

INDIGENOUS PLANT- DERIVED MEDICINES USED FOR GASTROINTESTINAL DISORDERS IN LIMPOPO PROVINCE, SOUTH AFRICA

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Abstract: The results reported in this research are part of a medical ethnobotanical study undertaken between 2012 and 2019 in Limpopo Province, South Africa. Eighty-nine plant species were identified as potential sources of medicine. Of these plants, 21 species from 18 botanical families were used medicinally to treat gastrointestinal diseases such as diarrhea, stomachaches, dysentery, and constipation. The plants provide medicinal infusions, decoctions, saps, and powders that are used orally to treat these disorders. Three of the plants used, *Dombeya rotundifolia*, *Siphonochilus aethiopicus*, and *Trichilia emetica*, treat many gastrointestinal disorders, the most common of which being dysentery. The research demonstrates that knowledge of indigenous plant-derived medicines is not limited to traditional health practitioners, since ordinary community members administer the medications without consultation with medical specialists beforehand. This form of primary health care might be documented and disseminated in order to enhance the community's health and well-being through the utilization of indigenous and culturally distinctive resources.

Keywords: Traditional medicine; indigenous medicinal plant; gastrointestinal disorder; Bapedi; Limpopo Province.

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INTRODUCTION

Basic health care is provided through the use of a variety of therapies, including indigenous plant-derived medicine. Local community members cure a variety of health conditions using medicinal plants collected from the forest or surroundings (Tariq et al., 2015). These communities are the repositories and users of medicinal plants to meet primary health care requirements (Wali et al., 2019). The use of indigenous plant-derived medicine is a kind of primary health care that the World Health Organization (WHO) recommends (Wali et al., 2019). This type of health care is used to treat a wide variety of conditions, including gastrointestinal disorders (Tugume et al., 2016). It is customary to use medicinal herbs to treat digestive system diseases (Wali et al., 2019). Tariq et al. (2015) assert that the indigenous people used medicinal plants harvested from the forest or surrounding environment to treat a variety of health problems, including diarrhea, dysentery, intestinal worms, nausea and vomiting, constipation, and abdominal pain, the majority of which are common in impoverished areas (Yusro et al., 2021).

Numerous ailments, including diarrhea, dysentery, intestinal worms, nausea and vomiting, constipation, and abdominal discomfort, are categorized as gastrointestinal disorders (Tariq et al., 2015). According to Semanya and Maroyi (2012), gastrointestinal diseases are a category of conditions that impact the digestive tract's functioning, such as food and liquid absorption, digesting, or excretion. Stomach or abdominal discomfort, diarrhea, dysentery,

gastroenteritis, constipation, and vomiting are all common gastrointestinal illnesses (Yusro et al., 2021). These diseases cause illness and may result in death, particularly in underdeveloped countries with inadequate sanitation. On the African Continent, gastrointestinal disorders are the most often treated with medicinal herbs (Mbuni et al., 2020).

Bapedi knowledge of medicinal plants used in the treatment of gastrointestinal ailments is reported in a few research that focused primarily on the medicinal plants' chemical qualities. Thus, comprehensive ethnobotanical research is required to record community members' knowledge of medicinal plants used to treat gastrointestinal problems. This information may be shared and kept in order to maximize the effectiveness of indigenous plant-based therapies used to treat digestive ailments. Thus, the current research investigated the use of indigenous medicinal herbs to treat gastrointestinal illnesses among members of four Bapedi communities in South Africa's Limpopo Province. The main research questions answered were: (i) what indigenous plant species are used to make medicine to treat gastrointestinal disorders in Bapedi communities? (ii) Which gastrointestinal disorders are treated, and which are the most common disorders?

MATERIALS AND METHODS

Study area

The research was done in four district municipalities in South Africa's Limpopo Province. Around 12% of the population resides in urban areas, compared to 88 percent in the rural

areas. The majority of the population lives in rural towns and villages scattered across the old homeland territory. Numerous small communities have populations of less than 1000 people. Due to their tiny size and dispersed location, municipal services and infrastructure are difficult and expensive to provide (Limpopo Development Plan [LDP] 2015-2019). Capricorn, Mopani, Sekhukhune, and Waterberg were chosen as district municipalities for the research because they are mostly rural. Each area was purposefully chosen for an ethnobotanical medicinal inquiry. The villages are mostly populated by individuals who speak Setslokwa, Kone, Selobedu, and Sepedi-sa-Sekhukhune.

