

DIFFUSION OF INFORMATION/KNOWLEDGE FOR GROWING FOREST HERBS AMONGST TRADITIONAL HEALERS: A CASE OF TRADITIONAL HEALERS AT EKWENDENI, MALAWI

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Abstract

The study investigated knowledge sharing practices amongst traditional healers in Ekwendeni, a semi-urban area in Malawi. Findings which were arrived at by soliciting data using a questionnaire have shown that traditional healers have knowledge of different plant species of trees, herbs, shrubs and climbers. The traditional healers use roots, leaves, and barks of trees, fruits and seeds in treating patients. The study further revealed that traditional healers are mostly sharing their knowledge amongst family members mainly through demonstrating all the processes of how traditional medicine is prepared. Findings showed that the majority of traditional healers depend on private owned and customary forests as their main sources of medicinal plants. Roles that traditional healers undertake in forest conservation were uncovered and they include providing advice on forest conservation, cultivating their own gardens and discouraging practices that encourage extinction of medicinal plants. The major challenges that traditional healers face include travelling long distances to fetch medicinal plants, scarcity of medicinal plants, lack of proper storage of traditional medicine, colleagues not willing to share knowledge in their groups, loss of clients to modern medicine, lack of recognition by the government of Malawi and lack of protection of their tacit knowledge.

Keywords: Traditional medicine; Traditional healers; Deforestation; Knowledge sharing; Malawi

1. Introduction

The World Health Organisation (2002) explains that herbal medicine constitutes a large part of what is practiced as traditional medicine around the world. Recent statistics show that 80% of the people in developing countries depend on traditional medicine (Kurian 2010). In Africa, it is estimated that 90% of the people use traditional medicine to cure some ailments (Winkler *et al.* 2009). A high dependency rate on traditional medicine in most developing countries has been attributed to many factors such as high cost of modern medicine, increase in chronic diseases that have not been completely healed by modern drugs, and people's concerns about side effects of modern drugs (Hussain & Malik 2013).

Traditional medicine has also proved to be important in Agriculture where it is used to treat livestock diseases (Alyemeni, Sher & Wijaya 2010). These developments seem to suggest that there is a growing preference for traditional medicine at a global level. A study by Wintola & Afolayan (2010) in South Africa, reveals that traditional medicine continues to play a very important role curing diseases in primary health care system. Oliver's (2013) literature review findings showed that some health clinics in Australia provided traditional medicine as part of their primary health care services.

The increasing demand for traditional medicine is being negatively affected by deforestation which is a result of rapid human population growth. Rapid human population growth has led to deforestation which has consequently, culminated into human sufferings through floods, depletion of trees and herbs for traditional medicine and famine just to mention a few (Pachamama Alliance 2016). In Malawi, while deforestation has brought many challenges like flooding, drought, scarcity of wood for domestic use just to mention a few, it has ironically provided opportunities for traditional herbal growers in some parts of the country. For example, some traditional herbal growers in Malawi have embarked on growing medicinal plants which they sell at internal and external markets. Pharmacy shops in Malawi are increasingly selling processed herbal products which they buy from these traditional herbal growers. Newspapers and electronic reports are full of adverts for traditional herbs being sold to treat many ailments in Malawi. This study therefore investigates knowledge or information sharing amongst some traditional healers and the role they play towards forest conservation. Although there are several forms of traditional medicine (plant, animal and mineral-based medicines, spiritual or religious therapies and manual techniques), this study focusses on plant-based because these have a direct effect on deforestation and that they are the most used (Dlamini & Geldenhuys 2011; Jiofack, Ayissi, Fokunang, Guedje & Kemeuze 2009).

2. Context of the study

The Malawi National Statistical Office (2011) describes Malawi as a sub-Saharan African country located south of the equator with a human population of slightly above 14 million. It is bordered to the north and northeast by the United Republic of Tanzania; to the east, south, and southwest by the People's Republic of Mozambique; and to the west and northwest by the Republic of Zambia. Malawi is one of the world's poorest countries, ranking 170 out of 182 countries on the United Nations Development Programme Human Development report (2013). Progress towards reaching the Millennium Development Goal of eradicating extreme poverty has been limited. According to the UNDP Human Development Report (2013, 120), about 74 per cent of the population still lives below the income poverty line of US\$1.25 a day and 90 per cent below the US\$2 a day threshold. The economy of Malawi is based primarily on agriculture, which accounts for 30 percent of the gross domestic product (GDP). The country's major exports are tobacco, tea, and sugar which combined, account for approximately 85 percent of Malawi's domestic exports.

