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Blood purification practices; Some ethnopharmacological insight from a rural community in KwaZulu-Natal, South Africa

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ABSTRACT

Edmophannacological re/eva,ice; Blood purification practices, also referred to as blood cleansing or detoxification, is an ancient concept which is widespread within African traditional medicine. There is, however, limited consolidated information about the selection of plant species, the purpose of use and how the preparation is made. An in-depth examination of how regional communities use medicinal plants for blood purification is needed to better understand this ethnophannacological practice.

Aim of the Jtudy: To gather knowledge on the traditional use of medicinal plants used for the purpose of blood purification by laypersons in northern Maputaland, KwaZulu-Natal, South Africa.

Methods: An ethnobotanical survey was conducted on medicinal plants used in the rural areas of northern Maputaland for blood purification. Interviews were conducted in 55 homesteads, where the most knowledgeable participant per household was interviewed using structured questionnaires. Information collected included knowledge of the concept of blood purification, purpose for medicating, plant selection, and mode of preparation. The most important species and families were identified through indices.

Results: Sixty-four plant species from 35 families were recorded as blood purifiers for the treatment of ailments linked to the need for blood purification. *Tenninalia smcea* Burch. ex DC. was the most used plant species (mentioned by 39% of the people interviewed). The conditions that were mostly associated with blood purifi• cation were skin complaints, gastro-intestinal disorders, and overall improvement of general health. Blood purification is also commonly used for non-medical purposes such as granting good luck or as a love chann. Six new plant species and five new Zulu vernacular names had not previously been documented for blood purification.

Conclu.sion: The frequently mentioned use of medicinal planlS for blood purification by the rural community of northern Maputaland clearly emphasises the importance of this cultural practice. There is no doubt that when examining African traditional medicine, holistic terms such as ··blood cleansing·· cannot be ignored. Future studies may provide a better understanding of this often misunderstood and undocumented practice.

1. Introduction

A blood purifier is defined as a substance that removes toxins from the bloodstream via a process known as detoxification. Blood purification is a practice that has been carried out traditionally for centuries. Blood impurities are toxins that are accumulated in the blood through improper diet, irregular bowel movements, pollution, obesity, and lack of physical activity. Traditional use confers that toxins in the stomach could be transported to other organs of the body through blood circulation and cause impurities in the blood and thus cause several varied infections (Akter et al., 2012). The concept of blood purification is complex and often difficult to understand due to multifactorial aspects that are implicated in diagnosis. Nonetheless, blood cleansing is widespread both in Western and in traditional medicine all over the world (Akter et al., 2012; Clement et al., 2017; Khalid et al., 2017; Sureshkumar et al., 2017). It implies that the blood is contaminated with undesirable elements that may cause illness. In Western medicine, blood purification involves sophisticated medical procedures which may include; haemoadsorption, haemodialysis, haemofiltration, haemoperfusion and plasma exchange amongst other techniques (Zhou et al., 2007).

In traditional medicine, the concept of blood purification is widely

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practiced. This have been reported widely, where some studies included medicinal plants *(Cassia absus* L., *Cynodon daccylon* (L.) Pers. and *Zizi• phus nwnmularia* (Burm.f.) Wight & Am} as blood purification remedies from India (Sureshkumar et al., 2017). In Pakistan in the Karamar valley, *Bauhinia vatiegata* LIM., *Chenopodium album* L., *Cuscuta rejlexa* Roxb., *Fagonia arabica* L. and *Fumatia parvifiora* L were documented (Khrdid et al., 2017), and in Iran, south of Kerman *Berberis integmima* Bunge, *Cichoriwn pumilwn* Jacq., *Sageretia thea* (Osbeck} M.C.Johnst. and *Trifoliumpretense* L were recorded (Sadat-Hosseini et al., 2017).

In South Africa, previous studies have shown that blood contamination isoften linked to medical conditions where the origin is not easily identifiable, such as internal infections and/or spiritual connection (VAi\ Vuuren and Frank, 2020).Several ethnobotanical surveys have recorded plant species used for blood purification. A study on medicinal plants used by women in northern KwaZulu-Natal documented **14** plants used as blood purifiers, and these were the most popular treatments docu• mented (De Wet and Ngubane, 2014). Earlier records (Hutchings et al., 1996} on medicinal plants used in the Zulu culture documented 73 plants for blood purification. Furthermore, our earlier review on South African medicinal plants used as blood purifiers defined the African concept of blood purification and documented 159 plant species that are associated with blood cleansing (Van Vuuren and Frank, 2020). Within this review, recommendations were made to get a better understanding of why specific plant species are used for blood purification. This study explores the plants used as blood purifiers and their curative purpose in rural communities within Northern Maputaland, KwaZulu-Natal.

2. Material and methods

2.1. Srudy *area*

The study took place In three rural communities (Mbazwana, Mseleni and Ntshogwe) in northern Maputaland in Kwuulu-Natal (South Africa) (fig. 1.). These communities are part of Umhlabuyalingana Local Municipality, which falls under Umkhanyakude District Municipality. The homesteads visited during the survey were found between 32•21• and 32•41' latitudes and 27°2-X and 27°6CY longitudes with a surface area of 3621 krn^2. The population estimates for the municipality ls approximately 168 763 for the year 2021. The number of households recorded as of 2016, was 39 614, with an average household size of 4.3 people per household (Umhlabuyallngana Local Municipality !DP, 2022/23).

The primary topsoil type prevalent in Umhlabuyalingana local municipality is sandy. This region also features expansive wetlands, characterized by the presence of wetland vegetation such *as* various species of *Juncus.* These wetlands offer numerous benefits to the area, with a significant focus on supplying grass for crafting and household purposes, as well as aiding in flood control. The prevailing vegetation in the area Is referred to as Maputaland Coastal Thicket, with a predominant presence of grassland (Umhlabuyalingana Local Municipality IDP, 2022/23). The area is 99% classed as roral, yet according to the Umhlabuyallngana Local Municipality, 72% of the population has access to schools, and 91.6% of households have access to healthcare services and schools. According to Sanders and Bradshaw (2010), many residents in these areas live in unclean, overcrowded, and poorly ventilated dwellings, which increase their risk of contracting infectious diseases. The local economy relies heavily on agriculture, tourism, and informal businesses as Its key economic driving forces.

The region has a subtropical climate, characterized by an **average** yearly temperature of 21.5 **•C.** Summers are warm to hot, while winters tend to be cool to mild. Annual precipitation varies, with the western rural areas receiving between 600 and 700 mm, and the coastal sea belt on the eastern side receiving between 1201 and 1250 mm of rainfall (Umhlabuyalingana Local Municipality IDP, 2022/23).