Sepedi is their official language in schools. Additionally, the communities shared cultural affinities in terms of economics, religion, social structure, and politics, demonstrating the province's thriving cultural heritage (Statistics South Africa, 2018). The study area is currently undergoing development. The responsibility for health care improvement is to address the fundamental determinants of health. This milestone is anticipated to be achievable via community mobilization for direct engagement in community-based health initiatives to augment official health system resources (Limpopo Development Plan [LDP], 2015-2019). As a consequence, the medicinal ethnobotanical information offered in this research may be beneficial in promoting health and well-being

through the administration of indigenous plants.

Ethnobotanical data collection

Between January 2018 and December 2019, ethnobotanical data were gathered through a semi-structured questionnaire during face-to-face interviews with 240 (60 participants each community) persons aged 29 to 87 years. Ethical clearance for this study was obtained from the Ethics Committee of the University of Limpopo. The researcher strictly adhered to ethical issues such as confidentiality and anonymity, and provided an explanation of the project goal and scope prior to consenting to participation in the study. All interviews were conducted in the local dialect and translated into English by language experts.

Community members and traditional health practitioners were sampled as participants in a convenient manner. A semi-structured questionnaire was designed to collect data that would determine participants' knowledge of indigenous plants used to treat gastrointestinal disorders, the plant materials used, and methods of preparation. To eliminate extraneous influences, the interviews were conducted in the participants' homes. Following the interviews, transect walks were conducted to locate and collect voucher specimens for botanical identification. The vouchers were placed at Limpopo's Larry Lach Herbarium. The researcher analyzed data given in figures and some in narrative form using descriptive statistics.

RESULTS AND DISCUSSION

Medicinal Plants Used to treat gastrointestinal disorders used by Bapedi

Table 1 below lists a total of 21 medicinal plants used to treat gastrointestinal diseases, including dysentery, diarrhea, stomachache, and constipation.

Table 1: Medicinal plants used disorders by Bapedi to treat gastrointestinal

Local Name	Botanical Name	Family	Habit	Part used	Gastrointestinal disorder treated
Sekgophana	<i>Aloe ferox</i> Mill.	Asphodelaceae	Aloe	Leaf	Stomachache
Lengana	<i>Artemisia afra</i> Jacq.ex. Will	Asteraceae	Herb	Leaf	Constipation
Motsere	<i>Bridelia micrantha</i> (Hochst) Baill.	Euphorbiaceae	Herb	Root	Diarrhea
Mokgwete	<i>Combretum molle</i> RBR ex. G. Don	Combretaceae	Shrub	Leaf	Diarrhea
Phelalegolana	<i>Dicoma gerrardii</i> (Harv.Ex. FC. Wilson)	Asteraceae	Herb	Bulb	Diarrhea
Mudomma	<i>Diospyros mespiliformis</i> Hochst. Ex. ADC.	Ebenaceae	Herb	Bark	Dysentery
Mohlabaphala	<i>Dombeya rotundifolia</i> (Hochst) Planch	Sterculiaceae	Herb	Bark	Stomachache; dysentery
Mmidibidi	<i>Ekebergia capensis</i> Sparrm.	Meliaceae	Shrub	Root	Dysentery
Mošitšana	<i>Elephantorrhiza elephantine</i> Burkei Benth.	Fabaceae	Herb	Root	Constipation
Mokumu	<i>Ficus Burkei</i> (Miq)	Moraceae	Tree	Bark	Constipation
Mohlahlaila	<i>Gnaphalium helichrysum</i> L.	Asteraceae	Shrub	Leaf	Constipation
Mošitši	<i>Guilleminea hensia</i> L.	Amaranthaceae	Herb	Root	Diarrhea
Mompate	<i>Harpagophytum procumbens</i> (Burch)	Pedaliaceae	Herb	Leaf	Constipation
Monamane	<i>Ilex mitis</i> L.	Aquifoliaceae	Tree	Bark	Constipation
Ngangi	<i>Lycium</i> sp.	Solanaceae	Shrub	Root	Stomachache
Mosehla	<i>Peltophorum africanum</i>	Fabaceae	Tree	Bark	Stomachache
Morula	<i>Sclerocarya birrea</i> (A. Rich) Hochst.	Anacardiaceae	Tree	Bark	Stomachache
Mmaba	<i>Trichilia emetica</i> Vahl.subsp.	Meliaceae	Tree	Bark	Stomachache; dysentery; constipation
Molaka	<i>Warbugia salutaris</i>	Canellaceae	Tree	Bark	Dysentery

	(G. Bertol)				
Motšhidi	<i>Ximenia cafra</i> Sond.	Olaceae	Shrub	Bark	Dysentery
Serokolo	<i>Siphnochilus</i> <i>aethiopicus</i> (Schweif) B.L. Burt	Zingiberaceae	Herb	Bulb	Stomachache; dysentery

The plant species that are used to treat digestive diseases are classified into 18 families. The Asteraceae, with three species, and the Fabaceae, with two species, were the most prevalent families. One of the 21 species, one was an aloe, while the other nine were herbs, six were trees, and five were shrubs (Figure 1). Semanya and Maroyi (2012) and Wali et al. (2019) support that the majority of medicinal plants used to treat gastrointestinal diseases belong to the Asteraceae and Fabaceae families.

