'u et al., 2008).

In Uganda a decoction from the roots is used to treat fever/malaria measles and expel worms (Okullo et al., 2014). Among the Marakwet the plant is used as a general appetizer (Kipkore et al., 2014). *Landolphia buchananii*, a decoction is taken orally to manage hernia, stomach ache and diarrhea by the people living around Morogoro and its environs (Amri and Kisiangau et al., 2012). In the Aldai area of Nandi the plant is used to manage sexually transmitted infections (Jeruto et al., 2008). *Tabernaemontana stapfiana*; the plant is traditionally widely used to manage various medical conditions as in the case of the Keiyo, a subset of the Kalenjin, it is used as antibacterial agent (Ruttoh et al., 2009). *Curroria volubilis*; the plant species is rarely used in traditional medicine apart from the Nandi community in Kenya (Jeruto et al.' 2008).

Asparagaceae: *Asparagus racemosus*; the species has been used in Ayurvedic medicine from time immemorial in the management of estrous cycles (Bopana and Saxena, 2007). It has also been used in the same to treat ulcers, dyspepsia and various gastric disorders, nervous disorders, and inflammations (Goya et al., 2003).

Asteraceae: *Acmella calirhiza*, In Machakos preparation is used to manage oral thrush, ulcers (Musila et al., 2000). The Sabaot of Mt Elgon in Kenya use the plant to relieve toothache and afterbirth pain (Okello et al., 2009). The latter application is similar to what the Nandi use it for. This is not a surprise since the Sabaot and the Nandi belong to the Kalenjin Community. *Sonchus oleraceus*, whole plant is used by traditional healers in Cameroon to treat diabetes mellitus (Teugwa et al., 2013) and in Nandi the plant is used to prolong vitality in men. *Vernonia auriculifera* is used traditional medicine to treat several ailments like malaria, measles in children and venereal amongst many with the preparations' in various forms (Kokwaro, 1993).

Basellaceae: *Basella alba*; the plant is an important vegetable in south east Asia, it is also used, root past preparation to correct irregular menstrual periods in women in parts of India (Adhikari et al., 2012). In West Africa, Nigeria and Cameroon the plant has been in use in folklore medicine (Adhikari et al., 2012). In Kenya amongst the Ogiek it is used as an important vegetable (Amuka et al., 2014). Closely related uses are mentioned by the Nandi who are closely related to the Ogiek,

Boraginaceae: the family has generated lots of interests in the ethno botany in that even apes resort to in for their medication (Huffman. 2000). The family has been heavily utilized for traditional medicine by people of

'Boosat' sub district, central Eastern Ethiopia among which *E.cymosa* has been mentioned by 16 informants giving 20% of the total informants (Debela et al, 2006). The fruits has been utilized as a wild plant among the Kusume, Derashe and Gamo people in Derashe and Kucha Districts, South Ethiopia (Kebu Balemie* and Fassil Kebebew, 2006). *Ehretia cymosia* Thonn leaves has been reported to be used in treatment of measles (viral diseases) among the people of Southern Western Nigeria (Oladunmoye and Kehinde, 2011). The leaf has been used as febrifuge, laxative, and pain-killer, for paralysis, epilepsy, convulsions and spasm. Sap from the fresh leaves is a mild laxative for children. The bark decoction is used to regulate menstrual cycle. (Omotayo, 2012).

Campanulaceae: *Plantago palmata* is used as a remedy against parasites, general throat ailments and swollen tonsils in Ethiopia (Luizza et al, 2013). Preparation from the plant parts, from *P. lanceolata* a member of the same genus, is used in Pakistan to improve eye vision (Abassi et al., 2013). In the Nandi community an infusion is used to remove placenta after birth.

Capparidaceae: *Cleome gynandra*; the plant which is abundant as a weed in India is used in Ayurvedic Anthelmintic, in ear diseases, pruritus and several other diseases like gastro intestinal disorders and gastrointestinal infections (Mishra et al., 2011). In East Africa several communities cook the leaves as a popular traditional port herb (Chweya and Nzava, 1997). The Nandi uses it to remove the placenta after birth.

Clasuciaceae: *Garcinia buchananii*; stem bark water extracts are widely used in almost the whole of sub Saharan Africa to manage diarrhea (Boakye et al.2012). Ripening fruits are orally taken to treat ascariasis in Ethiopia (Giday et al., 2010). In Uganda within the Lake Victoria Basin, although the methods of preparation and parts of the plant used are not indicated, the plant is used for various infections such as: gastrointestinal disorders, dizziness, allergies, evil spirits, chest pain, asthma, cardiovascular condition and eye disease (Okullo et al., 2014). The local communities use the infusion almost similar purposes especially the Ogiek who are a subset of the Kalenjin (Amuka et al., 2014). Amongst the Nandi the extract is used in the management sexually transmitted infections.