Ekwendeni is semi-urban area found to the Northern Region of Malawi in Mzimba District, North of Mzuzu City. It is located 20km away from Mzuzu City. The main economic activity of the people found at Ekwendeni is subsistence farming. Ekwendeni Township is surrounded by customary and private owned forests, which are main sources for traditional medicines of traditional healers. The customary forests are owned by local chiefs while private owned forests are owned by leased estate owners. These forests do not have rules as compared to the public forests where government restrict access. Lack of rules which govern the forests can make them prone to deforestation which can eventually, lead to extinction of medicinal plants

3. Statement of the problem

It is a well-known fact that traditional medicine has been accepted alongside modern medicine to treat diseases in primary health care across the globe in modern times (Kurian 2010). Furthermore the global market for traditional medicine grew to 83 billion US dollars in 2012 and future projection anticipates that by 2020 the market will grow to 115 billion US dollars (Rinaldi & Shetty 2015). In Malawi, traditional medicine has also been widely accepted by the Government as a development issue for the growth of its economy (Malawi Growth and Development Strategy 2012). African Technology Policy Studies Network, ATPS (2013) points out that “Traditional healers are an integral part of the local culture and are appreciated as key and sustainable sources of care and knowledge on disease and illness”. Given the situation, one would expect traditional healers in Malawi to exploit the economic advantage of traditional medicine by growing various herbal plants. However, it seems that traditional healers in Malawi including those in Ekwendeni have not embarked on full scale planting of medicinal plants as one way of sustaining their businesses in traditional medicine. This has seemingly exerted pressure on suppliers of traditional medicines who have in turn led to the depletion of natural forests where they get most of their medicinal plants. This poses a great risk of increasing deforestation which is consequently, slowly leading to the extinction of traditional medicinal plants. The study therefore sought to find out diffusion of information/knowledge for growing forest herbs amongst traditional healers in Ekwendeni in Mzimba North, Malawi. Specifically, the study achieves the following research objectives:

- the type of knowledge that traditional healers possess about traditional medicine;
- the techniques employed by traditional healers in sharing their knowledge about traditional medicine;
- the role of traditional healers in forest conservation; and
- Challenges that traditional healers face in sharing knowledge about their traditional medicine.

4. Literature Review

The World Health Organization, WHO (2015) defines traditional medicine as “the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses.” In other words, traditional medicines comprise of plant, animal and mineral-based medicines, spiritual or religious therapies and manual techniques designed to treat illnesses (WHO 2003). The traditional medicines are vital to local cultures for a number of reasons which among them are healing from diseases, source of income for people when sold and providing cultural identity for each and every local community. For the sake of this literature review, studies about medicinal plants will be reviewed as they are the mostly valued of all traditional medicine. According to Dlamini and Geldenhuys (2011:738) “natural forests and woodlands remain a highly valued source of natural medicines, which are essential components of health treatments”. Themes covered include type of knowledge that traditional healers possess about traditional medicine, techniques employed by traditional healers in sharing their knowledge about traditional medicine, the role of traditional healers in forest conservation and, the challenges that traditional healers face in sharing knowledge about their traditional medicine.

4.1 Knowledge traditional healers possess about traditional medicine

Murad, Ahmad, Gilani and Ajab (2011) did a study in Pakistan and found that traditional healers had knowledge of plant species of which 27 (36%) were trees, 24 (32%) were shrubs, 21 (28%) were herbs and 3 (3%) were climbers. From these species, parts such as leaves, stems, flowers, bark of trees, root fruits, and seeds were utilised by the traditional healers. The study also found out that the inhabitants of the area had very poor or had no or insufficient knowledge about proper time of collection, preservation and storage of medicinal plants. Semanya, Potieger, Erasmus (2013) conducted a study in Limpopo in South Africa among traditional healers using semi-structured questionnaire on the medicinal plants used in the treatment and management of HIV and AIDS. Findings from this study revealed that 96.1% of the medicinal plant species used were indigenous and also that 3.9% were planted species. The study further showed that 60 percent of the traditional healers had no knowledge of side effects of their drugs while 40 percent indicated to have heard about side effects from their clients such as dysentery, vomiting and upset stomach. In Malawi, Fassil's (2004) study found that the custodians of knowledge of medicinal plants are mostly women. However, these studies have not looked at the knowledge of how traditional healers can plant their own medicinal plants to sustain the forests.