2.2. *Ethnobatanical* surveys

Ethnobotanical surveys were conducted from October 2018 to January 2019 after receiving ethical clearance (UZREC 171110-030 PGM, 2018/609) from the University of Zululand Research Ethics Committee. Structured questionnaires were used to conduct interviews. The 55 homesteads visited were sampled by the convenience sampling method (EtJkan et al., 2016). The homesteads were approached if there was a sign of someone within the homestead. Participants of the study were sampled by availablity and willingness to participate in the

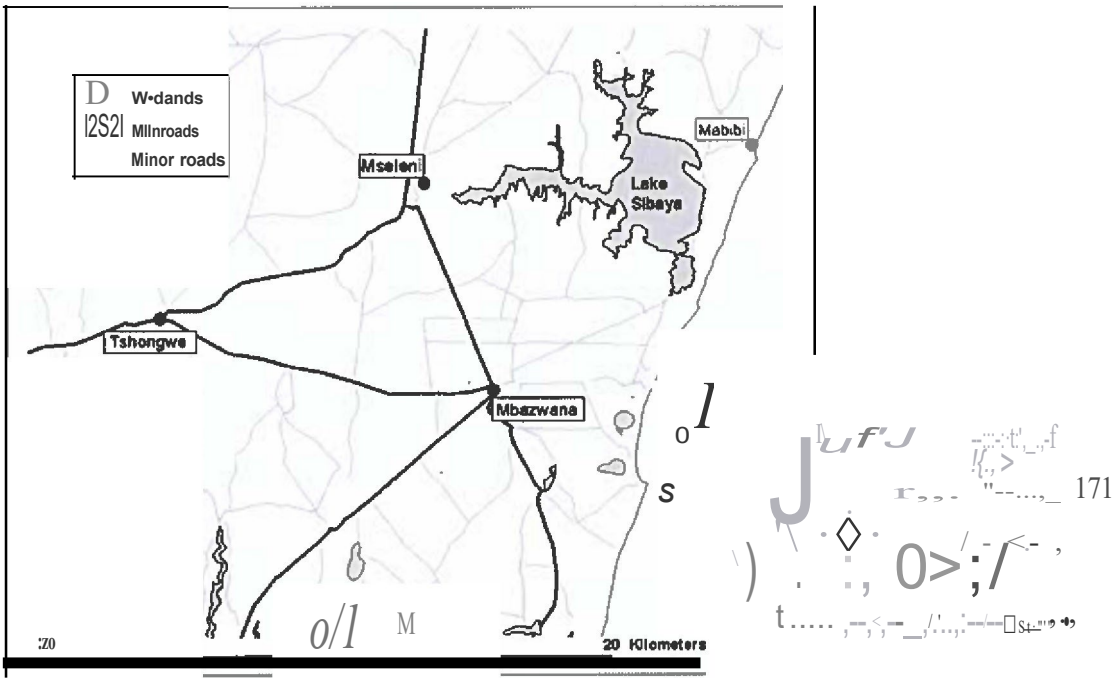


Fig. 1. Area of the study, showing the three communities involved in the study in the northern Maputaland KwaZulu-Natal, South Africa.

survey. In the case where there were two or more consenting adults in a homestead, the most knowledgeable person would be questioned.

Fifty.five participants were interviewed. The 55 participants con• sisted of 50 females and five males. All participants were well acquainted with plants used for blood purification. The survey had participants from different age groups, of which one participant was a child, 11% comprised of young people, 65% adults (25-64 years) and 22% elders (265 years). The survey was conducted during the time of the day when males and most young people were not around the homesteads. The males were reported to be herding cattle, seeking jobs or out for leisure, whereas young people were reported to be at school. Thirty•one percent of participants were illiterate, while 34% had only primary education, 33% had accomplished secondary education (with three teenagers interviewed still at school) and one participant had a tertiary education. None of the participants were formally employed. The living income was either from the South Africa Social Security Agency pension (SASSA) (18%), government social grants (33%), self. employment {7%), self.employment and SASSA pension (16%), self. employment and government social grant (20%) or government child support grant (6%). Self.employment referred to any income generating endeavour which included amongst others, selling medicinal plants to muthi markets, street vendors, home farming and some in construction.

Global Positioning System (GPS) was used to mark the specific location of each homestead visited. The aim and objectives of the study were explained to the participants and a consent form was signed before the interview. The elderly and illiterate participants were allowed to sign by the cross.signature method. The interviews were conducted in lsiZulu (local language). In most interviews, the researcher read the questions and wrote the answers verbally given by the interviewee, since some of the participants could not read or write. Plant species mentioned were identified by the participants and collected *111 situ* for voucher specimens. One voucher specimen that had leaves, flowers and fruits was collected for scientific identification. In the absence of vegetative and reproduction parts, the plant was searched by the common name and the resulting images were confirmed by the informants. Where there was ambiguity with respect to the common name, voucher specimens were cross referenced with our previous collections in the same geographical area (De Wet et al., 2010; York et al., 2011, De Wet et al., 2012; De Wet et al., 2013; De Wet and Ngubane, 2014; De Wet et al., 2016). Plant names were authenticated by Dr. T.H.C. Mostert from the Department of Botany (University of Zululand) and deposited in the University of Zululand herbarium (ZULU).

2.3. Data C111alysis

The demographic data of the informants was initially analyzed. Thereafter, quantitative parameters, where applicable, were measured to validate the traditional use of medicinal plants for blood purification (Leonti, 2022). The relative frequency of citation (RFC) was calculated to determine the correlation between the number of times a species was mentioned by an informant in relation to the number of times mentioned in total.

3. Results

3.1. Socio-demographic ill/onnation

An observation was made from the study that males and females had different reasons to use blood purifier plants. Males in the study pre• dominantly use blood purification for non.medical purposes like seeking employment (good luck) or courting (love channs), while women reportedly use the plant species for medically related conditions asso- ciated with the female anatomy. Both genders reportedly use plants for infection related conditions.

The study area is a developing region with easily accessible clinics, hospitals, and schools for basic education, however, the participants voiced preferred plants growing in and around their homesteads for their primary healthcare. More than 50% of the participants from each age group could at least name three plant species and provide detailed information on the preparation and administration of the remedy. In this study, a teenage girl in grade 12 (final year of secondary school edu· cation) was more interested and informative about blood purifier plants than her mother. The interest of this young girl in medicinal plants came from her aspiration of becoming a medical doctor, with the dream of promoting a relationship between traditional medicine and Western medicine.