Euphorbiaceae: *Bridelia micrantha* Traditionally *B. micrantha* (Euphorbiaceae) is commonly used for gastrointestinal ailments, painful joints, retained placenta, diabetes mellitus, syphilis, prehepatic jaundice, tape worm abdominal pain, conjunctivitis, headache, scabies, bloody diarrhea, dysentery, emetic, wound infection, coughs, threadworms, tonic for children, sore eyes, epigastric pain, relief of headache, purgative diarrhea and worms (Atindehou et al 2004; Nguemey et al., 2008). In Tanzania decoctions of *B. micrantha* are used to treat yellow fever, malaria, amenorrhea and dysmenorrhea (Moshi et al., 2012). . In South Africa, the stem bark of *B. micrantha* is employed in the management of helminthosis, gastroenteritis, infertility, psychosis, acquired immune deficiency syndrome and joint pain (Iwalewa et al., 2007). The stem bark of *B. micrantha* is used by herbalists in South-Eastern Nigeria for pain management Iwalewa et al., 2007). *Ricinus communis* In Tanzania, the leaves are burnt and the ash wetted with water is applied topically to the affected area to treat skin diseases and cancer (Moshi et al. 2012). In Ethiopia fresh leaf extracts are used to treat rabies (Megersa, et al., 2013). In India, three year old roots are crushed, mixed with milk and given to pregnant women who are due for ease of delivery. Fresh leaf extracts are used to treat allergic conjunctivitis and decoction of leaves is used to treat jaundice (Ahmad et al., 2012). In Ethiopia, the leaf extracts of *C. abyssinica* are used to treat skin infections and expel internal parasites in livestock (Teklay et al., 2014) and treat toothaches (Megersa et al., 2013). Root decoctions of the plant are used by the Marakwet of Kenya to treat erectile dysfunction. (Kipkore et al., 2014). In addition, the root decoctions can be mixed with other herbs and used a synergistic herb. The Nandi community use decoctions of the root and leaves to treat venereal and skin diseases, chest problems, cancer and fertility enhancement (Jeruto et al., 2008). Jeruto et al. (2011).

Tragia brevipes; The Marakwet and Keiyo communities of Kenya mix the roots of *T. brevipes* with those of *Gardenia volkensii* and *Euclea divinorum* then apply on incisions made on the bitten area as an ant venom (Kipkore et al 2014; Kigen et al., 2014). The plant roots are used as purgative and also given to expectant mothers during labor pain to increase uterus contraction rate. The leaves of the plant are used to treat against rheumatism by rubbing them on the knees and other joints (Kokwaro, 2009).

Lamiaceae: *Ajuga remota* is a herb that has been used in traditional medicine, as in the case of Kenya and Ethiopia, an infusions of the whole plant are used to manage malaria and hypertension in their respective communities (Njoroge and Bussmann 2006; Hailu and Engidawork 2014). Some other communities use the species in ethnoveterinary medicine to manage east coast fever in cattle in Kenya (Gakuubi and Wycliffe, 2012).

Leonotis mollissima is used by communities within the Rift Valley to treat various ailments such as stomach complaints, teething problems, wounds (Ngari *et al.*, 2010). Used of a decoction of the leaves to treat malaria has also been reported amongst the Nandi communities (Jerutto *et al.*, 2011). *Ocimum lamiifolium* the plant is sacred to the Hindus and has been used in Ayurvedic Medicine as old as the Indus civilization in the management of various ailments including cancers (Bhattacharyya and Bishayee 2013). The infusion of the leaves of the plant is used in eye treatment (Giday *et al.*, 2009). Elsewhere in folklore medicine it is used to manage various medical conditions ranging throat pain, fever and treatment of wounds in Ethiopia (Mequanint *et al.*, 2011). *Ocimum kilimandscharicum* plant extracts are used in the management of various ailments like colds, chest related complaints, abdominal disorders, measles. The plant is also traditionally used to treat ulcers, memory disorders amongst others (Narwal *et al.*, 2011).

Malvaceae: in some south East Asian Countries, China, Korea, and Japan, a decoction of the dried root without bark of *Paeonia lactiflora* Pall which is in the same genus with *Paeonia kilimandscharica*, has been used in folklore for over 1000 years to manage the following conditions: rheumatoid arthritis, systemic lupus erythematosus, hepatitis, dysmenorrhea, muscle cramping and spasms, and fever (He and Dai 2011). Coincidentally, the Nandi community use *Paeonia kilimandscharica* in obstetrics. In some of the subset of the Kalenjin communities, the Ogiek, *Sida cuneifolia* is used to manage throat and chest congestion (Ngari *et al.*, 2010). *Urena lobata* is a herb that is used in several communities in traditional medicine. In South East Asia; Philippines and Bangladesh externally to treat lumbago and rheumatism (Hossan *et al.*, 2010). An infusion roots is used to manage diuresis while an infusion of the stem and the roots is used to manage windy colic in babies. Its flowers have been used to manage dry cough as an expectorant and sore throat ((Hossan *et al.*, 2010).

Meliaceae: *Ekebergia capensis* is an endangered species for the simple reason that it is highly as source of timber (Tesemma *et al.*, 1993).in Ethiopia the infusion of the stem bark is used to manage menstrual problems (Lulekal *et al.*, 2014). Both root and stem barks are used in the management of venereal conditions amongst the Nandi people.

Moraceae: in China the species similar to *Ficus sycomorus* is used as vegetable and some other species from the same genus are *Ficus sycomonia* used to provide edible fruits (Shi *et al.*, 2014). In other parts of the World for example in Zimbabwe the root extracts of the species; *Ficus sycomorus* are used to manage coughs (Maroyi, 2013). It has also been mentioned the concoction in other parts of the world are used to manage various ailments like tuberculosis and other chest related conditions (Maroyi, 2013).

Myrtaceae: *Syzygium guinneense*, akin to *S. cummuni* which is a source of fruit in South East Asia, is used in Ayurvedic medicine for various diabetes, liver disorders and gastrointestinal complaints (Bhatia *et al.*, 2014). In Africa, Congo, the bark of the *S guinneense* concoction is used by the local communities to manage both bacterial and amoebic dysentery (Otshudi *et al.*, 2000).

Musaceae: *Ensete ventricosum* is closely related to the domesticated banana which an important staple food in many parts of the world, however, the species is a traditional crop in Ethiopia where the tubers are used as staple food crop along other cultivated crops (Tsehaye and Kebebe 2006). The plant is integrated into the culture of the communities where it is cultivated as folklore medicine and a tool for rituals (Tsehaye and Kebebe 2006). The Nandi community use a preparations from the plant to enhance fertility and vitality in male.

