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Medicinal properties of *Ximenia*; Lessons from the traditional healers in Oshikoto region, Namibia

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Abstract

Ximenia is an important indigenous plant in many countries and used often in herbal preparations by traditional healers. The plant is claimed to possess medicinal properties and is used in the treatment of different ailments and diseases. The aim of this study is to report some of the medicinal properties of *Ximenia* used by traditional healers in Oshikoto region. An ethnobotanical survey was undertaken to collect information from traditional healers on their use of medicinal plants in the traditional healing system. It was found that *Ximenia* is the most frequently used medicinal plant. A total of 47 respondents were interviewed; most of them were at the age of 66 years and above. The traditional healers in Oshikoto region use *X. americana* and *X. caffra* to treat various diseases and disorders such as Gonorrhoea, Culture Bound Syndrome (CBS), Impotency and Scoliosis. Both forms of the plant status (fresh and dry) were used during the medicinal preparations. Roots are the most used parts in the treatment. The average of the fidelity level (FL) of the both species for all ailments was 33.33% with the highest FL for *X. caffra* to treat CBS of 66.66%. This study is confirming the potential value of using *Ximenia* species in traditional medicinal remedies in Oshikoto region in Namibia.

Keywords: *Ximenia*; ethnobotanical survey; indigenous knowledge; traditional healing.

1. Introduction

According to the World Health Organisation (WHO), medicinal plants have been the main source of natural products and drug development (Voss et al. 2006; James et al. 2007; Maikai, 2010). The traditional medicine is the source of primary health care and the traditional healers and remedies made from plants play an important role in the health of millions of people in Africa (Rukangira, 2001). *Ximenia* has been used in African traditional remedies for a long time, this genus *Ximenia* belongs to the Olacaceae or hog-plum family. It grows widely in the tropical and temperate regions of the world. The most common species, *Ximenia americana* and *Ximenia caffra*; are found in the tropical regions of America, Africa and Asia (Verdoorn, 1938).

The most common species are *Ximenia americana* and *Ximenia caffra* which occur in the northern regions of Namibia. Both species occur in West Caprivi (Curtis and Mannheimer 2005) with abundance twice for *X. americana* as the abundant for *X. caffra* (Burke, 2009). *X. americana* has received more attention *X. caffra*. *X. americana* or “Wild plum” in English or “Tsada” in Hausa or “Chabbuli” in Fulani and “Kakukuru” and “Ompeke” for *X. caffra* in Oshiwambo is a bushy and spiny shrub, 4 - 5m high with an open crown. The fruits are green but turn golden yellow or red. The plant is claimed to possess medicinal properties for treatment of fever, jaundice, stiffness, onchocerciasis, sore throat, asthma, headaches and impotence (Arbonnier, 2004; Maikai, 2010). The aqueous extract of this plant has been shown to possess anticancer activity (Voss et al. 2006). Different parts of the plant have been reported to contain varying amounts of antioxidant and phytochemical compounds. The stem bark has been reported to contain varying amounts of alkaloids, tannins, Flavonoids, saponnins and cardiac glycosides (Maikai et al. 2008). The aim of this study is to report on the medicinal properties of *Ximenia* used by the traditional healers in the Oshikoto region of Namibia.

2. Material and Methods

2.1. Study site

Oshikoto region was selected because of its diversity of the cultures such as the San, Owambo, Damara>Nama, and Ova Herero inhabiting that region (Fig. 1).

