

Ethnobotanical information of medicinal plants used for treatment of cancer in the Eastern Cape Province, South Africa

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An ethnobotanical survey of plants used for the treatment of cancer was carried out in the Eastern Cape Province, South Africa. Information on the names of plants, parts used and methods of preparation was collected through a questionnaire which was administered to herbalists, traditional healers and rural dwellers. Information collected has revealed 17 plant species that are used for treatment of cancer in the Province. These plants belong to 13 families, of which Hyacinthaceae and Hypoxidaceae are the most prominent. Roots, corms and bulbs are the commonest parts of plants used, while decoctions and infusions are the main methods of preparation. Solanum aculeastrum was the most commonly used plant species for treatment of cancer in the Province.

Keywords: Cancer, herbal medicine, medicinal plants, *Solanum aculeastrum*.

OVER the past decade, herbal medicine has become a topic of global importance, making an impact on both world health and international trade. Medicinal plants continue to play a central role in the healthcare system of large proportions of the world's population¹. This is particularly true in developing countries, where herbal medicine has a long and uninterrupted history of use. Recognition and development of the medicinal and economic benefits of these plants are on the increase in both developing and industrialized nations². Continuous usage of herbal medicine by a large proportion of the population in the developing countries is largely due to the high cost of Western pharmaceuticals and healthcare. In addition, herbal medicines are more acceptable in these countries from their cultural and spiritual points of view³. Use of plants for medicinal remedies is an integral part of the South African cultural life, and this is unlikely to change in the years to come⁴. It is estimated that 27 million South Africans use herbal medicines from more than 1020 plant and 150 animal species⁵⁻⁸.

Among the human diseases treated with medicinal plants is cancer, which is probably the most important genetic disease. Every year, millions of people are diagnosed with cancer, leading to death in a majority of the cases. According to the American Cancer Society⁹, deaths arising from cancer constitute 2–3% of the annual deaths recorded worldwide. In South Africa, cancer rates are increasing every year; breast cancer being the most common form of cancer in women worldwide and the second most common

cancer amongst South African women. Current statistics indicates that across all ethnic groups, one in every 31 women in this country is likely to develop breast cancer.

Many traditional healers and herbalists in the Eastern Cape of South Africa have been treating cancer patients for many years using various medicinal plant species. Despite the long history of cancer treatment using herbal remedies in the Province, the knowledge and experience of these herbalists have not been scientifically documented. According to Grierson and Afolayan¹⁰, information on traditional herbal practice in the Province is passed from one generation to the other through oral tradition. Considering the rapid rate of deforestation and loss of biodiversity, there is a need for accurate scientific documentation of the knowledge and experience of these herbalists. In this article, we report the information gathered from traditional and elder rural dwellers, on plants used in the Province for the treatment of cancer.

Methodology

The study area falls within lat. 30°00'–34°15'S and long. 22°45'–30°15'E. It is bounded by the sea in the south and the drier Karroo (semi-desert vegetation) in the west. The elevation ranges from sea level in the south to approximately 2200 m in the north, and the vegetation type is thorn veld¹¹.

Information given here was collected from herbalists, traditional healers and rural dwellers in the Province. Adopting the method of Jovel *et al.*¹², information was compiled through scientifically guided questionnaires, interviews and general conversations. Although informants were not scientifically literate, they were born in the re-