Passifloraceae: *Adenia gummifera* is used to manage fertility in women amongst the Nandi community while in Tanzania root predations is used to manage candidiasis (Kisangau *et al.*, 2007). In South Africa the Kwa Zulu Natal lay people use an infusion of the roots to manage HIV/AIDS (De Wet *et al.*, 2012).

Papilionaceae: *Acacia hockii*, stem bark is pounded and rubbed on herpes zoster affected parts of human body (Chisembu *et al.*, 2011; Odhiambo *et al.*, 2011). *Albizia coriaria*, the stem bark is used to treat coated tongue in the Yoruba communities in Nigeria (Kayode *et al.*, 2008). In Northern Uganda t the stem bark is crushed soaked in water and the extract taen to cure dysentery (Kamatenesi *et al.*, 2011). In Kenya the Luo community used the preparations from the bark to treat coughs, stomach ailments, wind “Yamo” skin blemishes and toothbrush (John *et al.*, 1990). Orwa *et al.*, 2009 indicated that an infusion from the plant stem bark is used to treat malaria. *Entada abyssinica*, the plant has been used in several ways as medicine: in Nigeria an infusion is used to toothache while in Ivory Coast it is used to treat venereal infections. The plant is usually found debarked which an indication of its value in African traditional medicine is ranging from infectious disease treatment to gynecology obstetrics and pediatric problems management (Iwu, 2014). The plant is used in the treatment of miscarriage, and fever. A decoction of the bark is taken for coughs, chronic bronchial engorgement, rheumatic

pains and abdominal pain. An infusion of crushed roots is good for bronchial problems. Powdered or roasted pulverized seeds for sneezing; root bark as a massage for swelling; and the raw fruit induces vomiting as an antidote to snake venom (Yineger and Yewhalaw, 2007; EL-Kamali, 2009). *Erythrina abyssinica* in African folklore medicine the plant and its parts have been used for various purposes; pounded parts are used in a steam form in Kenya to treat diseases such as anthrax, and the bark is boiled with goat meat for treating gonorrhoea. The bark of the green stem may also be pounded and then tied into a fine piece of cloth and the liquid from it squeezed into the eyes to cure inflammation of the lids. The bark may be roasted till black, powdered, and applied to burns and general body swellings. A decoction is taken orally as an anthelmintic and to relieve abdominal pains. The roots are used to treat syphilis, and the leaves to cure skin diseases in cattle (Orwa et al., 2009).

Rhamnaceae: is widely used in traditional medicine and a few species have been incorporated into allopathic systems (Herbal medicine, 2013). *Rhamnus prinoides* Sexually transmitted diseases (e.g. syphilis & gonorrhoea), arthritis, flu/cold, back pains, stomachache, pneumonia, brucellosis, strength/nutrient supplement, enhancing/facilitating digestion (Kiringe, 2006).

Rosaceae: In the family, *Prunus africana* and *Rubus pinnatus*, are the two plants that are used by the community to manage hyperplasia and impotency respectively. A similar genus, *P.americana* is used to manage stomach problems and *R. pinnatus* infusion of the leaves is used in the management of menstrual cycle problems ((Amri and Kisangau, 2012). There are also other ethno based uses elsewhere as in the case of Cameroon, the preparation of the set bark is used to manage jaundice (Focho et al., 2009).

Rubiaceae: there are varied Ethnobotanical uses of the species from the family. This is the family to which *Coffea* spp. A beverage comes from. In the sub Saharan Africa malaria, hepatitis, eczema, oedema, cough, hypertension, diabetes and sexual weakness are some of the few medical conditions that are managed by the traditional healers using various members from the family (Karou et al., 2011). However, in the community it is used to manage sexually transmitted infections

Rutaceae: *Toddalia asiatica* is widely used in Ethnomedicine in the East Africa in the management of medical conditions ranging parasitic, microbial and viral conditions (Orwa et al., 2008). This reaffirms the role the species play in traditional medicine in the Region. Amongst the Kalenjin communities, to which the Nandi belong, the Ogiek incorporate the roots in the lamb stew as atonic (Amuka et al., 2014).

Salicaceae: plants from the family are not commonly used in medicine apart from the mention as activity against *Micrococcus* spp.(Kochhar, 1989). One plant species mentioned and is used elsewhere is *Trimeria grandifolia* which is used in central Kenya, by the Kikuyu in the management of malaria problems (Njoroge and Bussmann 2006). Kisumu District, which is a part of western Kenya, an infusion is used to treat malaria (Orwa et al., 2007). In Keiyo, close related Community to the Nandi, concoction of the same plant is used to treat various ailments (Kigen et al., 2014).

Solanaceae: Several communities all over the world have used various species from the Family Solanaceae to manage several diseases/ ailments (). The family has *S tuberosum* L. which is one important the most important sources of food carbohydrates in the world. Within the Rift Valley in Kenya there are several members of this genus that are used by the communities in Ethnomedicine (Amuka et al., 2014). In Kenya the Marakwets use the roots *Solanum incanum* to treat abdominal and colic pains in children. (Kipkore et al., 2014). The roots can either be boiled or chewed raw. The root and fruit crude extracts are used to treat tooth aches (Ngari et al., 2014). The Ethiopians use fresh fruit pulp to stop bleeding in fresh wounds (Megersa et al., 2013). Conditions in which the various plant parts are used by different African communities include, pain relieve in toothache and as a cure for snake bites and sexually transmitted disease. It is also used as an ingredient of arrow poison, as spice to improve flavour and as well as in curdling milk or in cheese making. In Ethiopia it is used in leather tanning and soap making (Matu 2008).

Urticaceae: *U. massaica* is used across all the communities in the Rift Valley of Kenya in circumcision ceremonies (Amuka et al., 2014). Recently the species is gaining popularity for the management of several complaints like kidney ailment, typhoid, malaria and wound healing (Ngari et al., 2010). In Central America the Red Indians have been using several genera from the family in the management of various health disorders and for other purposes such as fibre, human and livestock feed. (Corrado et al., 2015).

