Chapter 2

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Ethnobotanical Study of Plants Used for the Treatment of Diarrhoea in the Eastern Cape, South Africa

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Abstract: An ethnobotanical study of plants used for the treatment of diarrhoea in the Eastern Cape Province, South Africa was carried out, using a questionnaire which was administered to herbalists, traditional healers and rural dwellers. Information collected revealed the names of plants used for the treatment of diarrhoea, the parts used and the methods of preparation. This survey indicated a total of 17 plant species from 14 families used in the Province. *Elephantorrhiza elephantina*, *Hermannia incana*, *Pelargonium reniforme*, *Alepidea amatymbica* and *Bulbine latifolia* were the most frequently mentioned and highly recommended plants for the treatment of diarrhoea by both the traditional healers and rural dwellers. Roots, bark and leaves are the common parts of plants used, while decoctions and infusions are the main methods of preparation.

Key words: Medicinal plants, herbalists, traditional healers, ethnobotany, diarrhoea

INTRODUCTION

Diarrhoea is one of the leading causes of morbidity and mortality in developing countries. It is most commonly caused by gastrointestinal infections and kills around 4.6 million people, including 2.5 million children, every year (Thapar and Sanderson, 2004). Diarrhoea is the passage of watery stools, usually at least three times in a 24 h period. The main cause of death from diarrhoea is dehydration, which results from the loss of electrolytes in diarrhoeal stools. Cholera and dysentery are severe, sometimes life threatening forms of diarrhoea (Thapar and Sanderson, 2004). The use of clean potable water is an important preventive measure against the disease. In South Africa, with its mix of developed and developing regions, 9.7 million people do not have access to adequate water supply and 16 million lack proper sanitation services (Kahinda *et al*., 2007). It is estimated that about 1.5 million cases of diarrhoea in children under the age of 5 are reported annually (DWAF, 2001) and about 43,000 South Africans die every year from diarrhoeal disease while the annual public and private direct health care cost incurred due to diarrhoea alone is $ 4.3 million (Pegram *et al*., 1998).

Medicinal plants have proven to be an abundant source of biologically active compounds. About 80% of people in developing countries use traditional medicines for their health care (Kim, 2005), including the treatment of diarrhoea. Continuous usage of traditional medicine by a large proportion of the population in developing countries is largely due to the high cost of Western medications and healthcare. It is therefore important to identify and evaluate the safety and efficacy of available natural medications as alternatives to currently used anti-diarrhoeal drugs. Plant extracts are known to have antispasmodic effects, delay gastrointestinal transit, suppress gut motility, stimulate water adsorption or reduce electrolyte secretion (Palombo, 2006). All these activities may explain the benefits of using certain plants in the treatment of diarrhoeal disease. The use of herbal drugs in the treatment of various infections is a common practice in South Africa. An estimated three million people in South Africa are currently using indigenous, traditional plant medicine for primary health care purposes (Van Wyk and Gericke, 2000), hence a range of medicinal plants with antimicrobial properties has been widely used by the traditional healers in the Eastern Cape. The people of this province have a long history of traditional medicine usage for the treatment of various infections, diseases and ailments (Van Wyk *et al*., 1997). The present study reports the local and scientific names of the plants used for the treatment of diarrhoea in this province as well as the parts of the plants used and the various methods of preparation and administration.

Similar ethnobotanical studies have been reported in another part of South Africa (Lin *et al*., 2002; Mathabe *et al*., 2006) and some other part of the world (Mukherjee *et al*., 1998; Rahman *et al*., 2003).

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MATERIALS AND METHODS

Information for this study was collected in June 2007 through scientifically guided questionnaires, interviews and general conversations from the herbalists and rural dwellers in the Eastern Cape Province. The study area falls within the latitudes 30°00'-34°15'S and longitudes 22°45'- 30°15'E. It is bounded by the sea in the East and the drier Karroo (semi-desert vegetation) in the West. The elevation ranges from sea-level to approximately 2200 m in the North and the vegetation is veld type 7, known as the Eastern Cape thorn veld (Masika and Afolayan, 2003). This area consists of many villages which are generally classified as rural and poor.

During this survey some of the plants implicated in the treatment of diarrhoea were obtained directly from the healers and herbalists, while others were collected during walk through the forest accompanied by traditional healers and rural dwellers. The plants were initially identified by their vernacular names through consultations with the local people. The information collected included local names, the parts of the plant used, methods of preparation and the experience of healers. Voucher specimens were prepared and deposited in the herbarium of the Department of Botany, University of Fort Hare.

Additional information on the identification of the plants and their uses in other communities was collected and new findings established by consulting Roberts (1990), Van Wyk *et al.* (1997) and Van Wyk and Gericke (2000).

