Journal of Veterinary Research Advances
ISSN: 2582-774X

Research Article
Open access

Phytochemical screening and in vitro anthelminthic activity of selected ethnoveterinary medicinal plants in Haramaya District, Eastern Hararghe zone, Ethiopia

Zelalem Negassa[1], Walkite Furgasa[2] and Negesse Mekonnen[3]
[1]North Showa Zone, kuyu District, Livestock Development and fishery office, Ethiopia
[2]School of Veterinary Medicine, Wollegga University, Nekemte, Ethiopia
[3]Bahir Dar University, Ethiopia

Corresponding author: walkiteharamaya@gmail.com

Received on: 22/02/2021 Accepted on: 16/03/2021 Published on: 25/03/2021

ABSTRACT

Aim: The study was aimed to identify and document the medicinal plants used for treatments of diseases in animals.
Method and Materials: The present study was conducted in selected areas of Haramaya district in and around 6 kebeles (Gand Sharo, Ifa Oromia , Gand Boyi, Gand Amarti, gand xinike and ganda mude) from November 2014 to April 2015 . A total of 47 plants were identified through semi structured interview and guided field walk and observation. Among those, 9 plants (Allium sativium, Veronia amygladina, Lantana camara, Ricinus communis, Moringa olifera, Catha edulis Solanium incanum and Carpurnia aurea) were selected based on their superior uses for extraction, evaluation of phytochemical and antihelimithis assay. From the 9 selected medicinal plants, two plants were selected for in vitro antihelimithic efficacy tests for egg hatch assay. The 70% methanol extracts of the bulbs of Alium sativum and the leaves of Calpurnia aurea were evaluated on nematode eggs.
Results: Calpurnia aurea extracts caused complete eggs hatch inhibition at concentration of 0.8%, 0.4% and 0.2%, while alium sativum extracts only in habits at 0.8% concentration.
Conclusion: The current findings revealed that extracts from Calpurnia aurea b have potential anthelminthic effect and further in vitro and in vivo evaluation is warranted to make use of the plants.

Keywords: Medicinal Plants, Haramaya Districts, Traditional Healers, Phytochemical Screening, Anthelminthic Activity.

Cite This Article as: Negassa Z, Furgasa W and Mekonnen N (2021). Phytochemical screening and in vitro anthelminthic activity of selected ethnoveterinary medicinal plants in Haramaya District, Eastern Hararghe zone, Ethiopia. J. Vet. Res. Adv. 03(01): 28-40.

Introduction

Ethno botany practices are defined as a local people's interaction with the natural environment: how they classify, manage and use plants available around them (Martin, 1995). It involves inter disciplinary approach encompassing the field of botany, Chemistry, pharmacology and anthropology (Cotton, 1996). Some of the steps followed in the ethno botanical research involve documenting how people classify, identify and relate to plants , examining the reciprocal interaction of plants and people, taxonomic identification of selected plants and biological as well as chemical evaluation of their constituents (Balick, 1996).

In general, *Ethno botany* is the scientific investigation of plants as used in indigenous culture for food, medicine, magic, rituals, building, household utensils and implements, musical instruments, fire wood, pesticides, clothing, shelter and other purposes (Urga *et al*., 2004). Ethiopia is a country characterized by a wide range of climate and ecological conditions, possesses enormous diversity of fauna and flora (Pankhurst, 2001).

The country possesses a wide range of potentially useful medicinal plants more extensive indeed than available in many other parts of the world. Popular knowledge of plants used by humans is based on thousands of years of experience. By trial and error, people learn how to recognize and use plants, including those with a magic religious function. In Ethiopia, even though the traditional medicinal practitioners are the best source of information about the knowledge of the

medicinal plants, it was found very difficult to obtain their traditional medicinal information as they considered their indigenous knowledge as a professional secret, only to be passed orally to their older son, at their oldest age (Jansen, 1981).

However, the local indigenous knowledge on medicinal plants is being lost at a faster rate with the increase of modern education, which has made the younger generation under estimate its traditional values. In addition, the increase population growth rate would result in the intensification of agriculture in marginal areas which would lead to deforestation with decrease in number or loss of medicinal plants in the wild (Dawit, 1986), Estimated that 95% of traditional medicinal preparations in Ethiopia are of plant origin.

Therefore, it can be said that ethno botanical studies are merely at the start in Ethiopia though there has been some attempts in investigating medicinal plants uses and there is as yet no of such in depths study on the relation between medicinal plants indigenous knowledge on sustainable management of such plant resources(Debela, 2001).

Modern health care has never been and probably never will provide for the foreseeable future adequate and equitable health service anywhere in Africa, due to financial limitation related to rapid population growth as a result, the gap between supply and demand has continued to widen, political instability and poor economic performance. Due to incomplete coverage of modern medicinal system, shortage of pharmaceuticals and un affordable prices of modern drugs, the majority of Ethiopian still depends on traditional medicine (Anokbonggo, 1992).

Approximetly 422,000 flowering plants reported from the world, more than 50,000have been used worldwide for medicinal purposes. Until now, 80% of the world population depends on traditional medicine for its primary health care needs (Ulah et al., 2010).

Plants remedies are often used as an alternative to allopathic medicines due to their easy availability and cheap therapy as compared to costly pharmaceuticals (Sandya et al., 2006).

Recently, the field of ethno botany has shown tendency from mere documentation process to a more practical one, emphasizing on the sustainable use of local medicinal flora. The farmers has subsequently explored many ethno botanical products in treating livestock diseases (Fajimi and Tawio,2004). WHO also stated that the use of these natural products in control of animal and human diseases are considerably effective (Hoff, 1995).

Phytochemical screening is one of the techniques to identify new sources of therapeutically and industrially important compounds which could potentially serve as new lead and clues for modern drug design like alkaloids, flavonoids, phenolics, steroids, tannins, saponins, triterpens, glycosides and phlobatannins present in the plant extracts and others. Plant derived substances have recently become of great interest owing to their versatile applications.