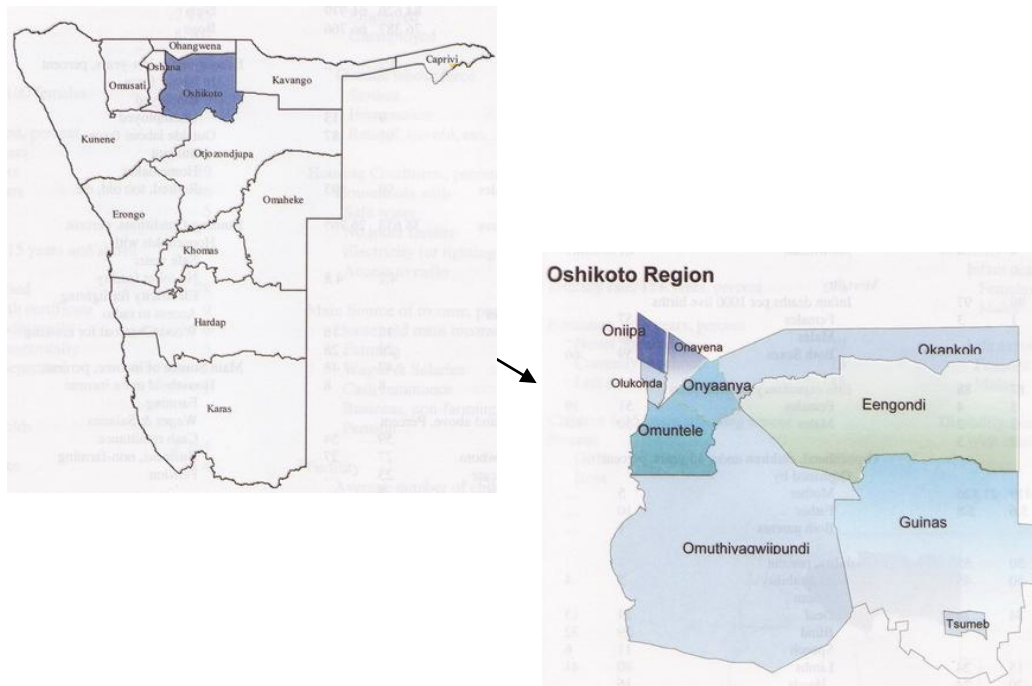


Fig. 1 Map of the study area showing Namibia and Oshikoto region

2.2. Ethnobotanical study

The study is mainly focussed on the existing indigenous knowledge on the *Ximenia* plants by traditional healers in Oshikoto region. The research team covered Oniipa, Onyaanya, Onayena, Olukonda and Omuntele constituencies during September 2008, and Okankolo, Engodi, Genius, Omuthiya and Tsumeb constituencies during October 2008. Questionnaires were designed to collect medicinal plants knowledge of traditional healers and were mainly focused on common local name, indigenous knowledge use(s), mode of preparation, parts of the plants used, the methods of their preparation and administration, and types of treated diseases with these medicinal plants.

2.3. The fidelity level (FL) of the *Ximenia* species

The fidelity level (FL), the percentage of informants claiming the use of a certain plant for the same major purpose, was calculated for the most frequently reported diseases or ailments as following:

$$FL (\%) = N_p/N \times 100$$

Where N_p is the number of informants that claim a use of a plant species to treat a particular disease, and N is the number of informants that use the plants as a medicine to treat any given disease (Giday et al., 2009; Teklehaymanot, 2009). Prior to the calculation of FL, reported ailments were grouped into major disease categories following the approach of Heinrich et al (1998). Generally; plants which are used in some repetitive fashion are more likely to be biologically active (Trotter and Logan, 1986)

3. Results and Discussion

3.1. Ethnobotanical findings

Ximenia has been observed to be the most frequently used medicinal plant among traditional healers. A total of 47 informants were interviewed; most of them; of the age of 66 years and above. Only informants with a traditional knowledge of useful medicinal plants, mostly either native born or had been living in the region for long time were interviewed since the medicinal plants knowledge is acquired through time in which it takes long time for the traditional healers to acquire the indigenous knowledge (Shapi et al. 2009). The traditional healers have used *X. americana* and *X. caffra* to treat various diseases and disorders such as “Lindongo”: Gonorrhea; “Mukayo”: Culture bound syndrome (CBS); “Uuta”: Impotency and “Ondjaba”: Scoliosis (Table 1).