3.2. Concept of blood purification

The participants from northern Maputaland used the word *"izihlazf* to refer to blood purifier plants, which is a direct translation from the word 'cleanser·. The participants described blood purification as a method for improving the function of the body and preventing and treating infections. "Blood impurities" were then referred to as any "dirt· accumulated by the blood and body to cause illnesses and discomfort. Examples of given impurities were toxins, pathogenic or• ganisms, evil spirits and magical evil cast through "witchcraft". In addition, blood purification procedures can also be applied for a spiri• tual connection, and body cleansing before participating in a spiritual event like fasting to connect to ancestors or during ancestral ceremonies. Blood purification plants were reportedly also used against "hateful thoughts", or "bad blood". Magical uses were ascribed to casting good luck and love charms. Several ailments were reported to be associated with the need for blood purification (**fig**, 2). According to the partici• pants, blood purification improves the functioning of a weak body (possibly referring to a weak immune system). Blood purification is applied when Jay people show visible signs of weakness, breath and urine odour, sores on children, regular boils, acne, red eyes, bladder, and kidney complaints, burning of parts of the body and bad luck. The study revealed that the participants associated most skin and urinary tract infections as well as infertility with blood impurity. Participants also associated blood cleansing with various fungal and bacterial infections as well as cultural and spiritual beliefs. The interviewed people believed that tapeworms develop in your intestine because of irregular cleansing and accumulation of blood toxins in the digestive system.

3.3. Medicinal plant species used for blood purification

A total of64 plant species within 35 families were recorded for blood purification. The participants believe that the red colour of the bark or roots of selected plants, like *Sclerocarya birrea* (A. Rich.) Hochst. and *Rhoicissus digitata* (L.f.) Gilg & M. Brandt show that the plant could be used for blood•related ailments. The whiteness of some bark or roots *(Ekebergia capensis* Sparrm., *Gardenia volkensii* K.Schum. and *Vangueria infa11sta* Burch.) was affiliated to cleanliness.

In TRble 1, the plant species mentioned for blood purification were recorded along with ailments that participants had linked to blood infection, the mode of preparation and administration was also mentioned. Five of these plant species were not available for collection in the homestead area or if the plant was available, it was reported that the roots were used but no above•ground vegetative part was available for identification. These plants were tentatively identified by their Zulu vernacular names. The most frequently mentioned plant species (!'able I) used as blood pu riflers by the participants was *Tennillalia sericea* Burch. ex DC. (mentioned 25 times), *Bridelia cathanica* Bertol. (18 times), *Cymbopogon marginarus* (Steud.) Stapf ex Burtt•Davy (15 times), Catunaregam *obovata* (12 times), *Sclerocarya birrea* (A.Rich.) Hochst.{10 times} and *Senecio serraruloides* DC. {10 times). Six plant species in this study, viz., *Can111aregam obovata, Dichapeta/11m cymos11m* (Hook.) Engl., *Hyphaene natalensis* Kuntze, Sola1111m *pandurifonne* E. Mey., *Synaptolepis kirkii* Oliv and *TabemaemontC111a e/egans* Stapf had not been previously mentioned in the literature for blood purification. The Zulu vernacular

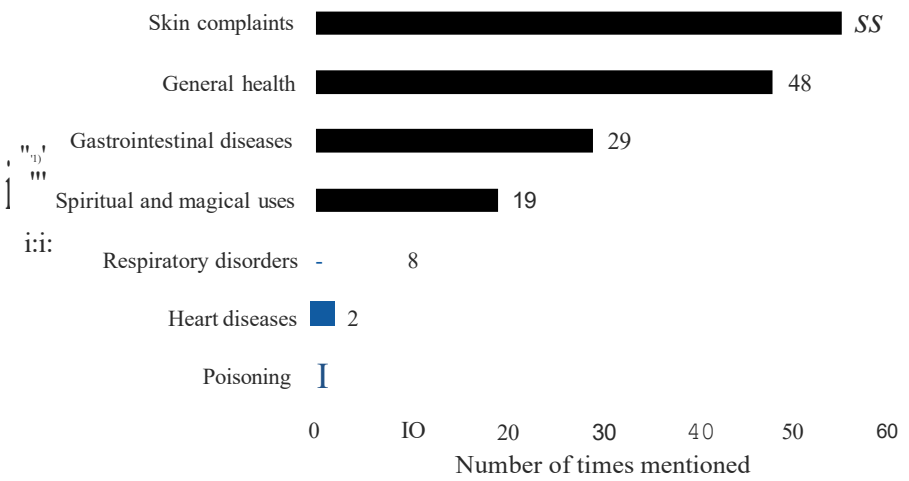


Fig. 2. Plant uses reported in northern Maputaland that are associated with the need for blood purification.

plant names mentioned for the first time according to literature were; isikwakwane *(Cattmaregam obovata* (Hochst.) A.E.Gon,;.); upata (Grewia *caffra* Meisn.); umhlakuva (Ricinus communis L.); umbungwa *(Landolphia kirkii* Dyer) and uvemvane *(Waldtena* indica L.).

Roots (41) were the most commonly used plan part followed by leaves (17%) then bark (16%). The other plant parts mentioned for blood cleansing included bulbs, fruits, seeds, tubers, conns, shoots, and twigs. For some plant species, i.e., *Cymbopogon m atus* (a grass) a whole plant was reported for use. During the survey, *C. m atu.s* was not available for collection during this survey due to goats and cattle grazing in and around the homesteads, but when available, the plant was frequently utilized for blood purifying purposes.

3.4. Preparation and administration of blood purifier plants

The predominant way to prepare the remedies used for blood purification was by decoction (52%), then infusion (35%) and burning of plant parts **(4%).** Most of the remedies were administered orally, whereby large quantities (5 L) of a weak, lukewarm herbal infusion was consumed to induce vomiting. The participants reported that th.is was done to ensure that the remedy can flush the system from impurities that may have accumulated. Poultices were used on boils and bums or as a bandage to cover them. In some cases plant material was simply sliced and rubbed on affected areas. The preparation involved softly pounding leaves to make a paste and then packing on an affected area.

While many of the plant preparations were simple decoctions, one preparation that stood out which was that for *Pyrertacantha scandens.* For this plant species, the participant mentioned the additional use of "white.. (silver) coins to enhance good luck. This can be compared to tossing coins into fountains and wells to wish for good luck. Forty percent of the remedies were taken orally, 18% of the remedies were administered as enemas, 15% by steaming, 12% through bathing, 11% by rubbing on the skin and 4% by inhaling the aromatic smoke. The dried fruits or bark was burned; fleshy shoots or leaves were crushed between the fingers and the aroma they release is inhaled. This type of inhalation was reported to be used for treating headaches. Steaming was reported to be purposively done by adults to open pores and allow the remedy to be absorbed by the skin for skin ailments (mostly for acne). In addition to steaming, people also reported using decoctions for bathing to wash sweat and "dirt" secreted from the skin. Ninety percent of the time participants reported that the plants they use for good luck or love charms were prepared as baths and for steaming. The use of an enema was reported to "flush diseases from the body" and cleanse the "stom• ach". Participants reported that when a remedy is bitter or poisonous if taken orally, the rectal route is preferred, and was less likely to have adverse effects. This mode is commonly used for infants and children. Enemas were administered in different dosages depending on the age of the person treated. Infants and children of 1-3 years took low dosages with a bulbed apparatus to inject an enema, whereby volumes of 30-300 ml were rectally inserted. Older children take enemas of 1-2 L and adults administered a dose of 5 L of a lukewarm decoction. The use of an enema was also mentioned for also relieving constipation.