4.2 Knowledge sharing amongst traditional healers

According to the literature, the most main technique of knowledge sharing amongst traditional healers is from parents to selected family members. The study of Yirga (2010) conducted in Ethiopia indicates that there is poor transfer of knowledge about traditional medicine among traditional healers among the selected few of the family members. In this study, it was found that the majority 69 % of the traditional healers transferred their knowledge verbally, while 23% through showing the medicinal plant species in the field and 8% of the traditional healers did a demonstration of all processes for the preparation of traditional medicines. Adjemian's (2008) study in Zambia also found out that the main method sharing knowledge among traditional healers is through oral means and in particular, interested children in the family. Oliver's (2013) study found out that knowledge sharing among Aboriginal people of Australia was through story telling or songs which are passed on from generation to generation among same family members and not to outsiders. The World Health Organisation (2013) also explains that the main technique of sharing information in traditional medicine is through oral method. However, there is still dearth of literature as regards to how knowledge sharing is done in a group and also the type of information shared.

4.3 Role of traditional healers in forest conservation

Realising the important role of promoting conservation of traditional medicinal plants, the Republic of Congo and Mali are cultivating medicinal plants while Cameroon, Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Senegal, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe are involved in cultivation of *Artemisia Annuua* for Malaria (Kasilo, Trapsida, Mwikisa & Lusamba-Dikassa 2010). The study by the ATPS (2013) highlighted conserving of traditional medicine through cultivation and establishment of herbal gardens. Murad *et al.* (2011) noted from their study that traditional healers' actions such as uprooting herbs, cutting shrubs and large trees as factors that encourage extinction of traditional medicinal plants. The study recommended that local people (traditional healers) need to be encouraged through awareness and cultivation of medicinal plants. Birhanu and Abera (2015) have reported that some traditional healers are growing herbs in their own homes. In Malawi, a study by Fassil

(2004) recommended that Malawi Social Action Fund should encourage traditional healers to plant their own medicinal plants as one way of encouraging sustainability of the medicinal plants in Malawi. One can easily conclude that all these studies are just making recommendations and not giving findings about the role traditional leaders have taken in implementing conservation strategies about medicinal plants. Adjemian (2008) conducted a study in Zambia and found out that although there was rapid deforestation, medicinal plants were not affected. The reasons cited for this are that medicinal herbs regenerate quickly in cleared areas. The majority of these findings are in agreement with the fact that deforestation has an impact on the extinction of medicinal plants.

4.4 Challenges faced by traditional healers

Mural et al.'s (2011) study has indicated challenges such as lack of proper places for storing harvested medicinal plants and collecting medicinal plants from remote forests by walking long distances. Birhanu and Abera (2015) study also indicated agricultural expansion, deforestation, and overgrazing of animals as part of the threats to traditional medicine in Ethiopia. Yirga (2010) finds that traditional healers transferred their knowledge to some family members while 50% kept their knowledge themselves and 16.7% do not transfer at all. Oliver's (2013) study found that another challenge that traditional healers face is that of failing to share knowledge to outsiders due to cultural reasons and mistrust regarding to how knowledge will be used when shared.

5. Methodology

The study used social survey method as it sought opinions held by traditional healers and their practice of activities in relation to the environment. According to Kothari (2004:120) a survey is "concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident or trends that are developing." The study targeted 30 registered traditional healers who belong to Muthuwo Traditional Healers Group from the surrounding villages in Ekwendeni. The respondents and study site were chosen purposively which according to Tongco (2007:147) "purposive sampling technique is a type of non-probability sampling that is most effective when one needs to study a certain cultural domain with knowledgeable experts within". Data was collected through questionnaires which were quantitative in nature as it mostly comprised closed ended questions. This questionnaire had five sections comprising biodata and four objectives. The questionnaire gathered both open and closed ended questions to gather information from respondents. Data was analysed manually and processed using Microsoft Word. The researchers sought permission from the Director of Research at Mzuzu University to carry out the study at Ekwendeni. Furthermore, this paper adopted some traditional medicine ethical issues as stipulated by Emanuel, Wendler and Grady (2000) such as seeking informed consent and respect for enrolled subjects.