RESULTS AND DISCUSSION

This study revealed 17 plant species belonging to 14 families that were frequently used for the treatment of diarrhoea by the people of the Eastern Cape Province, South Africa (Table 1). Members of the family Fabaceae were the most commonly used plants, followed by Anacardiaceae (two species) while the remaining families all had one species each for the treatment of diarrhoea. Different parts of plants were used by the local traditional healers. Among the different parts, roots were most frequently used, followed by the bark, leaves and bulbs. The observed methods of preparation involved the use of only a single plant part but more than one method of preparation. Decoctions and infusions were the main methods of preparation. The data also showed that majority of the remedies were taken orally. The dosage depended on the age of the patient and was administered orally until the patient was healed.

Table 1: Medicinal plants used for the treatment of diarrhoea in the Eastern Cape Province , South Africa

Plant species	Local name	Part used	Preparation
Acacia karoo Hayne (Fabaceae)	Umnga	Bark	Bark is boiled and the infusion is taken orally
Alepidea amatymbica Eckl. and Zeyh. (Apiaceae)	Iqwili	Root	Decoctions are made from roots and taken orally till the patient is cured
Bulbine latifolia (L.f.) Roem. et Schult. (Asphodelaceae)	Irooiwater	Root	Root decoction taken orally till the patient is cured
Curtisia dentata (Burm.f) C.A.Sm (Cornaceae)	Umlahleni	Bark	Bark is boiled in water and administered orally till the patient is healed
Elephantorrhiza elephatine (Burch.) Skeels (Fabaceae)	Intolwane	Root	Crushed roots are boiled in water and taken orally
Hermannia incana Cav. (Sterculiaceae)	Mavulakuvaliwe	Leaves	Crushed leaves are mixed with cold water and taken orally
Hippobromus pauciflorus Radlk. (Sapindaceae)	Ulathile	Root	Roots are boiled in water and then taken orally
Indigofera sessilifolia DC. (Fabceae)	Ikhubalo	Roots	Roots are boiled in water and the dcoton taken orally
Ledebouria revolute (L.f.) Jessop (Hyacinthaceae)	Ikreketsana	Bulb	Bulb infusoins are taken orally
Malva parviflora L. (Malvaceae)	Ujongilanga	Leaves	Leaves are boiled in water and the decoction is taken orally
Olea europaea subsp. *africana* (Mill.) P.S.Green (Oleaceae)	Umnquma	Bark	Bark infusions are taken orally
Pelargonium reniforme Curt. (Geraniaceae)	Uvendle	Root	Fresh root boiled in water and the decoction is taken orally
Protorhus longifolia (Bernh. ex C. Krauss) Engl. (Anacardiaceae)	Uzintlwa	Bark	Bark is boiled in water and taken orally
Prunus persica (L.) Batsch peach (Rosaceae)	Ipesika	Leaves	Leaves are boiled in water and taken orally
Rhus incise L.f. (Anacardiaceae)	Unongquthu	Bark	Bark is crushed and soaked in cold water and taken orally
Schotia latifolia Jacq. (Caesalpiniaceae)	Umgxam	Bark	Bark is boiled in water and administered orally till the patient is healed
Ziziphus mucronata Willd. (Rhamnaceae)	Umphafa	Root	Roots are boiled in water and decoction is taken orally

Of these plants, five were frequently mentioned and highly recommended by both the traditional healers and rural dwellers. These are *Elephantorrhiza elephantina, Hermannia incana, Pelargonium reniforme, Alepidea amatymbica* and *Bulbine latifolia*. Most of these plants were also used for coughs, colds, fever and wound treatment. *Elephantorrhiza elephantina* has also been reported to be used for diarrhoeal treatment in Limpopo province, South Africa and has shown appreciable antimicrobial activity (Mathabe *et al*., 2006). *Bulbine latifolia* is popular among the traditional healers. The roots are used to treat diarrhoea and a number of other ailments (Van Wyk *et al*., 1997). *Hermannia incana* is used by the local people as an emetic and the leaf sap extracted in cold water, is used to treat stomach-ache and diarrhoea, having purgative and diaphoretic effects. Decoctions of the whole plant are taken to soothe coughs. However, no other studies relating to the chemical composition of this species have earlier been reported. *Pelargonium reniforme* is indigenous to South Africa and abundant in the Eastern Cape Province. The extracts of *P. reniforme* have modest antibacterial activity (Kayser and Kolodziej, 1997). *Alepidea amatymbica* is described as a popular remedy for colds, coughs and chest complaints as well as for asthma, influenza, diarrhoea, abdominal cramps, sore throats and rheumatism (Van Wyk *et al*., 1997). Antidiarrhoeal and antidysenteric properties of medicinal plants were found to be due to the presence of tannins, alkaloids, saponins, flavonoids, steroids and terpenoids (Palombo, 2006).

The results of the present study provide enough evidence that medicinal plants still play an important role in the primary health care system of the people of this province. During this survey, it was observed that most of these people questioned use medicinal plants regularly to treat many ailments, including diarrhoea. Study is in progress on the ethnopharmacological, phytochemical and pharmacological aspects of some of these plants.

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