The participants emphasized the correct use of, as well as low dosages when using certain blood purifier plants, particularly when some blood purification plants are known to be poisonous. However, these poisonous plants species seemed to be the preferred plants since **par**ticipants believed that inducing vomiting or any other type of purging promoted good health which. was the main blood purification purpose. Some of the reported plants like *Abrus precatorius* L. and *Ricinus commtmis* were known to be toxic, however, they were reported as useful for inducing vomiting or acting as a laxative for removing "excess bile···. Some taxa such as *Catunangam* obovate, *Catharanthus roseus* and *Trichilia* emetica were used and participants all claimed that they had no known adverse reaction when used in small dosages. Ninety percent of the participants who mentioned *Catharanthus roseus* and *Tnchilia* emetica emphasized that pregnant women should not resort to using these medicinal plants as they could induce abortion. The participants claimed that plant parts that have a bitter stinging taste are more likely to be poisonous and should be used cautiously. Other species that are known or suspected to be poisonous **were** not reported to be used internally but rather used as baths for sores and other skin ailments.

3.5. Plant combinatioru; mentioned *as blood purifiers*

A total of 26 combinations were mentioned for blood purification (Table 1). These cowbinations were made up of mostly two plants but sometimes three or four plants were combined. The availability of different plant species in the area allowed participants to formulate their own combinations when trying to increase the efficacy of remedies. Each. combination was mentioned once. However, it was noted that some combinations had one plant difference. For example, one participant mentioned a combination of *Combretum* molle and *Terminalia sericea* and the other participant mentioned the same combination with the addition of *Ziziphus mucronata.* These combinations were prepared by boiling (92%} or soaking overnight (8%). *Vangueria infausta, Scleroccuya birrea, Strychnos spinosa* and *Termina/ia sericea* were the most frequently used plant species prepared in combinations.

From the 64 plant species used for blood purification, the RFC were

Table 1
Medidnal plants used (single and combination) by the participants for blood purification.

Botanical name (Voucher number); Family name	Vemacular name in Zulu	Plant parts used	Number or times mentioned (RFC)	Preparation, dos113e Md administration and ailments associated with blood cleansing	Previous studies rtalning lo associated use that may link to blood purification
Abrus *pm:<IIOrius"* L. (ns.zwan 02); Fabaceae	**Ums nsi**	Roots	Two (0.04)	(i) The roots are ground and boiled in water for 30 min (min) after which they are allowed to cool down. A mug (250 ml) is taken daily for blood cleansing and **prevenlion or lre.atment for boils, sores, ra-shes, ringwonnt or as a tonic.** (ii) The roots are mixed with those or *llridelio.* cadiartica and boiled in water. The decoction is taken in the morning **occr1siona.Uy as. a blood cleanser.**	Worms (Tugume el al, 2016)
Acantho,pmnwn glabrarum (DC.) Wild (ns.zwan 42); **Asteraceae**	**lsinama**	Whole plan\	Three (0.05)	Ground plant is immersed in warm waler and **given to children as an enema for intern.Rl** cleansing, lo boost lhe immune system, lreat strong fever, fatigue and cool down extreme body heal,	Fever (York el al , 20II)
Albtrtisia *dtlagomsis"*(N.E. **Br.)** Forman (ns.zwan 34); **Menisperm.aceae**	Ungandingandi	Roots	Three (0.05)	(i) Ground roots are boiled in water and taken orally by children for blood cleansing and tapeworm. (ii) The rools are ground and immersed in water overnight. Half a mug (125 ml) is taken orally in the mornings for cleansing blood. **(iii) Ground roots are mixed with the root** tuber of *Pyrtnacantha kauraba,sana* and boiled in 2 L of water. A quarter or a cup is taken orally for sores.	Digestive system disorders and infections (De Wet and Van Wyk 2008)
Aloe *marlochii* **A. Berger** (TYORK 19); Aloaceae	lnhlaba	**Leaves**	Two (0.04)	**Add** a few drops of lear sap in half a glass of **waler to drink in the morning for blood** cleansing. This is also used for heart diseases and high blood pressure.	Sores (De Wet et al., 2012)
Bidms pilosa L. (ns.zwan 48); Asteraceae	Uqadolo	Roots	One (0.02)	A handful of ground roots are boiled in 2 Lor water and strained. Drink half a glass every **morning for internal cleansing and skin** complaints.	Blood purification (Bryant, 1966; Mabogo, 1990; Von Koenen, 2001); ringworm (De Wet el al , 2013)
Brachylama diJco!or DC. (ns. zwan 43); Asteraceae	lphahla	Leaves	Three (0.05)	The ground leaves are boiled in water, slrained and llllowed 10 cool down. The decoction is taken as an enema for internal dearuing and slrenglhening of 1he body.	**Blood** cleansing (Githens, I949; Watt and Brcycr-Brandw1jk, I%2; Mabogo, 1990); £ever (Corrigan et al , 2011)
Brid"1ia cathartica Bertol. (ns. zwan 01); Euphorbiaceae	Umkhawulangazi/ ungazini	**Leaves,** roots	**Seventeen** (0.31)	(i) A handrul or fresh leaves or roots is lightly ground and boiled in I L of water for 30 min. A quar1er or a cup (63 mil is administered orally 30 min before breakfast for blood purification. This could also be used to treat menstrual pains. (ii) The leaves or roots ere ground, boiled in **waler, srrained ,and allowed 10 cool** down. The decoction is taken prior lo **breakfast, .as Rn emetic. The decoction** could also be used as an enema for ra1igue. (iii) The ground roots are mixed with lhe roots of Rhoicwus *digitata* and allowed to boil in 2 L of water. Hair a mug (125 ml) or the remedy is administered orally **in lhe mornings as a Ionic or cleanser.** This can also improve rerlilil}'. (iv) II is used in combin•tion with Abrw *prtcatorious* as previously described for cleansing blood.	Blood dearuing and menstrual pain (Wall and llrL')'Ct-Brandwijk, I%2)
Carica papaya L. (NZ-21); **Caricaceae**	Upopo	Lear stalk	One (0.02)	The milky sap or the stalk is applied topically on warts or ringworm or taken orally for Internal sores (where skin lntegril}' has been compromised), and used for cleansing.	Skin inrections **(At*•ind** et .d_ 20JJ)
Canchium inmnt(L.0 Kuntze (ru.zwan 07); Rubiaceae	Umvuthwamini	Roots	Two(0.04)	(i) The steam produced from boiling the **ground roots in waler is used lo (reat** acne and cleansing through the pores. (ii) The ground roots are mixed with the roots or S!l)'chnos ,pinosa and immersed in warm or cold W•ter for bathing. This	Stomach complaints (ll-•t • L **1966)**