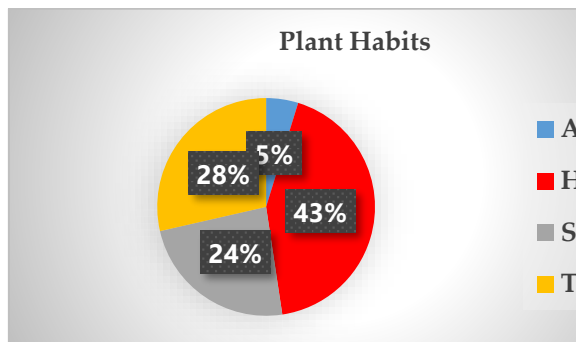


Figure 1: Plant Habits

A significant finding in this research revealed that the bark (42%) and roots (24%) of trees and shrubs were the most often gathered plant materials, whereas leaves (24%) and bulbs (2%) were usually taken from herbs. Seven herbs were used as sources of leaves, but just two herbs were sources of bulbs. Herbs were the most prevalent (43%), followed by trees (28%), shrubs (24%), and aloe (5%). This observation is consistent with Mongalo and Makhafola's (2018) findings that herbs dominated the lifeforms of medicinal plants used to treat digestive diseases in the Blouberg region, followed by trees and shrubs. Wali et al. (2019) substantiate these findings by demonstrating that herbs are the most

often used source of medication for gastrointestinal illnesses.

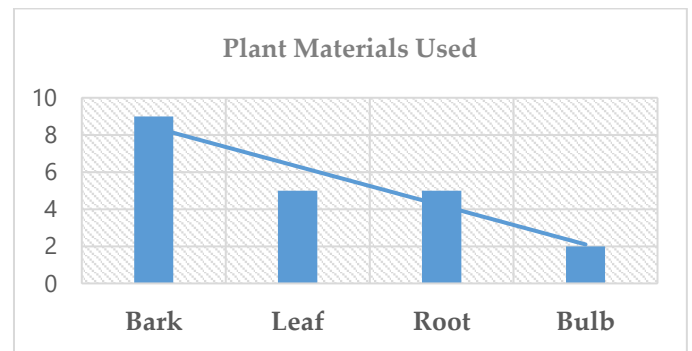


Figure 2: Plant Materials Used

Figure 2 shows that the bark was the most often employed plant material for the treatment of gastrointestinal diseases, followed by leaves, roots, and bulbs. The bark, leaves, and roots were mostly utilized to treat digestive ailments and problems (Manzo et al., 2017).

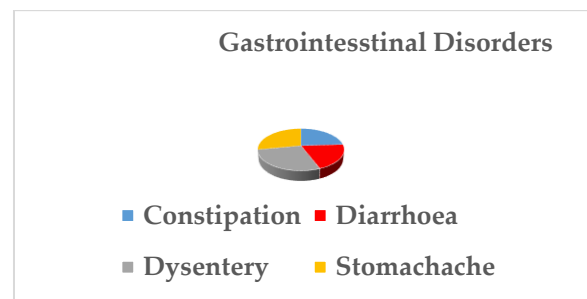


Figure 3: Common Gastrointestinal Disorders

Constipation, diarrhea, dysentery, and stomachaches were the most frequently reported gastrointestinal illnesses in the study (Figure 3). These kinds of illnesses correspond to Tariq et al. (2015) categorization of gastrointestinal disorders, which determined that constipation, diarrhea, dysentery, and stomachaches are the most often seen and treated problems among members of indigenous groups.

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According to Kullin et al. (2015), South Africa is one of the African nations where these four forms of gastrointestinal diseases are often blamed for the rise in death rates.