Knowledge of the chemical constituents of the plants is desirable because such information will be of value for the synthesis of new bioactive compounds for the treating the specific disease (Lingarao et al., 2012).

Phytochemicals are bioactive chemicals of plant origin. They are regarded as secondary metabolites because the plants that manufacture them may have little need for them. They are naturally synthesized in all parts of plant body; bark, leaves stem, root, flower, fruits, seeds etc. any part of the plant body may contain active components (Doughari, 2009).

The quantity and quality of phytochemicals present in plant parts may differ from one part to another. In facts, there is lack of information on the distribution of the biological Activity in different plant parts essentially related to the difference In distribution of active compounds(active principles) which are more frequent in some plant parts than in others(Harborne, 2007).

Diseased caused helminthic parasites in livestock continue to be a major productivity constraital over the world especially in small ruminants in tropical and sub- tropical countries (Perry et al., 2002). They cause retarded growth and lowered productivity (Perry and Randolph, 1999), mortality (Sykes, 1994) and high economic losses (Iqbal et al 1993).

Among the heliminths parasites gastro intestinal nematodes are said to be the main limiting factor in sheep production, causing the greatest economic losses for producers worldwide. Nematode infections of gastro intestinal tract adversely affect productivity of small ruminants. Option of using synthetic antiheliminthics is

decreasing due to development of resistance in gastro intestinal nematodes of small ruminants against several families of drenches (Saddiqui et al., 2010).

The global problem has created interest in researches on altarnates to the use of synthetic chemicals for the control of nematodes (Waller, 1999). In this regard, traditionally used ethno botanical with antihelimenthic properties are considered among the novel approaches particularilly in temperate and tropical countries (Akhtar et al., 2000).

Majority of the ethno veterinary medicine surveys and validation studies indicate much wider and effect use of plants as antiheliminthics compared with other diseases/ conditions (Alshaibani et al., 2009; Deeba et al., 2009). Most of the parasite control programs are based up on combination of chemio theripeutic control, grazing management, dietary management, biological control, vaccination and ethno veterinary treatment (FAO, 2002). However , the ethno pharmacological investigation of medicinal plants , traditional medicinal knowledge's , the extent of use of modern and traditional medicines , phytochemical screening of bioactive compounds , investigation of the in vitro anthelminthic and antimicrobial effects are lacking in the area.

The major significance of the study was to reassure using those plants are relevant in treating human and animal ailments , to know the knowledge of local society and traditional healers about these plants which will serve as base line information for further in vitro and in vivo pharmacological investigation. Therefore, the objectives of the study were to identify and document the medicinal plants used for treatments of diseases in animals and humans, to perform phytochemical screening test for selected medicinal plants and to determine the in vitro anti helminthic effect of medicinal plants.

Materials and Methods

Both qualitative and quantitative methods were used. In qualitative methods questionnaires, semi structured questionnaires were used to assess the attitude of informants about traditional and modern medicine, to assess the knowledge and practices of traditional healers about medicinal plants. In quantitative methods the collected medicinal plants from traditional healers were identified and documented in Haramaya University Herbarium department of plant science and voucher number was assigned. In addition to these, phytochemical screening and preliminary in vitro anthelminthic efficacy tests were performed.

Study Population and Data Collection

Six kebeles were selected based on access to transportation facilities. People living I ganda shano, Ifa Oromia , gand boyi, ganda imarti , tinike and ganda mude, were interviewed about the extent of use modern and traditional medicine. A four page questionnaires survey were conducted through semi structured interview, guided field walk and observation to obtain information about traditional medicinal practices both in animals and human in the area. Farmers, Healers and religious leaders were interviewed. Among those, traditional healers were asked to disclose medicinal plants, their local name, intended use, method of preparation, route of administration, solvent/ ingredients used during preparation, parts of plants used and the clinical symptoms and the name of the disease treated.

Data collection methods / sampling techniques

A total of 8 traditional healers of different ages (30-83 years) were selected with the help of local elders, administrative personnel and with self –interest of traditional healers to disclose during interview. Then they were interviewed as key informants. The healers were wel known in the community due to their long experience in providing services related to tradional heal care in the community.

Prior to the interview process, a short discussion was held with informants through assistance of local elders to elaborate the purpose of the study. This would be done to clarify the objective and build confidence of the respondents to give clear information without suspicion. After this, healers that would be participate in the study area were to provide information on the respondents' back ground, health problem treated , diagnosis and treatment methods, local name of medicinal plants used, source of collection(wild/ cultivated), growth form, plant part used, method of preparation and application, threats to medicinal plants and conservation practices of respondents were carefully recorded.

Observations were made on morphological features and habitats of each medicinal plant species in the field. Specimen of the reported medicinal plants was collected during the interview

from the field, coded and sent to the Haramaya University Botanical identification and archiving center (herbarium).

Collection of plant and extraction Techniques

The plants were harvested in fully developed green stage. Enough amount of the plant were collected from the area with the help of traditional healers. After collection the plant materials were identified (authenticated) by the Taxonomist at Haramaya University. The voucher number of the specimen has been deposited in plant science herbarium department at herbarium for the future reference. Based on the information obtained from the traditional healer, plants having superior activity or repeatedly used for common types of ailments were selected for further study. From the collected plants fresh plant leaves were washed under running tap water to remove the surface pollutants and the leaves were air dried under shade and ground to fine pieces that could be weighed. After the leaves were dry enough to break, they were ground to fine powder in the electrical blender, sieved, weighed and stored in a clean stopper container bottles and placed in in dry place until use.

Extraction

Extraction is the first crucial steps in preparation of plant formulation. The powdered plant materials were subjected to successive extraction with 70% methanol solvent using maceration techniques. In macerating technique, the coarsely powdered plant materials were kept in contact with solvent in a stopper container for three days with frequent agitation with electrical shaker adjusted as for three hours with six hours gabs twice per a day until soluble matter was dissolved. The extracts obtained this solvent were filtered using filter paper and concentrated using oven at 40^0c and then the concentrated extracts were allowed to dry to obtain the crude extracts.