(continued on nexi pt1ge)

Table 1 (conlinued)

Bou,nkal **1U1111e** (Voucher number}; family name	Vemacular name In Zulu	Plant parts used	Number of times **mentioned** (RFC)	Preparation, dosage and administration and ailments associated with blood cleansing	Previous studies **peruininz ID** associated use that may link to blood purification
				was reported to be done for good luck and as a love chann.	
Carharandtw ro.sew (L.) Cl. Don (ns.zwan 45); Apoeynaceae	lmball	Roolli	Three (0.05)	The rools are ground and immersed in warm water to prepare enemas for internal cleansing. II is used for strengthening the body, stomach-ache and IRpewonn.	Used extensively but not for any blood cleansing (I<I.IIIA,I'**1** ➨ - - 2021)
Carunarqcun *obovata* (Hochst.) **A.E.Gon .** (ns. **z.wan S2]; Rubiace11e**	Jsikwakwane'	fruits	Ten (0 18)	**Mature fruits are cut and immersed in warm** water **and the** next morning the infusion is carefully s1rained and taken orally to mduce vomiting for blood cleansing.	None mentioned In IlttrlltuH
ewan,,,los *hirta"* Klowch (ns.zwon 37); Menispermateae	Umenyokane	Roots	One (0.02}	Ground roots are mixed with theground roots of Gymnosporia senegalmru and a handrut of *Landolphia* krrlcii and bolled in 2 L of water. Adults drink half a mug (125 ml) and children 1-2 tablespoons (15 ml) three times a day to cleanse and mengthen the body, Md to ll'eat diarThoea.	Diarrhoea (•i. "ti .., Ill 20 I0)
Cl<uJSffla *omsata* (Willd > Hook f ex Bendt. (ns.zwan 47); Rulaceae	Umwashampunzi/ umsanga/isifudu/ umnukambiba	**Leaves**	Five (0.09)	Ground leaves are boiled in wattr, strained, and alloMd lo cool down. This is administered as an enema for body cleansing, **internal sores and exlernal sores. The** decoction is also used as a wash for external **sores**	Treats body pains;md gives SIrength (Phll ndl?r 2011)
Combnrummolle• **R.Br.** ex G. Don (ns.zwan 16); Combretaceae	lmbondo	**Leaves,** roots	Six (0.11)	(i) Ground leaves or roots are soaked in 5 L of water overnight. The infusion is strained and taken orally before breakfast as an emetic. This is done regularly ID maintain a healthy immune syslem and for sll'ength, (ii) A handful of roots are ground and mixed with the roots of *Taminalia* eo and infused in waler. In lhe mornings this infusion is taken orally to induce vomiting. This is also used as an antidote for snake poison. (iii) Mix the roots with the roots of *Tmninali• saiua* and *Ziziphw* **mncronara and soak thiem in warm water** fo, a brief time and *use* R< an enema for internal body cleansing and fatigue.	Snake bite antidote **(Pon,',t7, 1998)**
C)mbopogan m("linalw• (Steud,) Stapf ex Burn-Davy; Poaceae	Is	Whole plant	Fifteen (0.27)	(l) Ground fresh or dried plants are soaked in waler for **balhing,** for love charms, for good luck, and for skin problems. (ii} Mix the plant with the roots of *Prosopi, cin6aria* **and** *Sapium int,genimum* and boil in water. The steam is used for blood deansing. Steaming is also l1Sed to treat acne and as a good luck charm. (lil) The plant could lllso be l1Sed in combination wl th *Schotia bracliypttala* bark lo ste1U11 for pimples.	Blood purificalion (Wan and Breyer-Brandw1,k, 1962' Philander, 2011)
Dichapetalum cyrnoswn• (Hook,) Engl. (ns.zwan 20); Dichape1alaceae	Ubangalala	**Roets**	**One (OOl)**	Roots ara ground wilh roots of Eudeo natalmsiJ and soaked In cold water overnight, In the morning. the infusion is taken orally to 1nduc.! vomiling. Ir Is also used in balhs as a love ch•rm **and** for good luck.	None mentioned in llrt<aun
Ekebergia capm,i.s Spamn. (ns.zwan 50): Meliaceae	Umnyamathi	**Batl**	On-0 (0.02J	(I} Bark boiled in water 1s taken as an emetic for blood cleansing, (ii) Steam released from boiling the bark in **waler is used to treat acne and as a love** or good luck charm.	Emetic, pimples (Mabogo, 1990)
EltJ)hM1011hifa dtJ)hannna (Burch,) Skeels (S. Ncikl 12) ; Leguminosae	lntolwanetumdabu	Roots	Two(0.00	The roots are groood and boiled in water lo be administered AS an enema to improve blood circulation and sirength.	Blood purification (Bryant, 1966; Ocl(and el AL, 1985: Von Koenen, 200 I)
Eud,a natalmsis• **A.DC.** (ns. zwan 19); Ebenaceae	Udelunina/idungamuz,	**Bark,** roots	Two (0.04)	(I) II is used In combination with *Dichap,talwn cymoswn* as previously described. (ii} A handful of bark or roots are mixed with a handful of 5tlerocarya *bin-ea* bark **Md** boiled to steam for cleansing blood lrealing acne and getting rid of bad luck	**Blood** purificalion (Gerstner, 1 38; **U.** Wei and Ngubane, 2014)