Verbenaceae. *Clerodendrum myricoides* has been used in folklore medicine in Bangladesh for quite some time

(Rahmatullah *et al.*, 2011). Using folklore information it has become evidently clear that the information acquire from the traditions may be used in pharmaceutical drug development s for new drugs that can offer medical solutions to such crippling maladies like malaria, arthritis and the like.

Vitaceae is a small family, however, species from the genus *Cissus* are used as medicine as in the *C. aristata* in Papua New Guinea, an infusion from the stem is used to manage inflammation of the eye (Borut, 1988). In Thailand and India, Ant nociceptive and anti-inflammatory effects of *Centella asiatica* extracts have been verified based on ethno botanical information (Somchit, *et al.*, 2004; Maneenoon, *et al.*, 2015).

Conclusion and Recommendation

The 56 plants from just one location in south Nandi district is an indication of the richness of the biodiversity, especially the flora, in such a small area. Their use in the management of diseases in several subcategories such as infections, pain and various inflammations suggest that the plants may have antimicrobial, analgesic and anti-inflammatory properties many of which have not been investigated.

Assessment of the availability in relation to use plant parts should be done so as to project the reduction in availability and biodiversity of the plant species where their uses are endemic.

It is noted that a ¼ of all the families recorded in the report have latex containing species. Latex contains a diverse number of secondary metabolites such as cardiac glycosides, diterpenes, non-protein amino acids alkaloids, coumarins and sesquiterpene lactones many of which are medicinal (Wallis, 1985; Farrell *et al.*, 1991). Thus the presence of latex in the medicinal plants may be a good indicator of presence of healing activity of this category of diseases. Data gathered in this survey may therefore provide leads in the discovery and development of commercial drugs.

REFERENCES

- Abbasi AM, Khan MA, Shah MH, Shah MM, Pervez A and Ahmad M (2013). Ethnobotanical appraisal and cultural values of medicinally important wild edible vegetables of Lesser Himalayas-Pakistan *Journal of Ethnobiology and Ethnomedicine* 2013, **9**:66 doi:10.1186/1746-4269-9-66
- Adhikari LR, Naveen Kumar HN, Shruithi SD (2012). A Review on Medicinal Importance of *Basella alba* L. *International Journal of Pharmaceutical Sciences and Drug Research* 2012; 4(2): 110 -114
- Agnew ADQ (2013). Upland Kenya Wild Flowers and Ferns. Third Revised Ed. The East African Natural History Society, Nairobi, Kenya. ISBN 9966-761-17-9
- Akinpelu, A. David, Ogundaini, O. Abiodun, and Obafemi, A. Craig. ().Volume 1, Issue 2, 2007 Studies on antimicrobial, antioxidant and phytochemical analysis of *Urena lobata* Leave extract *Journal of Physical Natural Sciences Volume 1, Issue 2, 2007*
- Amri E and Kisangau DP (2012). Ethnomedicinal study of plants used in villages around Kimboza forest reserve in Morogoro, Tanzania *Journal of Ethnobiology and Ethnomedicine* 2012, **8**:1 doi:10.1186/1746-4269-8-
- Amuka O, Okemo PO, Machocho AK, and Mbugua PK (2014). Ethnobotanical Survey of Selected Medicinal Plants used by Ogiek Communities in Kenya against Microbial Infections www.ethnobotanyjournal.org/vol12/i1547-3465-12-627.pdf
- Anonymous, 1997-2001. Ministry of Economic Planning. Kenya; District Development Nandi District: Nandi District Development Plan 1997-2001, Ministry of Development and National Planning, Republic of Kenya, Nairobi
- Attah S K, Ayeh-Kumi P. F, Sittie A. A, Oppong I V Nyarko A. and K (2013) Extracts of *Euphorbia hirta* Linn. (Euphorbiaceae) and *Rauwolfia vomitoria* Afzel (Apocynaceae) demonstrate activities against *Onchocerca volvulus* Microfilariae *in vitro* *BMC Complementary and Alternative Medicine* 2013, **13**:66 doi: 10.1186/1472-6882-13-66
- Atindehou K.K., Schmid, C., Brun, R., Koné, M.W., Traore, D. 2004. Antitrypanosomal and antiplasmodial activity of medicinal plants from Côte d'Ivoire. *J. Ethnopharmacol* 90:221-227
- Balemie K and Kebebew F (2006). Ethnobotanical study of wild edible plants in Derashe and Kucha Districts, South Ethiopia. *Journal of Ethnobiology and Ethnomedicine* 2006, 2:53. doi:10.1186/1746-4269-2-53. <http://www.ethnobiomed.com/content/2/1/53>
- Beentje H.J., 1994. Kenya Trees, Shrubs and Lianas. National Museums of Kenya. Nairobi, Kenya
- Bekalo TH, Woodmatas SD and Zemedede Asfaw A ().An Ethnobotanical Study of Medicinal Plants used by Local People in the Lowlands of Konta Special Woreda, Southern Nations, Nationalities and Peoples Regional State