The crude extracts were weighed to know the yield of each plant. The results were revealed as percentages. Fifty gram of each plants part crude extract was mixed with 250 ml organic solvent of methanol 70%by electrical shaker for three hours twice a day for three days. The mixture thus obtained was filtered through filter paper and then refiltered by passing through what's man filter No 1. The filtrate was then concentrated by complete evaporation of solvent at 40^0c in hot air oven night to yield the pure extract (Goyal et al., 2008).

Phytochemical screening test

The methanol extracts A. sativum, V. amygladina, M. olifera, R. communis, C.edulis, F. vulgare, S. inconum, C. aurea, and L. camara were subjected to phytochemical screening using a standard screening procedure to know secondary metabolites they contain in their leaves and bulbs. The bioactive extract should be standardized on the basis of phytochemical compounds (WHO, 2000). Each extract was tested for the presence of phytoconistituents (Harborne, 2007).

Test for saponin: Frothing test

Extracts 300 gram with 5 mlA water was heated in water bath for two minutes and cooled and mixed vigorously and left for three minutes. The formation of frothing that remains left for 10-15 minutes indicates that the presence of saponin.

Test for tannins: Ferric chloride test

About 0.5 gram of the extract in 10 ml of water in a test tube in a beaker was boiled on hot plate stirrer and then filtered with filter paper. A few drops of 0.1% diluted ferric chloride solution was added and observed for brownish green or a blue black coloration indicating the presence of tannins.

Test for flavonoids: shinoda test

To 1 ml of the extracts, few drops of NaOH were added. An intense yellow color was produced in the extract which became colorless on addition of a few drops of diluted HCl acids indicates the presence of flavonoids.

Test for steroids:Lieberman-burchadis test

A 1 gm of the extracts was dissolved in 5ml of HCl and equal volume of concentrated sulphuric acid was added by the sides of the tube. The upper layer turns red and sulphuric acid layer turned yellow with green fluorescence. This indicates the presence of steroids.

Test for triterpes: Lieberman-burchadis test

A 300 gm extracts was mixed with 5 ml HCl and boiled on hot plate stirrer for 30 minutes and cooled for 5 minutes. Then few drops of concentrated sulphuric acid was added and mixed well. The appearance of red color was taken as a preliminary evidence for the presence of triterpences.

Test for phenolic compounds: Ferric chloride tests

A 2ml of filtered solutions of the methanol macerated of the plant material; 3 drops of a freshly prepared mixture of 1ml of 1% ferric chloride and 1ml of potassium ferrocyanide were added to

detect phenolic compound. Formation of bluish-green color was taken as positive for fenolic compounds.

Test for phlobatannis: hydrochloric acid (HCl) test

About 2ml of extracts were added to 2ml of 1% HCl and the mixture was boiled on hot plate stirrer and cooled for 5 minutes. Deposition of a red precipitate was taken as evidence for the presence of phlobatannins.

Test for glycoside: ferric chloride test

To about 0.5 gm of extracts 5ml of concentrated H2SO4 was added and boiled on hot plate stirrer for 15 minutes. This was then cooled and neutralized with 20% KOH. The solution was divided into two portions; and a green to black precipitate indicated phenolic aglycone as a result of hydrolysis of glycoside.

In vitro egg hatch assay

Fresh fecal pellets were collected directly from rectum from sheep farm of Haramaya University and placed in sterile stopper container plastic tube and sent to the veterinary parasitology laboratory found in Haramaya University in main campus. The simple flotation was made for positive screening test of the eggs to recover the eggs of nematodes from the positive sample.

Nematodes Eggs Recovery Technique

Eggs of nematodes were recovered using the following techniques. Approximately 50 gm. of faeces obtained from the sheep, suspended in approximately 50 ml of water using electrical mixer. This suspension was washed through a sieve with saturated NaCl solution. The mixture was poured into a shallow tray having approximately the depth of 4 cm a sheet plastic cut to the shape of the was floated on top (Le Jambere,1976). As the specific gravity of the mixture is greater than some nematode eggs, so they float to the top and adhere to the plastic sheet. After about 15 minutes the plastic sheet was removed and the eggs were washed off with a tap of water from plastic sheet into a beaker. Number of eggs was estimated by McMaster technique (Souls by, 1982).

Egg suspension

The concentration of eggs was estimated in 50 micro liters samples and adjusted to 500 eggs ml^{-1}. The egg suspension was diluted with filtrate from the first step of egg extraction that had been centrifuged manually for 5 minutes to eliminate organic debris to provide bacteria for larval development.

Test procedure

The hatch assay was carried out using the world association for the advancement of veterinary parasitology (WAAVP) guide lines for determination of the anti-helminthic resistance (Coles et al., 1992) with modifications that allowed the testing of the natural compounds (Alawa et al., 2003). A suspension of 0.2 ml was distributed in 6 petri dish flat bottomed containing approximately 500 fresh eggs and mixed with the same volume for both plant extracts having different concentrations (0.8%, 0.4% and 0.2%). The control petri dish contained the normal saline solution and albendazole dissolved in dimethyl sulfoxide (DMSO) as negative and positive control for both the extracts respectively. The petri dishes were incubated for 48 hours at 27 ^{o}c. All the eggs and the first stages larvae (L1) in each petri dish were observed for egg hatches inhibition or larval motility. Three replications per each treatment concentrations were employed.

Results and Discussion

During the interview the traditional healers reported Ethno medical data's of 47 species of plants. These plants listed in table 1 and 2 were reported as having medicinal properties against different ailments of humans and animals. Table 1 showed family and scientific name, local name, growth forms, parts of the plant, intended use and the voucher number of medicinal plants as claimed by the traditional healers from Haramaya district of selected kebeles. Among the 47 collected medicinal plants, 9 medicinal plants (Euclapytus glubulus, Junipers procera, Ruta chelepensis, Carica papaya, Catha edulis, Nicotinia natabacum, Allium sativum, and justicians chimperiana and cucripita pepo) were cultivated in home garden, while the rest medicinal plants were the collected from wild. Extended dry time and termites' problem were major threats of medicinal plants in the study area the traditional healers and farmers considered. These people made little plants conservation activity for easy utilization as medicinal plants.