Gastrointestinal Disorders

Constipation

Seven (33 percent) of the 21 plant species identified by participants were recognized as sources of medication for constipation. The infusion of *Artemisia afra*, *Gnaphalium helichrysum*, and *Harpagophytum procumbens* leaves, as well as the bark of *Ficus burkei*, *Ilex mitis*, and *Trichilia emetica*, was a significant medication for constipation. Constipation was also treated using a decoction of the root of *Elephantorrhiza elephantina*. The infusion and decoction were reported to be taken orally on an empty stomach to cure dyspepsia.

Diarrhoea

The root infusions of *Combretum molle* and *Guilleminea hensa* were used to alleviate diarrhea. *Bridelia micranta* root was crushed into a powder and given with water to treat diarrhea. *Dicom gerrardii's* bulb was boiled to create a curative decoction that also relieves diarrhea.

Dysentery

The most frequently recorded medications were bark decoctions and infusions from *Diospyros mespiliformis*, *Dombeya rotundifolia*, *Ekebergia capensis*, *Trichilia emetica*, *Warbugia salutaris*, *Ximenia caffra*, and *Ziziphus mucronata*, followed by bulb chips from *Siphnochilus aethiopicus*.

Stomachache

The most often cited medication was an infusion produced from the bark of

Dombeya rotundifolia, *Peltophorum africanum*, *Sclerocarya birrea*, and *Trichilia emetica*. Following that, *Aloe ferox* leaf sap was combined with water and administered to cure stomachache. *Siphnochilus aethiopicus* bulbs were chopped into little chunks and consumed to relieve stomachache.

The most common illness treated by species (8) was dysentery, followed by constipation (7), stomach discomfort (5), and diarrhea (4). According to Olajuyigbe et al. (2012), when the populace of the Eastern Cape Province, South Africa, used plant-derived medicine to treat a range of gastrointestinal diseases, the majority of the plants were found to be used to cure dysentery and diarrhea. Rokaya et al. (2014) agree that indigenous plant-based remedies are an excellent source of medication for diarrhea and dysentery.

A notable finding from the study was that that three plant species were sources of medicine to treat more than one gastric disorder. For instance, infusions of *Dombeya rotundifolia* leaves were used to cure stomachaches and dysentery. These problems may also be addressed by chewing *Siphnochilus aethiopicus* chips. *Trichilia emetica* bark infusion was used to treat stomachaches, dysentery, and constipation (Tugume et al., 2016).

Treatment

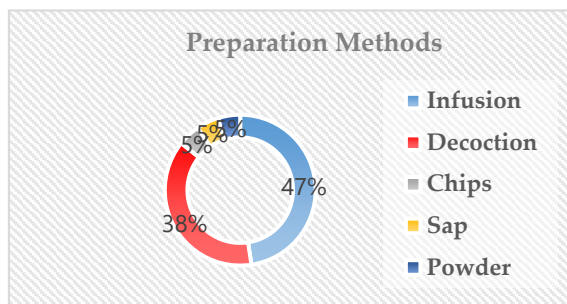


Figure: 4 Preparation Methods

Participants described a variety of procedures for preparing plant materials to make medication (Figure 4). These included infusion, decoction, chips, sap, and powder. Infusion was the most often used method of preparing plant materials (47 %). The bark was the primary plant material infused in water to make medicine, followed by the root and leaf. The bark, followed by the root and bulb, were boiled to make decoctions. Other techniques of preparation included the use of bulb chips, leaf sap, and powder. All of these products were reported to be taken orally. Rokaya et al. (2014) endorse the use of medicinal plants to treat gastrointestinal diseases through infusions, soaking, chewing, and other forms of extracts. Oral administration is regarded to be the most effective way of administration when compared to others, making it the major method of therapy for gastrointestinal diseases (Rania et al., 2019; Ningsih et al., 2020; Yusro et al., 2021).

CONCLUSION

The purpose of this research was to describe traditional medicinal herbs used to treat gastrointestinal ailments among four communities of Bapedi. A

total of 21 medicinal plants were identified as being utilized by the Bapedi people to treat gastrointestinal ailments. These are sources of infusion, decoction, sap, and powder administered orally to treat diarrhea, stomachaches, dysentery, and constipation. Three of the plants identified, *Dombeya rotundifolia*, *Siphnochilus aethiopicus*, and *Trichilia emetica*, are used to treat a variety of gastrointestinal conditions. This study recommends more scientific research to establish the effectiveness and safety of these medicine, as well as their inclusion into conventional primary health care services for future usage by Bapedi, other ethnic groups, and the worldwide community.