Table 1 Various ailments cured by *Ximenia* species in Oshikoto region, Namibia

Ailment	Scientific name	Local name	Parts used	Status of use (dry, fresh)	Time of recovery
Culture bound syndrome	<i>X. caffra</i>	Ompeke	Roots	Fresh and dry	2-3 days
	<i>X. americana</i>	Kakukuru			
Gonorrhoea	<i>X. americana</i>	Kakukuru	Roots, barks	Fresh and dry	2 -7days
	<i>X. caffra</i>	Ompeke			
Impotent	<i>X. caffra</i>	Ompeke	Roots	Fresh and dry	1 day
Scoliosis	<i>X. americana</i>	Kakukuru	Roots, leaves	Fresh	1 week

Both forms of the plants status (fresh and dry) were used during the plants preparations. Roots were the most frequently used parts in the treatment of diseases (Table 1); this result is in agreement with Ake and Guinko (1991) who reported that the roots of *Ximenia* are normally used for treating abdominal pains, dysentery, inflamed joints and mouth ulcers. Other ailments such as: skin aches and problems, headaches, leprosy, hemorrhoids, sexually transmitted diseases, guinea worm, sleeping thickness, oedema and antidote to poison have been treated by *X. americana* roots (Teo, 1997). Chest ailments have been treated with decoction root of the *X. caffra* by the San people in farm six in northern Namibia (Dan et al, 2010).

Leaves of *Ximenia* plant (*X. americana*) in combination with roots are used for the treatment of Scoliosis. This result is in agreement with the study of Omer and Ali (1998) who reported on the use of the leaves and twigs of *Ximenia* plant for fever, cold, as mouth wash for tooth aches, as laxative and an eye lotion. The leaves are used for headaches and poison antidote (Feiberger and Vanderjagt, 1998). The indigenous uses of the *X. americana* leaves is due to the presence of phytochemical active components such as: saponins, cyanogenic glycosides, flavonoids, and tannins (Ogunleye and Ibitoye, 2003).

The third plant part used were the barks in the treatment of Gonorrhoea; *X. americana* stem barks aqueous crude extract of may have hepatotoxic effects and could not have any toxic effect on the kidney (Wurochekke et al. 2008). Maikai et al. (2007) reported that the stem bark of the *X. americana* has trypanocidal activity. The stem bark of *Ximenia americana* extracts had show also an in-vitro and in vivo anti-trypanosomal activity (Maikai, 2010). Other parts of *Ximenia* have been reported in the traditional healing system for the San people in farm six in northern Namibia (Dan et al, 2010); the seed kernels of *X. americana* are roasted and used as a remedy for flu in children and wounds healing. The roasted seeds are crushed and applied directly to the wound. In the same manner; the kernels of *X. caffra* are used for preparing a valued ointment for healing wounds (Dan et al, 2010).

3.2. Fidelity levels and treated ailments

The average of the fidelity level (FL) of the both species for all ailments was 33.33% with the highest FL for *X. caffra* to treat CBS of 66.66% (Table 2). Generally; plants which are used in some repetitive fashion are more likely to be biologically active (Trotter and Logan, 1986).

Table 2 Fidelity level values of *Ximения* cited by informants used against a given ailment

Medicinal plant	Local name	Therapeutic uses	Number of Informants	FL value (%)
<i>Ximения caffra</i>	Ompeke	Gonorrhoea, Culture bound syndrome, impotent	6	66.66
<i>Ximения americanum</i>	Kakukuru	Gonorrhoea, Culture bound syndrome, Scoliosis	4	50.00

3.3. Treatment mode

The traditional healers prescribed their *Ximения* based treatment either on single plant use like the remedies for Scoliosis, or using combination of different plants combined with *Ximения* as it was prescribed for CBS, impotency and gonorrhoea (Table 1). Similar results were also reported in various studies conducted in different countries (Upadhyay et al. 2007; Teklehaymanot, 2009; Panghal et al. 2010; Uprety et al. 2010).

Conclusion

This study is showing the precious value of *Ximения* species in traditional medicinal preparations in Oshikoto region in Namibia, the two species of *Ximения* roots have been used in the treatment of many ailments and diseases such as: Gonorrhoea, CBS, Impotency and Scoliosis. *Ximения* has high potential for economic development and strengthening the *Ximения* uses in traditional healing system in Namibia.

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