Various details regarding data of research mentioned (Table 1 to 7).

Table 1. Plant details, growth and use

Family	Scientific name	local name of Plant	growth form	parts used	voucher	intended use. (Animal/human)
Asternaceae	Varnonia amygladina	eebicha	shrub	leaves	002213	both
Verbanaceae	Lippia Abyssinia	sukayee	herb	the whole	018474	human
Myrtaceae	Euclapytus glubulus	baarzafii	tree	leave	023518	human
Ambelliferaceae	Anthum graveolens	kamoonaa	herb	root	015995	animal
Cuprtaceae	Juniper sprocera	gaattiraa	shrub	leaves	023339	human
Lamiaceae	Osimum spps	harmaal	herb	leaves, root	003359	both
Rutaceae	Ruta chelepensis	xalaatam	herb	leaves	06546	both
Carjcaceae	Carica papaya	paappayyaa	shrub	leaves	024405	human
Celasteae	Catha edulis	khat	shrub	fresh stem	021564	human
Euphceae	Croton macrostachys	bakkanniisa	tree	leave	002863	human
Euphceae	Ricinus communis	qobboo	shrub	leaves	015365	human
Lamineae	Osimum lamiifolium	demakase	herb	leaves	000318	both
Morineae	Moringa olifera	shifera	tree	leave	005209	human
Phytoleae	Phytolaca dodecandra	andode	herb	leaves	005564	both
Verbaceae	Lantana camara	yewofkolo	shrub	leaves	007599	human
Solanaceae	Nicotinia matabacum	tambo	shrub	leaves	006912	animal
Apocyeae	Carissa spinarum	agamsa	shrub	root	000618	human
Alliaceae	Allium sativium	nech shunkurt	herb	bulb	009589	both
Rubiaceae	Rubia cordifolial	laalessa	shrub	leaves	015953	human
Solanaceae	Solanium incanum	hiddii	shrub	leaves	006984	human
Acanteae	Justicia schimperiana	ummuugaa /sensel	shrub	leaves	022489	both
Euphceae	Euphorbia candelabrum	adaamii/ kulkal	shrub	milky latex	002903	human
Boragieceae	Ehetia cymosa	ulaagaa	shrub	leave	010107	human
Aquifoliaceae	Illexmitis	urgessaa	tree	leave	014061	human
Asteraceae	Kleinias qarrosacufod	luqoo	shrub	leaves	0215598	human
Polygonaceae	Rumex bequarti	mucha arrbaa	shrub	leaves	005878	human
Fabaceae	Calpurnia aurea	ceekaa/ digixa	shrub	leave	003948	animal
Ranunculaceae	Clematis simensis	xiloo	herb	leaves	005997	both
Solanaceae	Cucumispro phetarum	hiddii hoolaa	herb	fruit	002631	animal
Laminaceae	Ocium urticifolium	muka michii	shrub	leaves	003359	human
Solanaceae	Withania soninifera	hiddii budaa	herb	fruit	022707	animal
Papilionoideae	Rhynchsia malacophylla	saara	herb	root	011207	human
Lamiaceae	Leucasspp	maqmaqqoo	shrub	leaves	012206	both
Lliceae	Asparagus africanus	muka saar	herb	leave	009634	animal
Boraginaceae	Ehretia cymosa	qacaaciluu	herb	leaves	000958	human
Polygonaceae	Rumex abyssinicus	muka hadhoftu	shrub	leaves	024054	both
Laminaceae	Ocium urticifolium	muka dero	shrub	leaves	003351	human
Asternaceae	Lactuca sativa	harregoogee	shrub	root	002012	animal
Tiliaceae	Grewia villosa	Indrew	herb	leaves	007319	human
Nyctaginaceae	Boerhavia diffusa	kontoma	herb	stem	005334	both
Crassulaceae	Kalanchoe petitiana	biipii garaa	herb	leave	002515	animal
Plumbaginaceae	Plumbago	marxas	herb	leve	05660	human
Loganiceae	Baddle japolystachya	hoomacheessaa	shrub	leave	004648	human
Boraginaceae	Cordial Africana	muka gurraacha	tree	dry root bark	000909	human
Fabaceae	Taverniara abyssinica	muka diingatenya	shrub	root	002645	human
Cucuribitaceae	Cucuribita pepo	buqqee nyaataa	herb	seed	002645	both
Asternanaceae	Oosteospermum vaillaltii	galaana aannanii	herb	leaves	012273	human

Table 2. Information of preparation methods and route of administration to diseases