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Table 1 *(continued)*

Botanical name (Voucher nwnber); Family name	Vernacular name in Zulu	**Plant parts used**	Nwnberof times mentioned (RFC)	**Preparation, dosage and administration and** allmencs associated wilh blood cleansing	Previous studies pertaining to associated use that may link 10 blood purification
Euphorl>ia in&=• E.Mey. ex Boiss.; Euphorbiaceae	Umhlenhle	Leaves	Two(0.04)	The leaves are cul, and !he milky sap is applied topically 10 cleanse blood or rubbed **on10 warts.**	Blood purification (Cnltnn, 19:111)
Garcinia living>lone, T. **Anderson** (ns.zwan 23); Clusiaceae	Ugobandlovu/Umphimbi	Bark	Three (0.05)	(i) The ground bark is soaked in water and **strained after a few min. The infusion is** given to children as an enema for weakness and fatigue. (ii) The bark is mixed with that of *Scltrocarya bin'ea* and boiled. After straining, it is taken orally to treat diarrhoea. (iii) The roots are mixed with the roots of *Oclma natalilia* and *Vangueria infawta* then soaked in cold water overnight. The infusion is used in a bath for seven consecmive days for body cleansing 10 prevent bad luck.	Blood purification (De Wet and Ngubane, 2014)
Gardenia .,,lkensii K.Schum. **(ns.zwan 28); Rubiaceae**	Umvalasangweni	Roots	One (0.02)	(i) A handful of roots are boiled and used to **steam acne and soothe sore eyes.** (ii) The ground roots are boiled in water, strained, and taken orally to cleanse the body and for intestinal worms and sores.	Sore eyes (Mar<>▶••"lOIJ)
Grt'Wia *caffra* Meisn. (ns:.zwan 44); Tiliaceae	**Upata**'↓	Roots	Two (0.04)	**The ground roots are soaked in cold/warm** water. A quarter of a mug is taken often orally **to slrenglhen the body and prevent diseases** as • form of blood cleansing.	**Blood purification** {f **runc"f\ 19:tll)**
Gymnosporia -"ntxaleruis• (Lam.) Loes. (ns.zwan 22); Celastraceae	Ubuhlangwe/ **isihlangwane**	Leaves, roots	Four (0.05)	(i) The roots or leaves are ground and mixed with sulphur powder and boiled in water for 30 min. The strained decoc1ion is taken orally in the mornings (half• glass) for blood cleansing. (ii) The ground roots are mixed with those of *Cissampelos hirta* and *Lartdolphia* kirkii and allowed to boil. Adults drink half a mug and children 1-2 spoons (15 ml) three times a day to dean the body and strenglhen it.	Blood purification (li<•<$1r.rr. **l')J/l)**
Hippobromw uciflorus Radlk. (ns.zwan 29); **Sapindaceae**	lqhume/umfazi othethayo	**Twigs, roots**	One (0.02)	(i) The ground twigs are soaked in warm water and administered as an enema to cleanse the body internally and for fatigue. (ii) Twigs or rool.5 are used to steam for love charms.	Love charm (l•co,do1 ct •l.. 2009)
Hydnora abyssinica **A.Br.** (ns. **zwan 39); Hydnoraceae**	Umavumbuka	Rhizome	Two(0.04)	*Dry* rhizome is ground, and • handful is **boiled in 5 L of water for steaming and** bathing. This is for cleansing the body and skin, good luck charms and pimples.	Stomach diseases, gastric ulcers and cancer (Al-f,uom, er •I, 2018&)
Hyphaene nataleruu• Kuntze (ns.zwan 32); Arecaceae	Ilala	Stem	One (0.02)	The chopped stem is mixed with the ground roots of *Rhoici.s5w digi101a* and boiled in 1 L of water. The decoction is taken orally in the **morning for body cleansing 11nd to relieve** menstrual pains.	None mentioned in literature
Hypoxis *hemerocallidea•* Fisch., C.A.Mey. & Ave-Lall. (SC Ngubane 15); **Hypocidaceae**	Inkomfe	Corm	One (0.02)	(i) Fresh corrn is chopped and boiled in 1-2 L of water. Half a glass is taken regularly 10 cleanse blood. (ii) The corm is chopped and mixed with the crushed shoots of *Senedo* .stmlluloides and boiled in 2 L of water for 30 min. Half a glass for children is taken orally !Wice a day co cleanse blood, 1rea1 rashes and sores. (iii) A handful of freshly ground corm is mixed with *Scadaxus* pwuc,w ground bulb, R1111unrulw mullifidw shoots, ground roolS of *Ximenia cajfrtJ* and brimstone (sulphur) and boiled in 5 L of water. Take half a glass orally three limes a day to drain vaginal discharge, get rid of smell in urine, dirt in the blood, and pimples.	Blood purification (rt,,luldn, **2011)**
Kigelia africana (Lam.) Benlh. (ns.zwan 30); Bignoniaceae	Umvongothi	Bark	Five (0.09)	The ground bark is boiled in 1 L of water. Infants are given 1 teaspoon (S ml) twice a	**Blood** purific3lion ((, rstner, 1938; Von Koenen 2001; Corrigan et al., 2011)

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Table 1 (continued)