6. Results and Discussions

In all, a questionnaire was sent to 30 thirty respondents of whom 21 responded. The majority of the respondents in this survey were males (13) and there were eight females. These findings contradict the findings of Fassil (2004) whose findings indicated that there are more female traditional healers than men. The majority of respondents (19) went through the primary education level while only two had secondary education certificate and none had attended tertiary education.

6.1 Knowledge of traditional healers about traditional medicine

Traditional healers were asked to indicate medicinal plant species they use in treating people. Respondents' multiple responses from the options provided in the questionnaire indicated that 19 of the respondents used tree species and herbs while 18 responses indicated they used climbers and 10 respondents used shrubs. A follow up question was posed to know parts of the plants which are used in treating diseases. Multiple responses also showed that 20 respondents used roots and 18 respondents used barks of trees. Some respondents also used flowers and seeds. These findings concur with the findings of Murad, Ahmad, Gilani, and Ajab's (2011) study in Pakistan which found that traditional healers had knowledge of different plant species such as trees, shrubs, herbs and climbers. Murad *et al.*'s findings also showed that different parts from these species such as leaves, stems, flowers, barks of trees, roots, fruits, and seeds were utilized by traditional healers.

6.2 Knowledge sharing amongst traditional healers

Respondents were asked to indicate a way that they use in sharing knowledge about traditional medicine. From multiple responses that were given, 20 respondents indicated that they share knowledge by demonstrating to the learners all the processes of traditional medicine while 18 respondents indicated that they just showed learners without demonstrating, 10 respondents indicated sharing their knowledge verbally. The least used method of sharing knowledge in this study was through groups where eight respondents indicated that they share knowledge using this method. The findings are in contrast to the findings of Yirga (2010) who found out that the majority of traditional healers in Ethiopia shared their knowledge verbally with demonstration being a main sharing technique of knowledge among traditional healers.

6.3 Role of traditional healers in forest conservation

Respondents were asked to indicate the type of forest where they get their traditional medicine. All 21 respondents indicated that they get medicinal plants from private forests belonging to leased estate owners while 19 respondents indicated that they get their medicinal plants from customary forests and three respondents indicated that they get from their own gardens. A follow-up question required traditional healers to indicate if they knew some harmful practices that lead to the extinction of medicinal plants. Results showed that all 21 respondents indicated that uprooting herbs was a major malpractice that could lead to extinction of medicinal plants while 16 respondents felt that cutting shrubs is also another major way of causing extinction to medicinal plants. The findings showed that very few respondents perceived that cutting large trees for traditional medicine contributed to extinction of forest herbs.

The researchers further found out the role of traditional healers in conserving and sustaining the forests from which they source their medicinal plants. Twenty one respondents indicated that giving advice in conserving forest is a major role they play whereas 14 respondents, said that traditional healers can sustain medicinal plants by cultivating their own gardens. Eight respondents said were involved in discouraging practices that lead to extinction of medicinal plants and replacing herbs. The findings support findings and recommendations by Fassil (2004) who made recommendations to Malawi Social Action Fund to encourage traditional healers to plant their own medicinal plants as one way of encouraging sustainability of the medicinal plants in Malawi.

6.4 Challenges faced by traditional healers

As depicted in Table 1, the majority of traditional healers felt that their main challenges were travelling long distance to gather traditional medicine, insufficient knowledge about preservation and storage of medicinal plants, unwillingness of some traditional healers to share knowledge with others, loss of clients to modern medicine, lack of recognition by government and lack of protection of traditional healers knowledge were identified as major challenges. Similar results about these challenges have been reported before in other countries (see Oliver 2013).