- Bhatia H, Sharma YP, Manhas RK, and Kumar K (2014). *Journal of Ethnopharmacology* 2014 Feb 3;151(2):1005-18. doi: 10.1016/j.jep.2013.12.017. E pub 2013 Dec 21.
- Bhattacharyya P, Bishayee A (2013). *Ocimum sanctum* Linn. (Tulsi): an ethnomedicinal plant for the prevention and treatment of cancer. *Anticancer Drugs*. 2013 Aug; 24(7):659-66. Doi: 10.1097/CAD.0b013e328361aca1.
- Boakye PA, Brierley SM, Pasilis SP, Balemba OB (2012). *Garcinia buchananii* stem bark extract is an effective anti-diarrheal remedy for lactose-induced diarrhea. *Journal of Ethnopharmacology*. 2012 142(2):539-47. doi: 10.1016/j.jep.2012.05.03
- Bopana N and Saxena S (2007) *Asparagus racemosus*—Ethnopharmacological evaluation and conservation needs *Journal of Ethnopharmacology* Volume 110, Issue 1, 1 March 2007, Pg. 1–15
- Borokini TI and Omotayo FO (2012). Phytochemical and Ethnobotanical study of some selected medicinal plants from Nigeria *Journal of Medicinal Plants Research* Vol. 6(7), pp.1106-1118, 23 February, 2012. Available online at <http://www.academicjournals.org/JMPR>. DOI: 10.5897/JMPR09.430. ISSN 1996-0875 ©2012 Academic Journals
- Borut Tellan (1988). The Role of Medical Ethnobotany in Ethnomedicine: A New Guinea *Journal Ethnobiology*, 8(2):149- 169
- Bruce K. Cassels (1985). Analysis of a Maasai arrow poison *Journal of Ethnopharmacology* Volume 14, Issues 2–3, November–December 1985, Pages 273–281
- Bum, N.E., Ngah, E., Ngo Mune, N. R.M., Ze Minkoulou DM, Talla, E., Moto, F.C, Ngoupaye G.T, Taiwe, G.S, Rakotonirina A, Rakotonirina, S.V. 2012. Decoctions of *Bridelia micrantha* and *Croton macrostachyus* may have anticonvulsant and sedative effects. *Epilepsy Behav.*24 (3):319-23. doi: 10.1016/j.yebeh.2012.03.028.
- Bussmann, R.W., 2006. Ethnobotany of the Samburu of Mt. Nyiru, South Turkana, Kenya. *Journal of Ethnobiology and Ethnomedicine*, 2: 35.
- Chifundera K. (1998). Livestock diseases and the traditional medicine in the Bushi area, Kivu province, Democratic Republic of Congo. *African Study Monographs*, 19 (1) : 13 -33.
- Chinsebu KC, Hedimbi M and. Mukaru WC (2011). Putative medicinal properties of plants from the Kavango Region, Namibia *Journal of Medicinal Plants Research* Vol. 5 31), pp.6787 -6797 23 December, 2011 Available online at <http://www.academicjournals.org/JMPR> ISSN 1996 0875DOI: 10.5897/JMPR11.1
- Chweya, JA, and. Mnzava NA. 1997 Cat's whiskers Cat's whiskers. Promoting the conservation and use of underutilized and neglected crops. 1 7 International Plant Genetic Resources Institute, 1997
- Cook, F.E.M., 1995. Economic botany data collection standard. Royal Botanic Gardens, Kew
- Corrado PAR, Gaglioti AL, Neto SR, and Lin Chau Ming LC (2015) Programa de Pós-Graduação em Reports of the use of Urticaceae Collected In Brazil And Deposited In The Herbaria of Kew (K), New York (Ny) and Paris *Ethnobiology and Conservation* 2015, 4:5 (12 June 2015) doi:10.15451/ec2015-5-4.5-1-12 ISSN 2238-4782
- Debela Hunde , Zemede Asfaw, Ensermu Kelbessa (2006). Use of traditional medicinal plants by people of 'Boosat' sub district, central eastern Ethiopia. *Ethiopian Journal Health Science* Vol.16, No. 2 July 2006.
- De Wet H, Nzama VN, Van Vuuren SF (2012). Medicinal plants used for the treatment of sexually transmitted infections by lay people in northern Maputaland, Kwa Zulu Natal Province, South Africa *South African Journal of Botany* Volume 78, January 2012, Pages 12–20
- EL-Kamali HH (2009). Medicinal Plants in East and Central Africa: Challenges and Constraints *Ethnobotanical Leaflets* 13: 364-69. 2009
- Farrel, B.D., Dussourd, D E. and Mitter, C., 1991. Escalation of Plant Defense: Do Latex and Resin Canals Spur Plant Diversification? *American Naturalist*, 138 (4): 881-900.
- Focho DA, Newu MC, Mendi G Anjah MG, Nwana FA and Ambo FB (2009). Ethnobotanical survey of trees in Fundong, Northwest Region, Cameroon Derek A Focho^{1*}, Muh Newu C, Mendi G Anjah, Fongod A Nwanand Fonge B Ambo *Journal of Ethnobiology and Ethnomedicine* 2009, 5:17 doi:10.1186/1746-4269-5-17
- Gakuubi MM 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* 2012, 8:39 doi: 10.1186/1746-4269-8-39
- Gebre-Mariama T, Neubertb, R, Schmidtc PC. Wutzlerd P, M. Schmidtked M, (2006). Antiviral activities of some Ethiopian medicinal plants used for the treatment of dermatological disorders *Journal of Ethnopharmacology* Volume 104, Issues 1–2, 8 March 2006, Pages 182–187 doi:10.1016/j.jep.2005.08.071
- Giday, M., Z. Asfaw, Z. Woldu, T. Teklehaymanot (2009). Medicinal plant knowledge of the Bench ethnic group of Ethiopia: an ethnobotanical investigation. *Journal of Ethnobiology and Ethnomedicine* 5 : 34
- Giday M. Asfaw Z Woldub Z (2009). Medicinal plants of the Meinit ethnic group of Ethiopia: An Ethnobotanical study. *Journal of Ethnopharmacology*, doi:10.1016/j.jep.2009.05.009 (2009)