Scientific name	Local name of disease treated	Ingredient/ solvent added	Preparation methods	Routes of Adiminstration	Clinical syptomes of the disease
Vernonia amygladina	Dhibee garaa	Water	Chopped leaves mixed with water	Oral	Constipation, flaccid paralysis, abdominal pain, skin scraping
Lippia abyssinia	Garaa kaasaa	Milk	The whole concocted with partinium hysterophorus root	Oral	Head ache, diarrhea,abdominal pain
Euclapytus glubulus	dukaaka	Milk	Dried leaves chopped and mixed with milk for child, leaves burned on fire and smoke is taken in adult	Oral and inhalation	Depression,head ache Fever, in appetence
Anthum graveolens	Dhibee harree	Water	Dried root chopped and mixed with water	Oral	Abdominal pain and distension, constipation, anuria
Junipers procera	Dhibee ijaa	no	Leaves burnt on fire and smoke is taken	inhalation	Trachoma, conjunctivitis, lethargy
Osium spps	Dhibee hedduu	Water	Chopped leaves and root mixed with water	Oral	Hardening and swelling of udder, coughing,
Ruta chelepensis	Dhukkuba hedduu	Water	Chopped leaves mixed with little water and filtered fresh leave chewed	Oral	colic , prolonged ministration
Carica papaya	Dhibee raammoo garaa keessaa	Water	Chopped leaves mixed with water	Oral	Shivering , diarrhea, weight loss
Catha edulis	Fincaan diduu	Water	Crushed fresh stem concocted with leaves of Vernonia amygladina	Oral	Abdominal pain, swelling of face, legs and abdomen
Croton macrostacyus	Dhibee busaa	Water	Crushed fresh stem concocted with leaves of Vernonia amygladina and boiled and filtered	Oral	Shivering, head ache, thirsty, inappetence
Ricinus communis	Rakkoo saalaa	Coffee, tea , milk	Crushed leaves mixed with coffee/ tea/ milk	Oral	In ability of male penis to erect during copulation
Osmium lamiifolium	qufaa	Butter, coffee	Crushed leave mixed with butter/ coffee	Oral	Sudden illness, coughing, depression, head ache, in appetence
Moringa olifera	Dhibee hedduu	Tea/water coffee	Dried leaves chopped and mixed with tea, water, coffee	Oral	Gastritis, hyperphagia, hyperdyspia, vomition
Phytolaca dodecandra	Dhibee hedduu	Water	Crushed fresh dried leaves mixed with water	inhalation	Shivering, fever, swelling of udder
Lantana camara	Dhibee garaa	Water	Powdered dried leave mixed with water	Oral	Abdominal pain, diarrhea,nausea, bleeding of moth and nose
Nicotinia natabacum	Dhibee ilbiisaa	Water	Crushed leave mixed with water and filter	Oral	Bleeding of mouth and nose
Carissa spinarum	Waan mucaa	water	Dried crushed root burn on the fire	Oral	Retained placenta
Allium sativium	Dhibee garaa	Water	The bulb chopped and boiled with water	Oral	Diarrhea , head ache , abdominal disconfort
Rubia cordifolial	Dhibee garaa	Water	The root is chopped and mixed with water	Oral	Abdominal pain, weight loss and diarrhea
Solanium	Dhibee garaa	Water	Freshed leave chopped mixed with	Oral	Recumbenced back

incanum			water		
Justicia schimperriana	Waan garaa	Water	Crushed fresh leave concocted with bark of croton macrostachyus	Smear on skin	Nausea, weight loss, dis figure
Euphorbia candelabrum	roobbii	No	Milk latex from plant mixed with powdered root of Ruta chelepensis and past applied to affected area	External use only	Ring like lesion on skin, wart
Ehretia cymosa	michii	water	Freshly dried leaves chopped and mixed with water	Tie on the area	Conjunctivitis, larcremation, photo fovea
Illex mitis	Goga garaa	Butter	Freshly dried leaves chopped and mixed with butter	External use only	Skin dryness
Kleinia sqarrsacufod	Garaa kaasaa	Water	The fresh leaves chopped and sieved then mixed with full cup of water	External use only	Headache, diarrhea, abdominal pain
Rumex bequartii	sillisa	No	The leaves chopped and hot on the fire with triple leave of Recinus communuis	Oral	Swelling of neck
Calpurnia aurea	Dhibee ilbiisa keessaa fi alaa	Water	The leaves dipped into water and washed the whole part of the animal with it and the leaves are chopped with water	Oral and external use(wash)	Rubbing, weight loss, restlessness
Clematis simensis	Dhibee millaa	no	Leaves chopped and hot on the fire wounded /swelled area	Tie on the area	Swelling of legs and legs wound
Cucumisprophe tarum	Dhibee garaa keessaa	No	The fruit is collected and heat on the fire	External use only	Diarrhea ,abdominal discomfort
Ocium urticifilium	Dhibee ijaa	No	Leaves chopped and smear externally outside the eye	External use only	Photo fovea, lacrimation
Withania soninifera	Sa'aa aannan dhowwatteef	Water	Dried root grounded and boiled in water with sugar	Smear on the swollen udder	For reduced milk production and agressivee cows
Rhynchsia malacophylla	Dhibee hedduu	Water, sugar	Dried root grounded and boiled in water with sugar	Oral	Warts, swellings, burns when urinate
Leuca smartinicensis	gofla	No	Leaves chopped and heat on fire	Oral	Cancer, swellings
Asparagus africanus	Dhibee mucha	Water	Leaves chopped and mixed with water	Oral	Reddening and swelling of udder
Ehretia cymosa	Dhibee garaa ijoollee	Water	Dried chopped leaves mixed with water	Oral	Children abdominal pain
Lactuca sativa	Dhiitoo adda addaa	Water	Dried chopped leaves and root mixed with water	Spitting external	Different swellins
Rumex abyssinicus	Dhibee hadhooftuu	Water	Dried crush leaves mixed with water	Smear,oral	Heart burns , vomition ,dysphagia , abdominal pain
Ocium urticifolium	Dhibee garaa	Water	Dried crush leaves mixed with water	Oral	Abdominal pain
Lactuca rativa	utaalaa	No	To the incised dewlap the chewed root is spitting into the incised part	spitting	Oozing of blood from natural orfice and abdominal distension
Grewia villosa	Dhiitoo adda addaa	Sugar	Chopped leaves mixed with sugar and smear on the area of swellings	Smear	Different swellings
Boerhavia diffusa	Raammoo garaa keessaa	Water	Chopped stem mixed with water	External use only	Internal parasites
Chalanchoe petitiana	Jigoo, hyena bites	Water	Chopped leaves mixed with water	inhalation	Swelling of udder, wound
Plumbago zwyianica	gofilaa	Water	Chopped leaves mixed with water	Oral	Cancer, swellings
Buddle japolystachya	Dhibee miillaa	water	Chopped leaves mixed with water and wash the face	oral	Leg disease and swellings
Cordial africana	budaa	No	Powdered dried root bark is sprinkled on burning charcoal and	inhalation	Head ache, depression, evil eye

			smoke is inhaled covered with cloth		
Taverniara abyssinica	Dhibee garaa	Water	The root is pounded in water and the juice is drunk	Oral	Stomach ache , vomition and fever
Curcribita pepo	Raammoo garaa keessaa	Water	Dried powdered seed mixed with milk	Oral	Diarrhea, weight loss and vomition
Osteospermum vaillalti	Dhibee garaa keessaa	Water	Chopped leaves mixed with water	Oral	Head ache, fever, diarrhea

Table 3. Growth forms of medicinal plants i n the study area

Growth habitat	Total number of species	% of the total number
Shrubs	23	48.94
Herbs	19	40.43
Trees	5	10.64
Total	47	100

Table 4. A total of 175 people were asked during sample collection from the study area about their demography.