Challenge	Responses
Long distance to get medicinal plants	20
Scarcity of medicinal plants due to extinction	17
The new generation does not appreciate the role of traditional medicine	3
Insufficient knowledge about preservation and storage of medicinal plants	1
Some traditional healers do are not willing to share knowledge with others	16
We are losing our clients to modern medicine	16
Lack of recognition by Government	16
Lack of protection of our local knowledge	16
Our knowledge is not captured (tacit) and it is difficult to share	2

Table 1 Challenges faced by traditional healers

7. Conclusion

The study has established that traditional healers in Ekwendeni are endowed with knowledge of traditional medicine from different species and various parts of those species. Furthermore, it has been established that traditional healers are sharing their knowledge through different techniques but key among them is demonstration of traditional medicine plants to the young generation. The study has established that many traditional healers get traditional medicine from both private forests and customary forests and very few have private herbal gardens. Apart from being aware of practices that can lead to extinction of forest medicinal plants, traditional healers are also able to provide advice to each other for conserving forests. Despite this being the case, traditional healers in Ekwendeni have not been spared from the consequences of deforestation as evidenced by movement of long distances to gather traditional medicines which were once obtained in nearby forests. Notwithstanding this, traditional healers lament scarcity of medicinal plants, lack of knowledge about proper storage of modern medicine, colleagues not willing to share knowledge in their groups, loss of clients to traditional medicine, lack of recognition by the Government of Malawi and lack of protection of their tacit knowledge. The study therefore recommends the need to encourage traditional healers to plant their own medicinal plants in their own herbal gardens which will reduce distances they walk to get medicinal plants for their businesses but can also help in mitigating deforestation.

References

- Adjemian, M. (2008) *Medicine from the forest: The impact of deforestation on medicinal plant availability and use in the Bilili Game Management Area, Southern Zambia*. Montreal: McGill University (Master thesis)
- African Technology Policy Studies Network, ATPS 2013: *Appropriate Protection, Promotion and Access to Benefit-Sharing of Traditional Herbal Medicinal Knowledge in Uganda* [Wanakwakwa J., Munabi C., Lwanga H., Muhumuza J., Gateese T.], ATPS WORKING PAPER No. 69
- Alyemeni, M.N., Sher, H., & Wijaya, L. (2010) *Some observations on Saudi medicinal plants of veterinary importance*. Journal of Medicinal Plants Research Vol. 4(21), pp. 2298-2304. <http://www.academicjournals.org/JMPR> DOI: 10.5897/JMPR10.555
- Birhanu, T., and Abera, D. (2015) *Survey of ethno-veterinary medicinal plants at selected Horro Gudurru Districts, Western Ethiopia*. African Journal of Plant Science Vol. 9(3), pp. 185-192. <http://www.academicjournals.org/AJPS> DOI: 10.5897/AJPS2014.1229
- Dlamini, C.S., and Geldenhuys, C.J. (2011) *Quantities and values of selected forest medicines harvested by eight villages adjacent to natural woodlands in the four ecological zones of rural Swaziland*. African Journal of Plant Science Vol. 5(12), pp. 730-741, 27 October, 2011 Available online at <http://www.academicjournals.org/AJPS>
- Emanuel EJ, Wendler D, Grady C. *What makes clinical research ethical?* JAMA 2000;283:2701-2711
- Fassil, H. (2004) *Building on traditional medicinal plant knowledge and home-based health care efforts in Rural Malawi*. <http://www.worldbank.org/afr/ik/default.htm>
- Fonge, B. A., Egbe, E. A., Fongod A. G., Nfocho, D. A., Tchetcha, D. J., Nkembi, L. a& Tacham W. N. (2012) *Ethnobotany survey and uses of plants in the Lewoh- Lebang communities in the Lebialem highlands, South West Region, Cameroon*. Journal of Medicinal Plants Research Vol. 6(5), pp. 855-865, 9 February, 2012. <http://www.academicjournals.org/JMPR> DOI: 10.5897/JMPR11.1494
- Fongod A. G. N., Ngoh L. M., & Veranso M. C. (2011) *Ethnobotany, indigenous knowledge and unconscious preservation of the environment: An evaluation of indigenous knowledge in South and Southwest Regions of Cameroon*. Journal of Medicinal Plants Research Vol. 5(7), pp. 1072-1086. <http://www.academicjournals.org/JMPR>
- Jiofack, T. Ayissi, I., C. Fokunang, C., Guedje N & Kemeuze, V. (2009) *Ethnobotany and phytochemistry of the upper Nyong valley forest in Cameroon*. African Journal of Pharmacy and Pharmacology Vol. 3(4). pp. 144-150. <http://www.academicjournals.org/ajpp>
- Kasilo, O.M.J., Trapsida, J., Chris Ngenda Mwikisa, C.N. & Lusamba-Dikassa, P.S. (2010) *An overview of the traditional Medicine Situation in the African Region*. Retrieved from: <http://www.who.int/sites/default/files/ahm/reports/32/ahm-13-special-issue-pages-7to15.pdf>
- Kothari, C.R. (2004) *Research methodology: methods and techniques*. New Delhi: New age International (P) Limited Publishers
- Kurian, J. (2010) *Healing wonders of plants*. Lusaka: Zambia Adventist Press