- Giday M., Z. Asfaw, Z. Woldub (2010). Ethnomedicinal study of plants used by Sheko ethnic group of Ethiopia Journal of Ethnopharmacology, 132, pp. 75 - 85 doi: 10.1016/j.jep.2010.07.0
- Githinji, C. W. and Kokwaro, J. O., 1993. Ethnobotanical study of some major species in the family Labiatae from Kenya, Journal of Ethnopharmacology, **39**: 197-203.
- Goyal R K, Singh J, Lal H. Asparagus racemosus--an update. Indian J Med Sci 2003; 57:408
- Green, G., Obi, L.C., Amidou S, Pascal, O., Bessong, P.O. and Ndip, R.N. 2011. Characterization of n-Hexane sub-fraction of *Bridelia micrantha* (Berth) and its antimycobacterium activity. *BMC Complementary and Alternative Medicine* 11:28.
- Green, E., Samie A, Obi C.L, Bessong P.O, Ndip, R.N: 2010. Inhibitory properties of selected South African medicinal plants against *Mycobacterium tuberculosis*. *Journal of Ethnopharmacology* 130:151-157
- Hailu W and Engidawork E (2014). Evaluation of the diuretic activity of the aqueous and 80% methanol extracts of *Ajuga remota* Benth (Lamiaceae) leaves in mice *BMC Complementary and Alternative Medicine* 2014, 14:135 doi:10.1186/1472-6882-14-135
- He DY and Dai SM (2011). Anti-Inflammatory and Immunomodulatory Effects of *Paeonia Lactiflora* Pall., a Traditional Chinese Herbal Medicine. *Frontiers in Pharmacology*. 2011; 2: 10. . doi: [10.3389/fphar.2011.00010](https://doi.org/10.3389/fphar.2011.00010)
- Hedberg, I., Hedberg, O., Madati, P.J., Mshigeni, K.E., Mshiu, E.N, Samuelsson, G., 1983. Inventory of plants used in traditional medicine in Tanzania. Part III. Plants of the families Papilionaceae Vitaceae. *Journal of Ethnopharmacology* 9, 237 –260
- Hossan MS, Hanif A, Agarwala B., Sarwar Md S, Karim M, -Ur- Rahman MT, Jahan R, Rahmatullah M (2010). Traditional Use of Medicinal Plants in Bangladesh to Treat Urinary Tract Infections and Sexually Transmitted Diseases *Ethnobotany Research & Applications* 8:061-074
- Ichikawa, M., 1987. A preliminary report on the ethnobotany of the Suiei Dorobi in Northern Kenya. African study monographs. Suppl. 7: 1-52.
- Iwalewa, E.O., McGaw, L.J., Naidoo, V., Eloff, J.N. 2007. Inflammation: The foundation of diseases and disorders. A review of phytomedicines of South African origin used to treat pain and inflammatory conditions. *Afr. J. Biotechnol.*25:2868-85.
- Jeruto P, Mutai C, Ouma G, and Lukhoba C An inventory of medicinal plants that the people of Nandi use to treat malaria *Journal of Animal & Plant Sciences*, 2011. Vol. 9, Issue 3: 1192- 1200. Publication date: 28/2/2011,
- Johns T, Kokwaro JO, And. Kimanani EK (1990). Herbal Remedies of the Luo of Siaya District Kenya: Establishing Quantitative Criteria for Consensus *Economie Botany*, 44(3), 1990, pp. 369-381
- Kamatensis MM, Acipa A and Oryem-Origa H () Medicinal plants of Otwal and Ngai Sub Counties in Oyam District, Northern Uganda *Journal of Ethnobiology and Ethnomedicine* 2011, 7:7 doi:10.1186/1746-4269-7-7
- Karou SD, Tchacondo T, Ilboudo DP and Sipore J (2011). Sub-Saharan Rubiaceae: A Review of Their Traditional Uses, Phytochemistry and Biological Activities *Pakistan Journal of Biological Sciences* Year: 2011 | Volume: 14 | Issue: 3 | Page No.: 149-169 DOI:10.3923/pjbs.2011.149.169
- Kashmira J. G., Jagruti A. P. and Anuradha K. G. (2010). Pharmacological Review on *Centella asiatica*: A Potential Herbal Cure-all. *Indian Journal of Pharmaceutical Sciences* 72 (5): 546–556. doi: [10.4103/0250-474X.78519](https://doi.org/10.4103/0250-474X.78519)
- Kayode J, Aleshinloye L and Ige OE (2008). Ethnomedicinal Use of Plant Species in Ijesa Land of Osun State, Nigeria. *Ethnobotanical Leaflets* 12: 164-170. 2008.
- Khajja BS , Sharma M , Singh R, Mathur GK (2011) Forensic Study of Indian Toxicological Plants as Botanical Weapon (BW): A Review. *J Environment Analytic Toxicol* 1:112. doi:10.4172/2161-0525.100011
- Kigen G, Some F, Kibosia J, Rono H, Kiprop E., (2014) Ethnomedicinal Plants Traditionally Used by the Keiyo Community in Elgeyo . *Journal of Biodiversity and Bioprospecting for Development* 1: 132. doi: 10.4172/ijbbd.1000132
- Kigomo, B.N. (1991). Indigenous Forests, Ecosystem dynamics and Tree Volume. Data in Kenya; A Historical perspective on local knowledge. KIFCON, Nairobi.
- Kiringe WJ (2006). A Survey of Traditional Health Remedies Used by the Maasai of Southern Kajiado District, Kenya *Ethnobotany Research & Applications* 4:061-073 (2006). ethnobotanyjournal.org/vol4/i1547-3465-04-057.
- Kisangau DP, and Lyaruu HVM (2007) Use of traditional medicines in the management of HIV/AIDS opportunistic infections in Tanzania: a case in the Bukoba rural district. *Journal of Ethnobiology and Ethnomedicine* 2007, 3:29 doi: 10.1186/1746-4269-3-29 <http://link.springer.com/search?facet-creator=%22Daniel+P+Kisangau%22>