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

Family and botanical name	Local name	Part used	Preparation	Conservation status and endemism
Hypoxidaceae				
<i>Hypoxis hemerocallidea</i> L.	inkomfe	Corms	Corms are pulverized, boiled in water and administered orally till signs of relief are obvious.	nt/ne
<i>Hypoxis argentea</i> L.	Inongwe	Corms	Corms are stamped, boiled in water and administered orally till the patient is healed.	nt/ne
<i>Hypoxis colchicifolia</i> Bak	iLabatheka	Corms	Crushed corms are boiled in water and administered orally for several days or weeks.	nt/ne
Hyacinthaceae				
<i>Merwillia plumbea</i> (Lindl.) Speta	Inguduza	Bulbs	Decoctions are made from bulbs, warmed gently and taken orally till the patient is cured.	nt/ne
<i>Scilla natalensis</i> Planch.	Bloulangkop	Bulbs	Decoctions are made from gently warmed bulbs and taken orally till signs of relief are obvious.	v/ne
<i>Eucomis autumnalis</i> (Mill.) Chitt	Umathunga	Bulbs	Decoctions of warmed bulbs in water or milk are usually administered orally for several weeks.	v/ne
Solanaceae				
<i>Solanum aculeastrum</i> Dunal	Mtuma	Fruits, leaves, bark and roots	This is the most commonly used plant in this area. Fruits are boiled until they burst into pieces. It is filtered and the decoction administered once a day until the patient is cured.	nt/ne
Alliaceae				
<i>Tulbaghia violacea</i> Harv.	Wild garlic, wildeknoflok	Bulbs	Fresh bulbs are boiled in water and the decoction is taken orally for several weeks.	nt/ne
		Leaves	Crushed leaves are infused in water. It is then administered orally for several days.	
Gunneraceae				
<i>Gunnera perperna</i> L.	River pumpkin, uGhobo	Rhizome	Aqueous infusions and decoctions of gently warmed rhizomes are administered orally for three to four weeks.	nt/ne
Ranunculaceae				
<i>Knowltonia capensis</i> (L.) Huth	Blistering leaves, brandblare	Leaves	Crushed leaves are directly applied as poultices on external tumours.	v/e
		Roots	Crushed leaves are boiled in water and taken orally.	
Cannabaceae				
<i>Cannabis sativa</i> L.	Nsangu, Umya	Leaves	Crushed leaves are administered orally everyday until the patient is cured.	nt/ne
Fabaceae				
<i>Sutherlandia frutescens</i> L. R.Br.	Umnwele	Branches, leaves, flowers and seeds	Decoctions made from all parts of the plant are administered orally for internal cancer and applied topically on external cancers.	v/ne
Pittosporaceae				
<i>Pittosporum viridiflorum</i> Sims	Umkhwenkwe, umVusamvu	Bark and roots	Decoctions or infusions are made with water from stamped bark and roots, and administered orally for several weeks.	nt/ne
		Bark and roots	Dried bark and roots are pulverized into powder and taken orally with water.	
Cornaceae				
<i>Curtisia dentata</i> (Burm.f.) C.A.Sm.	umLahleni	Bark and leaves	Bark and roots are stamped and boiled in water to make a decoction. It is administered orally till signs of relief are obvious.	nt/ne
Euphorbiaceae				
<i>Euphorbia ingens</i> E.Mey. ex Boiss	Nkondze	Latex	Latex is applied topically on external cancers everyday until the tumour heals.	nt/ne
Agapanthaceae				
<i>Agapanthus africanus</i> (L.) Hoffmanns	Mathunga, Agapanthus	Roots	Sun-dried roots are powdered and infused in water and then taken orally until the patient is cured.	nt/e
Ulmaceae				
<i>Celtis africana</i> Burm.f.	umVumvu	Bark and roots	Sun-dried bark and roots are powdered and infused in water or milk and taken orally every day till signs of relief are obvious.	nt/ne

nt, Neither rare nor threatened; v, Vulnerable; e, Endemic; ne, Non-endemic.

gion and had lived there for most of their lives. The plants were initially identified by their vernacular names through consultations with the local people. Voucher specimens were prepared and deposited (Vedic Med 2005/1–Vedic Med 2005/17) in the Giffen Herbarium, University of Fort Hare, Alice. Proper scientific identification of the plants and their uses in other communities were collected from the literature^{13–15}.

Results and discussion

The results of this study have revealed 17 plant species belonging to 13 families that are frequently used for treatment of cancer by herbalists, traditional healers and people of the Eastern Cape Province, South Africa (Table 1). Members of the family Hypoxidaceae and Hyacinthaceae are the most commonly used. It was observed that some plants have more than one vernacular name. The reason for this is because the same plant is prepared in different ways in different communities to treat different ailments.

The method of preparation varies. Decoctions and infusions are the most frequently used methods of preparation (Table 1). It was also observed that some plants were prepared using more than one method.

Roots, corms and bulbs were reported to be the most frequently used parts of plants for the treatment of cancer, constituting about 54% of the preparations. This is followed by leaves and barks constituting 23 and 19% respectively, while fruits, seeds and latex contribute about 4% of the herbal preparations.

This study has revealed that medicinal plants still play a vital role in the primary healthcare of the people of this Province. During the survey, it was observed that more than half of the total number of people questioned regularly used medicinal plants to treat many ailments, including cancer. Among the members of the Solanaceae family, it was observed that *Solanum aculeastrum* was the most frequently reported plant used for the treatment of cancer. Based on this observation, work is in progress on the ethnopharmacological, phytochemical and pharmacological analysis of the plant. In conclusion, this study is important to preserve the knowledge of medicinal plants used by the people of the Eastern Cape Province, South Africa. Also, it is of significance to exploit novel pharmacological agents in various treatments of diseases.

Medicinal plants used in local health traditions are gradually becoming extinct due to over utilization, population explosion and for other anthropogenic reasons. In order to reverse this trend, domestication of wild medicinal plants is of utmost importance. This would augment the income of rural people and in turn help in the conservation of species. Until the late 1980s, little attention was paid in South Africa to conservation issues relating to medicinal plant resources. Popular species which are slow-growing and slow-reproducing, such as *Eucomis autumnalis* and *Scilla natalensis* (Hyacinthaceae), and are fre-

quently used in traditional Zulu medicine, are particularly threatened by over-exploitation and recognized by the healers as becoming scarce^{16,17}. The main problem is destructive harvesting of the underground parts of these plants, or even the plant as a whole. Successful implementation of alternative harvesting methods of 'wild' plants sustainably is generally likely to involve agencies such as the forest departments, usually working closely with local people. Encouragement of cultivation is likely to be useful, in order to take the pressure off wild stocks, thus helping conserve genetic diversity. This could be through the development of small nurseries at each *in situ* site, so as to propagate the species and reintroduce them where populations are low.

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Received 19 May 2006; revised accepted 8 November 2006