Malawi Government (2012) *Malawi Growth and Development Strategy II 2011 -2016*. Lilongwe: Ministry of Finance and Economic Planning

Murad, W; Ahmad, A; Gilani, S; Khan, S (2011) *Indigenous knowledge and folk use of medicinal plants by the tribal communities of Hazar Nao Forest, Malakand District, North Pakistan*. Journal of Medicinal Plants Research Vol. 5(7), pp.1072-1086. <http://www.academicjournals.org/JMPR>

Oliver, S.J. (2013) *The role of traditional medicine practice in primary health care within Aboriginal Australia: a literature review*. Oliver Journal of Ethnobiology and Ethnomedicine 2013, 9:46 <http://www.ethnobiomed.com/content/9/1/46>

Pachamama Alliance (2016) *Effects of deforestation*. Retrieved from <http://www.pachamama.org/effects-of-deforestation>

Rinaldi, A & Shetty, P (2015) *Traditional medicine for modern times: Facts and figures* Retrieved from <http://www.scidev.net/global/medicine/feature/traditional-medicine-modern-times-facts-figures.html>

Semenya, S; Potgieter, M; & Erasmus, L (2013) Ethnobotanical survey of medicinal plants used by Bapedi traditional healers to manage HIV/AIDS in the Limpopo Province, South Africa. Journal of Medicinal Plants Research Vol. 7(8), pp. 434-441. <http://www.academicjournals.org/JMPRDOI:10.5897/JMPR012.727>

Shahzad Hussain, S. & Malik, F. (2013) *Integration of complementary and traditional medicines in public health care systems: Challenges and methodology*. Journal of Medicinal Plant Research Vol. 7(40), pp. 2952-2959. <http://www.academicjournals.org/JMPR> DOI: 10.5897/JMPR12.458

Tongco, M.D.C. (2007) *Purposive sampling as a tool for informant selection*. Ethnobotany Research & Applications 5:147-158 <http://hdl.handle.net/10125/227>

WHO (2002) *WHO Traditional Medicine Strategy 2002–2005*. Retrieved from http://www.wpro.who.int/health_technology/book_who_traditional_medicine_strategy_2002_2005.pdf

WHO (2003) “*Fact Sheet No. 134: Traditional Medicine*,” (May 2003), Retrieved from <http://www.who.int/mediacentre/factsheets/2003/fs134/en/>.

WHO (2012) “*Traditional Medicine: Definitions*”, WHO/EDM/TRM/2000.1. Retrieved from <http://www.who.int/medicines/areas/traditional/definitions/en/>

Winkler, A.S., Mayer, M., Ombay, M., Mathias, B., Schmutzhard, E., & Jilek-Aall, L. *Attitudes towards African traditional medicine and Christian spiritual healing regarding treatment of epilepsy in a rural community of northern Tanzania*. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3021156/pdf/AJTCAM0702-0162.pdf>

Woods, M. (2011) *Interviewing for research and analysing qualitative data: an overview*. Retrieved from <http://owll.massey.ac.nz/pdf/interviewing-for-research-and-analysing-qualitative-data.pdf>

Yirga, G (2010) *Assessment of indigenous knowledge of medicinal plants in Central Zone of Tigray, Northern Ethiopia*. African Journal of Plant Science Vol. 4(1), pp. 006-011. <http://www.academicjournals.org/AJPS>

Yirga, G (2010) *Assessment of indigenous knowledge of medicinal plants in Central Zone of Tigray, Northern Ethiopia*. African Journal of Plant Science Vol. 4(1), pp. 006-011. <http://www.academicjournals.org/A>