- Kipkore, W., Wanjohi, B., Rono, H. and Kigen, G. 2014. A study of the medicinal plants used by the Marakwet Community in Kenya. *Journal of Ethnobiology and Ethnomedicine* 10:24.
- Kochhar, S.L. (1989). Plants as Stimuli for Exploration and Exploitation. In: *Plants and Society* ed. M.S. Swaminathan and S. L. Kochhar. Macmillan Publishers, London pg. 44-85.
- Lindsay, R.B.G. and Hepper, F. N., 1978. Medicinal plants of Marakwet, Kenya, Royal Botanic Gardens, Kew.
- Luizza MW, Young H, Kuroiwa C, Evangelista P, Worede A., Bussmann RW, and Weimer A (2013). Local Knowledge of Plants and their uses among Women in the Bale Mountains, Ethiopia *Ethnobotany Research & Applications* 11:315-339 (2013).
- Lulekal E, Asfaw Z, Kelbessa Z, and Van Damm P (2013). Ethnomedicinal study of plants used for human ailments in Ankober District, North Shewa Zone, Amhara Region, Ethiopia. *Journal of Ethnobiology and Ethnomedicine* 2013, 9:63 doi:10.1186/1746-4269-9-63
- Maneenoon K, Khuniad C, Teanuan Y, Saedan N, Prom-in S, Rukleng N, Kongpool W, and Pins P (2015). Ethnomedicinal plants used by traditional healers in Phatthalung Province, Peninsular Thailand *Journal of Ethnobiology and Ethnomedicine* 2015, 11:43 doi:10.1186/s13002-015-0031-5
- Maroyi A (2013). Traditional use of medicinal plants in south-central Zimbabwe: review and perspectives *Journal of Ethnobiology and Ethnomedicine* 2013, 9:31 doi:10.1186/1746-4269-9-31
- Maundu, P. and B. Tengnas (2005). Useful trees and shrubs for Kenya Technical Handbook No.35. World Agroforestry Centre, Eastern and Central Africa Regional Programme.
- Mesfin F, Demissew S and Teklehaymano T (2009). Ethnobotanical study of medicinal plants in Wonago Woreda, *Journal of Ethnobiology and Ethnomedicine* 2009, 5:28 doi:10.1186/1746-4269-5-28
- Mequanint W Makonnen E Urga K (2011). In vivo anti-inflammatory activities of leaf extracts of *Ocimum lamiifolium* in mice model *Journal of Ethnopharmacology*. 2011 Mar 8; 134(1):32-6. doi: 10.1016/j.jep.2010.11.051. Epub 2010 Dec 1.
- Mishra SS, Moharana S K*and Dash MR Review on Cleome Gynandra *International Journal of Research in Pharmacy and Chemistry Ijrpc* 2011, 1(3)
- Moshi, M.J, Otieno D.F. and Weisheit, A. 2012. Ethnomedicine of the Kagera Region, north western Tanzania. Part 3: plants used in traditional medicine in Kikuku village, Muleba District. *Journal of Ethnobiology and Ethnomedicine* 8:14.
- Musila W, Kisangau D, and Muema J (2000). Conservation Status and Use of Medicinal Plants by Traditional Medical Practitioners in Machakos District, Kenya National Museums of Kenya P.O. Box 40658, Nairobi, Kenya
- Narwal S , Rana AC, Tiwari V, Gangwani S, Sharma R (2011). (Review on Chemical Constituents & Pharmacological Action of *Ocimum kilimandscharicum* *Indo Global Journal of Pharmaceutical Sciences*, 2011; 1(4): 287-293).
- Ngari W, Chiuri LW, Kariuki ST and Hockett S (2010) Ethnomedicine of Ogiek of River Njoro Watershed, Nakuru- Kenya *Journal of Ethnobotanical Research and its Applications* =
- Ngueyem, T.A., Brusotti, G., Caccialanza, G., Finzi, P.V 2008. The genus *Bridelia*: A phytochemical and ethnopharmacological review. *Journal of Ethnopharmacology* 124:339-349.
- Njoroge GN and Bussmann RW (2006). Diversity and utilization of antimalarial ethnophytotherapeutic remedies among the Kikuyus (Central Kenya). *Journal of Ethno biology and Ethnomedicine* 2006, 2:8 doi: 10.1186/1746-4269-2-8
- Nedi, T., Mekonnen, N., Urqa, K., 2004. Diuretic effect of the crude extract of *Carissa edulis* in rats. *Journal of Ethnopharmacology* 95, 57-61
- Nwaehujor, C. O., Igile, G.O, Ode, J.O. and Udegbunam, R. 2014. Anti-Inflammatory Activities of Methanol Leaf Extract of *Bridelia micrantha* (Hochst) Baill. (Euphorbiaceae) In Wistar Rats. *Journal of Applied Pharmaceutical Science* Vol. 4 (06), pp. 068-073. DOI: 10.7324/JAPS.2014.40610
- Odhambo JA, Lukhoba CW, Dossaji SF (2011). Evaluation of Herbs as Potential Drugs/Medicines *African Journal Traditional and Complement Alternative Medicine* (2011) 8(S):144-151
- Okullo BL, Omujal F, Bigirimana C, Isubikal P, Malinga M, Bizuru E . Namuteb A, Obaa BB, Age JG (2014). Medicinal Uses of Selected Indigenous Fruit Trees from the Lake Victoria Basin Districts in Uganda J. *Journal of Medicinal Plants Studies*: 201 4, Volume:2 78 -88)
- Oladunmoye, M.K and Kehinde, F.Y., 2011. Ethnobotanical Survey of Medicinal Plants used in treating Viral Infections among Yoruba tribe of Soth Western Nigeria . *African Journal of Microbiology Research* .Vol. 5 (19), pp 2991-3004. doi:10.5897/AJMR10.004. <http://academicjournals.org/ajmr.ISSN> 1996-0808@2011 Academic Journal
- Olembo, N.K., Fedha, S.S. and Ngaira, E.S., 1995. Medicinal and agricultural plants of Ikolomani Division,

Kakamega District. Developmental Partners.