Botanical name (Voucher nwnber); Family name	VemacuJ.ar name in Zulu	Plant parts used	Number or times mentioned {RFC)	Preparation, dosage and admlnlstralion and aibnents associated with blood cleansing	Previous studies pertaining 10 associated use that may link to blood purilicalion
				day to cleanse the internal system and treat boils and sores.	
KnllMOla mosambicind' Pax Holhn. (ns.zwan 14); Caryophyllaceae	lkhambl	Shoots	Five (0.09)	(i) Crush one handrul or the plant and soak it in 1 L or warm water. After straining we the infusion as an enema 10 cleanse the body and for fatigue. (ii) The leaves are mixed with those of Psidium *guajava* and *Melia llltdarach* and bolled in water 10 be administered orally in the mornings for blood purification.	Skin and s10mach co nli (De Wet et al. 2010; York et al. 2011)
Landolphia kirki,.., Dyer; Apocynaceae	Umbungwa'	ROOIS	One (0,02)	The ground roots are mixed with those or *Cissampelos hirla* and *Gymnosporia* s,n,galmru and boiled in waler. The decoclion is taken orally three limes a day (half a mug for adults and 1-2 teaspoons for children) for blood purilicalion.	Magic medicine (Magwede et al, 2019)
Lippia javanica (Burm.I.) Spreng. (ns.zwan 06), Verbenaceae	**Umsuzwane**	**LeavesJ** shoots	Two (0.04)	(il The leaves or shoots are boiled In water and token orally to improve **blood** circulotion, strengrhen the body and for **fever.** (ii) The leaves or shoots are allowed to boil in WAier for ste,,ming to tre,,t fever or used as a bath to get rid of evil spirits.	Blood purification {Mabogu, I 990; Pooley, 19911)
MomordicG*balsamilla* L (ns, **zw;m 35); Cm;urbitaceae**	Umkaka	Leaves	Three CO.OS)	(i) The crushed leaves are boiled in water and administered orally for blood cleansing. Paste is made from leaves and applied on ringworm and sores.	Blood purificalion (Vo,, **KDMffl** 20011
Ochna naraliua• (Meisn.) Walp. (ns.zwan 03); Ochnaceae	lslzemane	Roots	Two (0.04)	(i) A handrul or cut or ground roots (sometimes mixed with *llridelia cathartica)* is boiled in 2 L of water. One cup is diluted in 5 L of water ond used as an emetic every moming for blood cleansing. (ii) II is used in cornbin'"ion wilh *Garcuria* liringstonei and *V'"""""a (n/OJJSlo* as described previously to cleanse the body and prevent bad luck.	Blood purification (lie \ff<t Ngubane, 2014)
Ochna s,m,lara Walp. (ns. **zwam 41); Ochnace11.e**	Umngenlsanyoni	RoolS	Three (0.05)	The roots are cut and boiled in 2 L of waler for 30 min. The decoclion is taken orally three limes a day for blood and womb cleansing. The deroctlon Is also taken for infertility and menstrual pains.	Skm infections Olut<ll.113, et I , 19%)
O oraa ,ngltri R.F•m. *1k.* **A.** Fem. (ns.zwan 46); Anacardiaceae	lsllice	Roots	One (002)	A handful of roots is ground and soaked m **warm water for 11 (ew min. The infusion is** taken as an enema for internal cleansing as well as fover.	Blood purilication (De Wet and Ngubane, 2014)
Pum1 amuic<V!a Mill. (ns. zwan 27); Lauraceae	Ukotapheya	**Seed**	One (0.02)	Cut seed is soaked in wMm **water** and taken orally on mornings for cleansing the body and for kidney complainls.	Cleanser (Asowata-AyudeleN •I., 2016)
/'rosfJpU *cinuaria•* (L) Druce (nuwan 08); Leguminosae	Ushashane	**Roots**	Four(0,07)	(i) The roots are boiled in water and strained. A d=tlon Is used **as a** mouthwash for toothache. **(ii) 1l is used in combination with** *C)'mbopogon* marginarus and *Sapiwn integ,rrimwn* a, described previously 10 treat pimples and cleanse blood. (Iii) Mix with the roois of Stryehnos *spinosa* and *Vangutria infawta* and boil in 2 L *of* water. Take two plastic hotde caps (10 ml) twice a day to cleanse blood and ease menstrual pain.	Various ailments (Choudhary e1 al., 2018)
Psidiwn guajav,r L. (ns.zwan 49); Myrtaceae	Amagwava/ugwava	Leaves	One (0.02)	The leaves are combined with those of *Kram,ola* mosam!,;cina and *f,Mia* mmlaraclr. boiled in water **and** taken orally in the mornings for blood cle11nSing.	The leaves are used to treat poisoning, stomach-ache and dia1Thoea (Mongalo and Mal<hafola, 2018)
P:,mracandra *kaurabcw4na'* Baill. (ns.zwan 38); **lcacinaceae**	**lnzmuo**	Root tuber	Two(0.04)	(iJ A handful or ground dried root tuber is soaked in 2 L of cold water. The lnrusion is taken orally in the mornings for the cleansing of blood. (ii) The powder *of* the root tuber is placed on SOl'es and wounds.	Genital warts (De Wei et al,, 2012)

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Table 1 (continued)

Bo1ankal name (Voucher number); Family name	Vernacular name in Zulu	Plant parts used	Number of **times** mentioned {RFC)	Preparation, dosage and administration and ailments •ssociated with blood cleansing	Previous studies pertaining to associated use thal may link to blood purification
				(1ii) It is used m combination with Alberti.sio *delagoensis* as descnbed previously lo cleanse the blood and the body.	
l'yrt11.u:antha scand•ru Planch ex Harv. (ns zwan 40); lcacinaceae	Unginakile/ umakhkhothwane/ ungandingandi/inhlanhla emhlophe	Twigs	Four (0.07)	(i) Soak a handful of !Wigs in 5 I. of cold waler overnight Strain I L of the infusion in the morning and drink to **induce vomiling. This is done to cleanse** the body. (ii) Soak a mug of ground stem in 5 L of cold water overnight with silver money coins. Use the mixture to bathe a1 dawn (without using soap for cleansing) for good luck and as love charms.	An1i-abortifacien1 (l!:r)**MI**, I
Ranunrnlus mullifidus" Forssk. (S. Nc1k1 23), **Ranu.nculaceae**	lxhaphozi	Shoots	Three (0.05)	(i) A handful of shoots is mixed with a handful of *Senwo* s,rraltlloidts shoots **and** crushed, then **boiled** in 2 L of Waler. The de<:oction ,s strained and poured in a sealable bonle U is drunk daily in 1he morning for skin cleansing, mens1rual pain, and pimples (ii) Ground shoots are mixed with the corm of *Hypoxis lremerocall,d,a,* bulb of *ScadoJrW pw,iceus, Ximtnia caffra* roots and sulphur as described previo\lSly 10 drain vaginal discharge, ge1 rid of smell in urine, dirt in lhe blood, and for pimples.	**Blood** purification (\'MOl'IWn, 2001)
Rhoicissus digi1ma• (L.O Giig & M.Brandt (ns.zwan 04), **Vitaceae**	**lr,11wa.rl**	Roots	Two (0.04)	(i) Roots are chopped and boiled in I I. of water. It ,s laken orally in the morning before ea1ing to cleanse the blood and **treat menstrual pain.** (ii) Ground roots are mixed wilh the ground slem of *Hyphaene* na1aleruis and boiled in 2 L of water. It is taken orally in the morning before eating for blood cleansing and kidney complaints.	Blood purificalion (f'b,1 ....dcr, 2",JI)
Ricinus com.muni.s **L (ns.zwan** 21); Euphorbiaceae	Umhlakuva' /umpono	**Leaves**	Three (0.05)	(i) The leaves of the plant are boiled in water, slramed, allowed to cool and laken orally for blood cleansing and **s:ores.** (ii} I.eaves are soaked in worm water. The **infusion is taken orally to dean-se lhe** bladder and kidneys.	Blood purificalion (Von I<-,,. ... ,, 20"0
S<lPiWll intf!/ltrrlmwn' (Hochsi.) J. Leonard. (ns. zwan I I); Euphorbiaceae	lgowane/umgaqampunzi	Bark	One (0.02)	(i) The bark is infused in cold waler and \lSed for balhing 10 lreal skin ailmenls. The bark is also used to steam for blood **cleans•ng.** (ii) Ground roots are mixed with the bark of Strychnos spinosa lo sleam for blood cleansing and as a love charm. (iii) It is used in combina1ion with *Cymbapogan ma,xjnatus* as described previously to trea1 pimples, as a charm and to cleanse the blood.	Menslrualion and dysmenorrhoea (De Wei and Nguhane, 2014)
Scadoxus pw,iceus• CL.) Friis & Nordal (ns.zwan 09); Amaryllidaceae	ldumbe lehlalhi	Bulb	One(0.02)	The ground material is mixed wilh a handful of freshly ground corms of *Hypoxis htmerocallid•a.* R011W1culus *mullifidus* shoots, *Ximmia caffra* roots and brimsione (sulphur) **as described previously to drain vaginal** discharge, get rid of smell in the urine, dirt in the blood, and for pimples.	Blood purification (Mhlongo and Van Wyk, 2019)
Scholia brach toJa• Sond. (ns.zwan 17); Leguminosae	**Umgxa.mujuvovovo**	**Bark roots**	Four (0.07)	(i) The bark and rools are ground and boiled in waler for steaming 10 cleanse the body and puriFy the blood. (ii) II is used in combination with *Cymbopogon* ma,xjnarus as described previously to treal pimples and for body **cleansing.**	Blood purification, acne (llu..mr 1 '>4)
Scluocarya birr,a (A.Rich.) Hoch<t. (ns.zwan ID); **Anacardiaceae**	Ulhl/1:\W	Bark	Ten (0.18)	(i) A handful of fresh bark is mixed wilh bark or roots of *Euclea natalensi.s,* boiled **in w ter and used for s.teaiming to de°"n** 1he blood, get rid of pimples and agains1 bad luck.	Blood purification Gerstner (1938); Pujol (19901; Von Koenen (2001)