Back ground factors	**%use of modern health facilities**	**Percentage use of herbal medicine**	**No action**	**Total ill**	**Ill and use herbal medicine**
Sex (175)					
Male (105)	30(28.6)	69(65.7)	6(5.7)	3	2
Female(70)	20(19.0)	40(38.1)	2(1.9)	8	5
Age in years					
0-4(55)	9(16.4)	44(80)	2(1.9)	11	7
5-14(51)	17(33.3)	33(64.7)	1(2)	2	0
15-54(19)	10(52.6)	5(26.3)	4(21.1)	0	0
55+(50)	1(1.7)	41(68.3)	8(16)	8	3
Marital status					
Married (100)	36(36)	63(63)	1(1)	15	9
0thers (75)	21(28)	47(62.7)	7(9.3)	13	11
Religion					
Muslium(120)	40(33.3)	71(61.7)	9(7.5)	11	5
Others(55)	16(29.1)	36(65.5)	3(5.5)	1	1
Education					
Literate(52)	49(94.2)	2(3.8)	1(1.9)	1	0
Iiliterate(123)	9(7.3)	106(86.2)	8(6.5)	5	3
House hold size(100)					
1-4(34)	15(44.1)	15(44.1)	4(11.8)	0	0
5-9(42)	11(26.2)	28(66.7)	3(7.1)	2	1
10+(24)	3(13.6)	17(77.3)	4(16.7)	3	0

Types of action taken by those perceived illness in three weeks recall period.

Table 5. results of percentage yield of methanol extracts

Plant species	**Local name**	**% yield(w/w)**
Allium sativium	Nech shunkurt	18
Verninia amygladina	Eebicha	13.1
Lantana camara	Yewofkolo	10
Recinus communis	Kobo	19.5
Moringa olifera	Shifera	12.4
Catha edulis	Khat	27
Foeniculum vulgarae	Kamona	18.2
Solanium incanum	Hiddii	10
Calpurnea aurea	Ceekaa	11

Table 6 results of phyto chemical screening test of the selected 9 medicinal plants

Phytochemical conistituents	Allium sativium	Vernonia amygladina	Recinus communis	Moringa olifera	Catha edulis	Foeniculum vulgare	Solanium incunum	Calpurnia aurea	Lantana camara
saponins	-	+	-	+	-	+	+	+	+
tannins	+	+	+	+	+	+	+	+	+
Phenolic compounds	+	+	+	-	+	-	+	+	+
Steroids	-	-	-	+	-	+	-	-	-
Triterpins	+	-	-	+	+	-	-	-	-
phlobatannins	+	+	-	+	+	-	-	+	+
Flavonoids	-	-	+	+	+	-	-	+	-
Glycosides	+	+	+	+	+	-	-	+	+

Note: + (present), - (absent)

In this study, Allium sativium and Calpurnia aurea extracts were subjected screening egg hatch assay using normal saline as negative control and abendazole 1% and 1.25% as positive control for both extracts respectively.

Table 7. Results of screening of egg hatch assay

Plant extracts	**0.8%**	**0.4%**	**0.2%**	**Albendazoe 1 %**	**Albendazole 1.25%**
Allium sativimu	**-**	**+**	**+**	**-**	**-**
Calpurnia aurea	**-**	**-**	**-**	**-**	**-**

The present study documented many well-known and different effective medicinal plant species of relevance for both human and animal health care. A total of 47 plant species were recorded as traditional medicinal against human and animal ailments. Among the 47 collected medicinal plants 27 species (54.45%), 8 species (17.02%) and 12 species (25.53%) used for human, animals and for both respectively.

Among the routes of administration of the medicinal plants, the most commonly used in the study area was the oral route and the most dominant ingredients the farmers and the traditional healers used in the present study was water . Of the 47 medicinal plants studied, 37 species (78.72%) were collected from the wild while 9 species (19.15%) were collected from home garden. This indicates that the practitioners depend on the would source or the natural environments rather than home gardens to obtain the medicinal plants, and the activity of cultivating the medicinal plants is poor the study area. However, from the study area the traditional healers had fears of medicinal threats due to extended dry time and termites problems. As a result some of the traditional healers made plant conservation activity for easy utilization as medicinal plants. According to Belayneh et al. (2012), the research conducted in Erer valley of Babile woreda , a total of 51 plant species traditionally having medicinal properties were identified. In similar study on medicinal plant of Meen people in south west Ethiopia 52 species of medicinal plants were reported (Abbink, 19993). Therefore, the number of plan species reported in this study is comparable with the above research. This finding is a good indicator for the presence of a considerable diversity of plant species in the area. Regarding the medicinal plant growth habit, shrubs were the most common and stood (first (23 species, 48.9%), followed by herbs(19, 40.4%) and trees(5 species, 10. 6%). Perceived morbidity is the main initiator for seeking healthcare. Regarding the health care options the over all, action taken for those reported illness was 43.3%, out of which 21.1% used herbal medicine and 19.4% modern medicine .like other previous study, this study showed that the burden of illness is less pronounced in males than females (Gedif, 1995).

When we see the extent use of traditional medicine, illiterate and older people have the tendency to use herbal medicine than literate and younger people respectively. A study conducted in rural Tanzania showed that age and education were the main factor that seemed to influence the, choice of health care (Satimial et al, 1998).

