

Short Communication

Evaluation of traditional plant extraction methods used by traditional healers in KwaZulu-Natal, South Africa

R. M. Cooposamy* and K. K. Naidoo

Department of Nature Conservation, Mangosuthu University of Technology, P. O. Box 12363, Jacobs, 4026, Durban, KwaZulu-Natal, South Africa.

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Extraction methods of plant material used by traditional healers to treat various ailments fall under four categories. Maceration, diffusion, digestion and decoction are methods most frequently employed by the traditional healers. These methods were obtained from interviews with traditional healers using structured questionnaires at the Durban and Isipingo muthi markets located in KwaZulu-Natal, South Africa.

Key words: Traditional methods, maceration, diffusion, digestion, decoction.

INTRODUCTION

The uses of traditional medicine in developed countries are gaining popularity as traditional antibiotics become ineffective (Cowan, 1999). It is estimated by the World Health Organisation that 80% of the people living in developing countries almost exclusively use traditional medicine. Traditional medicine plays an important role in many areas of South Africa, where communities do not have access to proper healthcare facilities. In KwaZulu-Natal, approximately 70-80% of the black population consults traditional healers for health hazard problems and utilize traditional prescribed medicines, most of which is derived totally from species indigenous to the region (Jager et al., 1995). Plants showing dermatological properties are highly sought after due to their ability to stop bleeding, speed up wound healing and to soothe skin exposed to burns (Lewis and Elvin-Lewis, 1977). Although, skin diseases do not usually threaten life, their unforgiving itching can cause misery and their presence may be a social stigma. In KwaZulu-Natal, skin conditions are dominated by bacterial and fungal infections and their clinical expression is often modified by HIV-induced immune-suppression (Naafs, 2004). Skin diseases may therefore constitute a large percentage of all attendees in clinics in rural communities in KwaZulu-Natal. Population growth coupled with rapid urbanization is creating an ever

increasing demand for traditionally derived medicine. This, together with the high rate of unemployment is forcing many people to turn to gathering and selling medicinal plants to eke out a living resulting in the exploitation of certain species and, in some instances, almost to the brink of extinction (Mander, 1998). Unfortunately, most of the traditional methods of plant extraction are not effective resulting in unnecessary wastage, thereby exacerbating indiscriminate over-harvesting of plants (Naidoo and Cooposamy, 2011). Traditionally, collected plant parts are not stored hygienically or the methods are not properly employed to obtain maximum yield of plant extract. As a result, many species are found only in reserves and not in the wild. Optimising and perfecting plant extraction methods may reduce pressure on vulnerable species and allow them to recover. Educating traditional healers on proper plant extraction methods may also lead to a better understanding of product viability and shelf life, thereby, reducing health risks associated with a contaminated product prescribed to the patient. The aim of the study was to validate the different methods of plant extraction and to scientifically analyse their efficacy using traditionally collected plant specimens.

METHODOLOGY

Informed consent

Prior to the study, signed consent forms from each interviewee

*Corresponding author. E-mail: rogercooposamy@gmail.com.
Tel: +27 82 200 3342. Fax: +27 31 907 7665.

Table 1. Traditional methods used to extract compounds from medicinal plants.

Methods of plant extraction			
Method	No. of respondents*	Technique	Time
Maceration	52	Powdered crude drug mixed with water forming a paste	Varies, depending on specimen
Infusion	55	Crude drug macerated with cold or boiled water	Generally 15-30 min
Digestion	53	Extraction using heat	Varies depending on specimen
Decoction	60	Crude drug boiled, cooled and strained or filtered	Usually 1-2 hours

*Respondents that employ this technique as per the response to questions in the questionnaires.

Table 2. Antibacterial assay using extracts obtained from traditional healers using different extraction techniques.

Bacteria 10 ⁶ Bacteria/ml	Gram +/-	Medium (MIC) (mg/ml)				Control µg/ml	
		Maceration*	Infusion**	Digestion***	Decoction****	Chlor ^a	Strept ^b
<i>Bacillus subtilis</i>	+	7.0	7.7	8.0	7.8	<2.0	<2.0
<i>Staphylococcus aureus</i>	+	7.3	7.2	8.4	8.4	<2.0	<2.0
<i>Staphylococcus epidermis</i>	+	8.6	7.3	8.4	8.6	<2.0	<2.0
<i>Escherichia coli</i>	-	Na	Na	Na	Na	<2.0	<2.0
<i>Proteus vulgaris</i>	-	Na	Na	Na	Na	<2.0	<2.0
<i>Enterobacter aerogene</i>	-	Na	Na	Na	Na	<2.0	<2.0

*Extract used to treat wounds. **Extract used to treat gastric problems, sexual problems. *** Extracts used as blood purifiers and to treat gastric problems. ****Extracts used to treat chest ailments, gastric, sexual problems and as blood cleansers. Na = No activity.

were obtained. These individuals constituted traditional healers from the Umlazi, Isipingo and Durban muthi markets, in KwaZulu-Natal, South Africa.

Data collection

A total of 60 questionnaires, 20 questionnaires for each muthi market were administered. The responses were then tabulated (Table 1).

Sampling and interview of healers

Due to the low education level or lack of English understanding of most individuals, the structured questionnaires were discussed on an individual basis and explained by an interpreter. The results were then transcribed by the interpreter as some traditional healers could not write. Some of the extracts obtained by traditional methodology were purchased and tested against selected bacterial cultures to provide validity of the treatment against ailments outlined by these traditional healers.

RESULTS AND DISCUSSION

Table 1 show that there are four main methods of extraction used by traditional healers in KwaZulu-Natal. Based on the survey, four predominant extraction techniques were used by traditional healers to treat common ailments. These ailments included superficial wounds, gastric problems, chest problems, sexual problems as well as blood cleansers. Traditional healers indicated that for sexual sores and vaginal/penis burning

macerated plant samples are applied to the surface for sores. Furthermore, an infusion can also be made for oral consumption. This combined method assists in curing the superficial wounds and at the same time cleanse the insides of the vagina/penis. Many of the traditional healers indicated that the infusion technique was often employed to treat patients that had sexual problems. Patients that were prescribed, this treatment had to follow a detox programme for three to five days. In addition to consuming the plant extract prescribed by traditional healers, the patient was requested to consume at least ten to fifteen glasses of water per day.

Application of the herbal remedies varied from drinking the boiled plant material for oral and blood infections, application of extracts directly on infected areas of skin and superficial infections, and application of pastes on infected areas for superficial sexual infections.

The extracts purchased and tested against both Gram positive and Gram negative bacteria have provided some indication of their validity of use by traditional healers. In the antibacterial assay, growth inhibition occurred for all Gram positive bacteria at relatively high concentrations (Table 2). Similar results were obtained by Naidoo and Coopoosamy (2011), when studying the effects of *Haworthia limifolia* and *Aloe excelsa* extracts used in the treatment of common skin conditions in South Africa. However, there seem to be no inhibition against Gram negative bacteria (Table 2).

Recovery from the extracts prescribed by traditional healers will therefore not be effective in certain instances where the ailments are caused by Gram negative

bacteria.

Conclusion

This study has unveiled the different extraction techniques used by traditional healers for treatment of various ailments and the important role traditional remedies play in the primary healthcare of the people of Durban, Kwazulu-Natal. These findings validated the use of traditional herbs by traditional healers for the treatment of certain ailments. Further research is needed to isolate the active compounds from prescribed extracts in order to understand their effects.

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