REFERENCES

- Ashwin, N. & Ramnik, A.J., 2020. Xavier, in *Gastrointestinal Diseases. Hunter's Tropical Medicine and Emerging Infectious Diseases* (Tenth Edition), 2020.
- Kullin, B., Meggersee, R., D'Alton, J., Galvão, B., Rajabally, N., Gastroenterol, C., Whitelaw, A., Bamford, C., Reid, S.J. & Abratt, V.R., 2015. Prevalence of gastrointestinal pathogenic bacteria in patients with diarrhea attending Groote Schuur Hospital, Cape Town, South Africa. *South Afr. Medical Journal*, 105 (2), 121-125.
- Limpopo Development Plan [LDP] 2015-2019. Available at: <http://www.limpopo.gov.za/webDocs/Limpopo.LDP.Summary.Final.31.March.2015.docx>. Accessed 7 March 2022.
- Manzo, L.M., Moussa, I. & Ikhri, K. (2017). *Ethnobotanical Survey: A Comprehensive Review of Medicinal*

Rankoana, S.A.

Plants Used Against Gastrointestinal Disorders in Niger, West Africa. *Jundishapur J. Nat Pharm Prod.* 12 (4), 1-10. e65730.

Mbuni, Y.M., Wang, S., Mwangi, B.N., Mbari, N.J., Musili, P.M., Walter, N.O. & Hu, G., Zhou, Y., Wang, O. (2020). Medicinal Plants and Their Traditional Uses in Local Communities around Cherangani Hills, Western Kenya. *Plants.* 9(331), 1-16. DOI:10.3390/plants9030331.

Mongalo, N.I. & Makhafola, T.J. (2018). Ethnobotanical knowledge of the lay people of Blouberg area (Pedi tribe), Limpopo Province, South Africa. *J. Ethnobiol. Ethnomed.* 14,46. DOI: <https://doi.org/10.1186/s13002-018-0245-4>.

Olajuyigbe, O.O. (2012). Ethnobotanical survey of medicinal plants used in the treatment of gastrointestinal disorders in the Eastern Cape Province, South Africa. *J. Med. Plant Res.* 6, 18. DOI: 10.5897/jmpr11.1707. 32.

Rania, F., Wardenaar, E., Mariani, Y., 2019. The Utilization of Medicinal Plants to Cure Gastrointestinal Disorders. *Jurnal Borneo Akcaya.* 5,2, 84-94. DOI: <http://jurnallitbang.kalbarprov.go.id/index.php/litbang/article/download/113/95>.

Rokaya, M.B., Uprety, Y., Poudel, R.C., Timsina, B., Münzbergová, Z., Asselin, H., Tiwari, A., Shrestha, S.S. & Sigdel, S.R. (2014). Traditional uses of medicinal plants in gastrointestinal disorders in Nepal. *J. Ethnopharmacol.* 158,221-229.

Semenya, S.S. & Maroyi, A. (2012). Medicinal plants used by the Bapedi traditional healers to treat diarrhea in the Limpopo Province, South Africa. *J. Ethnopharmacol.* 144,2, 395-401. DOI: 10.1016/j.jep.2012.09.027.

Statistics South Africa. (2018). General household survey. Available at: www.statssa.gov.za (accessed 24 March 2021).

Tariq, A., Mussarat, S., Adnan, M., Allah, E.F.A., Hashem, A., Alqarawi, A. A. & Ullah, R. (2015). Ethnomedicinal Evaluation of Medicinal Plants Used against Gastrointestinal Complaints. *BioMed Research Int.* 1-14. DOI: <https://doi.org/10.1155/2015/892947>.

Tugume, P., Kakudidi, E.K., Buyinza, M., Namaalwa, J., Kamatenesi, M., Mucunguzi, P. & Kalema, J. (2016). Ethnobotanical Survey of Medicinal Plant Species Used by Communities Around Mabira Central Forest Reserve, Uganda. *J. Ethnobiol. Ethnomed.* 12(5),1-28. DOI: <https://doi.org/10.1186/s13002-015-0077-4>.

Wali, S., Hammad, A.J. & Bussmann, R.W. (2019). Quantitative ethnomedicinal study of indigenous medicinal plants used for digestive disorders of Laspur Valley, Chitral, Northern Pakistan. *Ethnobotany Research and Applications.* 18(32), 1-18. DOI: <http://dx.doi.org/10.32859/era.18.32.1-1>.

Yusro, F., Mariani, Y. & Wardenaar, E. (2021). The Utilization of Medicinal Plants to Cure Gastrointestinal

Rankoana, S.A.

Disorders by The Dayak Muara Tribe
in Kuala Dua Village. Jurnal Biologi
Tropis. 21,2, 416 – 426.

DOI: <http://dx.doi.org/10.29303/jbt.v21i2.2638>