Extraction and phytochemical screening test were conducted at veterinary physiology and biochemistry laboratory of the college of veterinary medicine, Haramaya University. Among the 47 collected medicinal plants, 9 plants (Allium sativium, Vernonia amygladina, Recinus communis, Moringa olifera, Catha edulis, Foeniculum vulgare, Solanium incunum, Calpurnia aurea and Lantana camara) were selected for extraction and Valuation of phytochemical screening tests. Variation in yield among different

plant species in methanol extract was observed. The major secondary metabolites detected in plants were Tannins, whereas steroids were detected only in Moringa olifera and Foeniculum vulgarae. The lowest yields were recorded both in Solanium incanum(10%) and Lantana camara(10%) while the highest yield was observed in Catha eduli(27%). Generally, factors such as extraction procedure, solvent used for extraction, plant part used as starting material, temperature, and plant material to the solvent ratio affects the quality and quantity of a given extract(Ncube et al., 2008).

Among the 9 extracted medicinal plants, Allium sativium and Calpurnea aurea were tested for antihelimenthic efficacy. The presence of tannins, flavonoids and saponins in the phytochemical screening tests of the plant extract might re assure good antihelimenthic activity (Dahiru et al., 2005). Previous studies reported that methanol extraction of Calpurnia aurea has been used to treat diverse medicinal condition and parasitic infestation in animals. Similar study reported Calpurnia aurea crushed leaves is used for tick control (Regassa, 2000). It is also reported that in Ethiopia it is used in human to treat stomach disorder, internal parasites and eye disease (Abate, 1998).

Only 0.8% Allium sativium extracts inhabited eggs of nematodes, whereas in 0.4% and 0.2% motile larvae were observed. Previous study in Nigeria reported that Allium sativium was used in small ruminants, sheep and goats for treatment of worm infection or vermifuge (Nwude and Ibrahim, 1980). Similar study in India also reported that Allium sativium has potential effect to combat internal parasites, and its antihelimenthic activity is time and concentration dependent (Kumar, 2014).

Furthermore, a research conducted in Pakistan by Nadeem Badar(2011) showed that, Allium sativium bulbs extract had antihelimenthic activity on round worms in sheep (Iqbal et al., 2001). However, in Ethiopia the medicinal value of Allium sativium on animal was rarely studied. Recent study conducted in Gondar revealed that, Allium sativium had anti parasitic activity in human for internal parasites (Gebreselama and Mebratu, 2013).

Conclusions

In conclusion traditional healers in Haramaya district have sound ethno pharmacology knowledge and practice. Accordingly, the study enabled to document about 47 species of medicinal plants that have been used for treatment of many types of human and animal diseases in study area. In general, the current study tried to explore the species of plants, plant parts, growth forms, routes of administrations, solvents added, during preparation of the medicine and the type of ailments treated had been thoroughly presented. Besides, the phytochemical screening of 9 medicinal plants showed the presence of different secondary metabolites which conserve as a potential source of drugs. The result of in vitro anthelminthic assay of two plant species indicated the presence of some secondary metabolites having anthelminthic activity. Recommendations based on the conclusion are: Further in vitro and in vivo evaluation is warranted to make use of these plants; structural elucidation of the bioactive compounds should be performed; pharmacokinetics and pharmacodynamics of phytochemicals should be conducted and Further research is needed using advanced anthelmintic efficacy test methodology to understand mode of action under in vivo conditions.

Reference

Abate G and Demissew S (1989). Ethiopian traditional medicine, Addis Ababa University Press, Addis Ababa.

Abbink J (1993). Meen ritual, Medicinal and other plants:acontribution to south west Ethiopia Ethno botany. Journal of Ethiopia studies, 24: 1-20.

Akhtar MSZ, Iqbal MN, Khan and Lateef M (2000). Anthelmintic activity of medicinal plants with particular reference to their use in animals in Indo Pakistan subcontinent. Small Rumin Res 38: 99-107.

Alawa CBAM, Adamu JO, Gefu OJ, Ajannusi PA, Abdu NP, Chhiezey JN, Alawa and Bowma DD (2003). Invitro screening of two Nigerian medicinal plants (Vernonia amygdalina nd Annona senegalensis) for antihelmintic activity. Vet parasitol., 113: 73-81.

Al-Shaibani IRM, Phulan MS and Shiekh M (2009). Anthelmintic activity of Fumaria parviflora (Fumariaceae) against gastrointestinal nematodes of sheep. Int *J* Agric Biol., 11: 431-436.

Anokbonggo W (1992). The Role of African Traditional Medicine in Healthcare

Delivery alongside Modern Medicine. In: Plants used in African traditional medicine as practiced in Ethiopia and Uganda. Botany 2000. East and Central Africa. NAPRECA Monograph Series 2, 25-35. (Edwards, S., and Zemede Asfaweds). Published by NAPRECA, Addis Ababa University, Addis Ababa

Balick MJ (1996). Transforming Ethno botany for the new Millennium. Ann Missouri Bot. Garden 83: 58-66.

Belayne A, Asfew Z, Demissew S and Bussa N (2012). Medicinal plants potential and use by pastoral and agro pastoral communities in Erer valley of Babile woreda, Eastern Ethiopia. Journal of Ethno biology and Ethno medicine 8:42

Coles GC, Bauer C and Borgsteede FHM (1992). World Association for Advancement of Veterinary Parasitology (WAAVP) Methods for detection of anthelmintic resistance in nematodes of veterinary importance. Vet Parasitol 44: 35-44.

Cotton CM (1996). Ethnobotany: Principles and applications Chichester, New York: John Wiley and Sons Ltd.

Dahiru D, William ET and Nadro (2005). Protective effect of ziziphus mauritiana leaf extract on carbon tetrachloride induced liver injury. African J Biotechnol 4: 1177-1179.

Dawit A (1986). Traditional medicine in Ethiopia. The attempt being made to promote it for effective and better utilization. SINET: Ethiopian Journal of Scince 9: 61-69.