Onoja, S.O., Ukwueze, C.O., Maxwell. Ezeja, Nkeiruka E. Udeh. 2014. Antinociceptive and antioxidant effects of hydromethanolic extract of *Bridelia micrantha* stem bark. *Journal of Experimental and Integrative Medicine* 4 (4): 273-277. DOI: 10.5455/jeim.271014.or.114

Orwa JA, Jondiko IJO, Minja RJA, Bekunda M (2008) The use of *Toddalia asiatica* (L) Lam. (Rutaceae) in traditional medicine practice in East Africa. *Journal of Ethnopharmacology* 115 (2008) 257–262

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 *Agroforestry Database: a tree reference and selection guide*

version 4.0 (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.as>)

Otshudi AL, Vercruyse A, and Foriers A (2000). Contribution to the ethnobotanical, phytochemical and pharmacological studies of traditionally used medicinal plants in the treatment of dysentery and diarrhoea in Lomela area, Democratic Republic of Congo (DRC) *Journal of Ethnopharmacology*, Volume 71, Issue 3, P 411-4

Pandey, B.P. 2006. A textbook of Botany: Angiosperms, Taxonomy, Anatomy, Embryology (including tissue culture) and Economic Botany, S Chand & Co., Ltd., Ram Nagar, New Delhi.

Parekh, J. and Chanda, S. 2007. In vitro antimicrobial activity and phytochemical analysis of some Indian Medicinal plants, *Turkish Journal Biology* 31: 53-58

Rahmatullah M,R, Safiul Azam FM, Hossan S, Mollik H, and Rahman T (2011) Folk Medicinal Uses of Verbenaceae Family Plants in Bangladesh (2011). *African Journal of Traditional and Complementary Alternative Medicine*. 2011; 8(5 Suppl): 53–65.

Rahmatullah M. R., Ferdousi D., Mollik, H. A. Md., Jahan R., Chowdhury H. M., Haque M. W., (2010). A survey of medicinal plants used by Kavirajes of Chalna Area, Khulna District, Bangladesh, *African Journal Tradition* 7(2) 91-97

Ruttoh EK, Tarus PK, Bii CC, Machocho AK, Karimie LK, and Okemo PO Antibacterial Activity of *Tabernaemontana Stapfiana Britten* (Apocynaceae) Extracts African

Sajem AL and Gosai K (2006). Traditional use of medicinal plants by the Jaintia tribes in North Cachar Hills District of Assam, Northeast India. *Journal of Ethnobiology and Ethnomedicine* 2006,2 :33 doi:10.1186/1746-4269-2-3

Sakshi S., Asmita G., Abhimanyu S. and Amla B. (2010). *Centella asiatica* (L.): a plant with immense medicinal potential but threatened. *International Journal of Pharmaceutical Sciences Review and Research*.

Shi Y, Hu H, Xu Y, and Liu X <http://link.springer.com/search?facet-creator=%22Daniel+P+Kisangau%22> (2014). An Ethnobotanical Study of the Less Known Wild Edible Figs (Genus *Ficus*) Native to Xishuangbanna, Southwest China *Journal of Ethnobiology and Ethnomedicine* 2014, 10:68 doi:10.1186/1746-4269-10-68

Tabuti JRS, Kukunda CB Kaweesi D and Kasilo MJO (2012). Herbal medicine use in the districts of Nakapiripirit, Pallisa, Kanungu, and Mukono in Uganda *Journal of Ethnobiology and Ethnomedicine* 2012,8:35 <http://www.ethnobiomed.com/content/8/1/35>

Teoriana (2013). Foundations In Herbal Medicine Integrative Medicine Concepts,

Teklay, A., Balcha, A. and Mirutse, G. 2013. An ethnobotanical study of medicinal plants used in Kilde Awulaelo District, Tigray Region of Ethiopia. *Journal of Ethnobiology and Ethnomedicine* . 9:65

Tsehaye Y and Kebebe F (2006). Diversity and cultural use of Enset (*Ensete ventricosum* (Welw.) Cheesman) in Bonga in situ Conservation Site, Ethiopia *Ethnobotany Research & Applications* 4:147-157 (2006).

Teugwa MC, Mejiato PC, Zofou D, Tchinda BT and Boyo FF (2013). Antioxidant and antidiabetic profiles of two African medicinal plants: *Picralima nitida* (Apocynaceae) and *Sonchus oleraceus* (Asteraceae) *BMC Complementary and Alternative Medicine* 2013, 13:175 doi:10.1186/1472-6882-13-175

Tesemma B A, Birnie A, Tengnas B. 1993. Useful trees and shrubs for Ethiopia. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA)

Uduak, A. Essiett, Kola, K. Ajibesi (2010). Antimicrobial Activities of Some Euphorbiaceae Plants Used in the Traditional Medicine of Akwa Ibom State of Nigeria *Ethnobotanical Leaflets* 14: 654-64. 2010

Wallis, T.E., 1985. Textbook of Pharmacognosy. Edition 5. CBS Publishers and Distributors.

Ya'u J., Yaro AH, Abubakar MS, Hussaini IM (2008) Anticonvulsant activity of *Carissa edulis* (Vahl) (Apocynaceae) root bark extract *Journal of Ethnopharmacology* 120 (2008) 255–258

Yineger H and Yewhalaw D (2007). Traditional medicinal plant knowledge and use by local healers in Sekoru District, Jimma Zone, Southwestern Ethiopia *Journal of Ethnobiology and Ethnomedicine* 2007, 3:24 doi: 10.1186/1746-4269-3-24

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