Debela H (2001). Use and Management of Traditional Medicinal Plants by Indigenous People of BoosatWoreda, Wolenchiti Area: An Ethnobotanical Approach. M.Sc. Thesis, Addis Ababa University.

Deeba FG, Muhammad, Iqbal Z and Hussain I (2009). Survey of ethno-veterinary practices used for different ailments in dairy animals in peri-urban areas of Faisalabad (Pakistan). Int J Agric Biol., 11: 535–541.

Doughari JH, Human IS, Bennade and Ndakidemi PA (2009). Phyto Chemicals as Chemotherapeutic agents and antioxidants. Possible solutions to the control of antibiotic resistance verocytotoxin producing bacteria. Journal of Medicinal Plants Research, 3(11): 839-848.

Fajimi AK and Taiwo AA (2004). Herbal remedies in animal parasitic disease in Nigeria. Afr J Biotech, 4 (4): 303–307.

FAO (2002). *Biological control in a global perspective, a view on emphesis on Duddingtonia flagrans.* Final Proceeding of FAO, Technical Cooperation Project in Malaysia.

Gebreselema G and Mebratu G (2013). Medicinal values of garlic: A review

Goyal P, Khanna A, Chauhan A, Chauna G and Kaushik P (2008). In vito evaluation of crude extracts of Catharanthus roseus for potential anti bacterial activity. Int J Green Pharm., 2: 176-81.

Handa SS, Khanuja SPS, Longo G and Rakesh DD (2008). Extraction technologies for medicinal and aromatic plants. Trieste: ICS UNIDO.

Haramaya District Agricultural and Development Bureau, (2007). Ethiopia.

Harborne JB (2007). Phytochemical methods, aguide to modern techniques of the plant analysis, 3rd ed, chapman and hall, London 16-32.

Hoff W (1995). Traditional practitioners as primary health care workers. WHO: Geneva: 141.

Iqbal Z, Akhtar M, Khan MN and Riaz M (1993). Prevalence and economic significance of haemonchosis in sheep and goats slaughtered at Faislabada abattoir. Pakistan J. Agri. Sci 30: 51-53.

Iqbal Z, Nadeem QK, Khan MN, Akhtar MS and Waraich FN (2001a). In vitro anthelmintic activity of Allium sativum, Zingiber officinale, Curcurbita mexicana andFicus religiosa. Int J Agric Biol., *3*: 454-457.

Jansen PCM (1981). Spices, Condiments and Medicinal plants in Ethiopia: Their Taxonomic and agricultural significance. Centre for agricultural publishing and documentation.

Kumar P and Singh DK (2014). In-vitro anthelmintic activity of Allium sativum, Ferulaasa foetida, Syzygium aromaticum and their active components against Fasciola gigantica. J. Biol. Earth. Sci. 4 (1): B57-B65.

Le Jambere LF (1976). Egg hatch as an invitro assay

of thiabendazole resistance in nematodes. Vet. parasitolo., 2: 385-391.

Lingarao M (2011). Savithramma N., Phytochemical studies of *Svensonia hyderobadensis* (Walp.) Mold – Arare medicinal plant, Der Pharm. Lett: 3: 51-55.

Martin GJ (1995). Ethnobotany: A Method Manual. Chapman and Hall, London, 267 pp.medicinal plants used in Ethno Veterinary practices in Uganda. African Journal of Natural Product Chemistry. England: John Wiley and Sons. pp 283-359. Sen, C.K. Oxygen toxicity and antioxidants: state of the art. *Indian Nwude, N. and Ibrahim, M.A. 1980.* Plants used in traditional veterinary medicinal practice in Nigeria. J vet pharm Ther., 3261-273.

Pankhurst R (2001). The status and availability of oral and written knowledge on traditional healthcare. In: Conservation and Sustainable Use of Medicinal Plants in Ethiopia Proceeding of The National Workshop on Biodiversity Conservation and Sustainable Use of Medicinal Plants in Ethiopia, 28 April 01 May 1998, pp.92 106 (Medhin Zewdu and Abebe Demissie eds.)

Perry BD and Randolph TF (1999). Improving the assessment of the economic impact of parasitic diseses and of their control in production animals. Vet. Parasitol., 84:145-165.

Perry BD, Randolph TF, McDermott JJ, Sones KR and Thornton PK (2002). Proceedings of a national workshop held in Addis Ababa, Ethiopia, 30 June-2

Regassa A (2000). The use of herbal prepations for tick control in western Ethiopia. J S Afr Vet Assoc. 71: 240-74.

Saddiqui HA, Iqbal Z, Khan MN and Muhammad G (2010). Comparative resistance of sheep breeds to Haemonchus contortusin a natural pasture infection. Int J Agric Biol., 12: 739-743.

Sandya B, Thomas S and Isabel W (2006). Ethnomedicinal plants used by the Valaiyan community of Piranmalai hills (reserved forest), Tamilnadu, India. Afr J Tradit Complement 3: 104–114.

Satimia F, McBride SR and Leppard B (1998). Prevalence of skin disease in rural Tanzania and factors influencing the choice of health care modern or traditional. Archives of Dermatology 134: 1363–1366.

Soulsby EJL (1982). Helmenthes, arthropods and protozoa of demosticated animals. Engloish Language Book Society, Baillere Tindall,London.

Sykes AR (1994). Parasitism and production in farm ruminants. Anim Prod 59: 155–172.

Ulah R, Hussain Z, Iqbal Z, Hussain J, Khan UF, Khan N, Muhammad Z, Ayaz Z and Ahmad S (2010). Traditional uses of medicinal plants in Dara Adam Khel NWFP Pakistan. J Med Plants Res., 17: 1815–1821.

Urga Kelbessa, Asefa Ayale and Guta Merga (2004). Traditional Medicine in Ethiopia.

Waller PJ (1999). International approaches to the concept of integrated control of nematode Parasites of livestock. Int J Parasitol., 29: 155-164.

WHO (2000). General guide lines for methodologies on and research and evaluation of traditional medicine: Geneva Switzerland, WHO EDM TRM 1: 1 –80.

******