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Table 1 (continued)

Botmical name (Voucher number); F11111ily mune	Vernacular name In Zulu	Plant parts used	Number of tlmes mentioned (RFC)	Preparation, dosage and administration and ailments associated with blood clelUUing	Previous studies pertaining to 11$$0Cia1ed use that may link 10 blood purlftcation
				(ii) It is used in combination with *Garcinia* as described previously to **treat diarrhoea.** (iii) The bark is mixed with the bark of *Vachdia sitboialia* boiled in Willer. II is used as an **enema** for internal **deansi113** for a baby.	
Sen.mo saratuloides• DC. (ns. zwan); Asterace;ie	Un.sukumblh	**aves**, shoots, whole plant	Ten (0.18)	(i) A handful of crushed dried or fresh plant material is boiled in I Lor water. H.olr• **cup** of **the** decocrion is taken twice a day for aduhs and two teaspooll$ (IO ml) for children for blood cleall$ing and sores. (ii) It is used in combinalion Wilh *Hyporis hemuoca/lideo* as described previously for blood clean.sing and to treat rash and sores. (Iii) It is used in combination with *Ranuncwm* m,.olqtidw as described previously to treal skin **and** dysmenonhea.	Blood purificali011, **sora** (Wall and Breyer-Br ndwijk, 1%2; Pooley, 1998)
.sot.num *atuleasrnun*• Dunal; S01anacea1	Jntuma enkulU/umth ma omkhulu	Fruits	One (0-02)	(i) Fruits are burnt in **a** way that the smoke will reach the sore tooth for treoting toothache. (ii) Fruits are cul open and applied topically on warts and other skin infeceiOfU.	Sores and wounds (Mhlongo and V,m Wyk, 2019)
Solanum panduriform• E. Mey, (S Nctki 38); Solon•	lntuma/umthuma	**Fruits**	Two(0.00	(il The fruit is used to treat wans and boils. II is cut open and applied topically on wans or boils. (ii) Dried fruit is burnt, **and** the smoke ls directed to the sore 1001h for toothache. (iii) The fruits are ground and soaked in **warm water. The infusion is** administered as an enema once strained and lukewarm to cleanse the internal system.	None mentioned in literature
Sr,ychnos spinosa' Lam. (ns. zwan 12); l.oganiaceae	UmhhllatMUlhJali	Roots	Four (0.07)	(i) E,mng fruits helps 10 get rid Or the mucus that build$ in the chest lhw cleanse the body from UI'IJI«CSSAry dirt (ii) It ıs used in combination with Canrhitrm inom• as described previously and used as a blood cleanser. (iii) II is used in combination with *Prosopu cineraria* **and** *V""8lleria infausta* as described previously to treat dysmenorrhea and clean.se the blood. (iv) 11 is used in combination with *Saplum* integerrimum as described previously to cleanse blood.	**Blood** punficabon (Von l<otntn, 200J)
Synaptolq,b lcirlcli Ohv.; Thymelaeaceae	Uvum• omhiophe	Roots	Two (0.04)	(i) Two mndfuls Or ground roots are balled ,n water for steaming to cleanse the blood and body. (ii} The roots are ground, and the powder is snuffed to inhibit hemorrhage.	None mentioned in literature
Syzygi1B11 *cordarum*• Hochst. **ex** Krauss (ns.zwan Sll; **Myrlaceae**	Umdoni	Bark	Two (0 04)	The bark is mixed with the root or *Ternrill<J!ia* ...,.,,ea and soaked in warm water overnight. The infusion is used as an emetic for body cleansing	Skin conditions. **medicinal** magical purpose (Hutchings et al., 1996, Mhlongo and Van Wyk, 2019)
***Tabernaemontana* e/1!3G'U** Stapf (ns.zwan 31); Apocynoceae	Umkhahla	Frmts	One (0.021	A few fruits are ground and soaked in 2 L of warm or cold water. The infusion is occasionally taken orally in the mornings to induce vomit for internal cleansing and prevention of illnesses. It is also recommended for (ever and fatigue.	None mentioned In literature
***Tfffflinal.ia suicm'* Burch. e-x** DC. (ns.zwan **18);** **CombretHtea**	lkonono/umkonono	Bark, roots	Twenty-two (0.40)	(i) The ground roots are soaked in warm water. The liquid is stralntd in the morning; a cup of the infwjon b drunk and then the patient waits a few min. before drinking enough w rrn water 10 induce vomiting to cleanse the blood. (ii) It is used in combination with Cornbrttum *mo/le* as desaibed previously to cleanse blood.	Blood p,.ilialtion (Vot1K-2001)

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Table 1 *(continued)*

Botanical name (Voucher number); Family name	Vernacular name in Zulu	Plant parts used	Number of **times** mentioned (RFC)	Prepara1ion, dosage and administralion and ailments assodaled with blood cleansing	Previous studies pertaining 10 "5sOCialed use lhat may link lo blood purificalion
				(iii) It is used m combination with *Combrelum moUe* and Ziziphw *mucronata* as described previously to cleanse the body. (Iv) The bark is used in combination with *Syeygium cordarum* as previously described to cleanse the body.	
Trichilia tmeaca Yahl (ns. zwan 25), Meliaceae	**Umldtuhl**	Bark, roots	four (0.07)	(i) The roots are ground, boiled in water and strained. The decoc1ion is used as an enema to cleanse the womb and relieve constipalion (ii) The bark is ground and soaked in waler for enemas, used oe<:asionally for arlhrilis and cleansing the body. Make sure the decoction is weak.	Numerous medicinally rela1ed uses (Komanc et al., 201 I)
Vachelia srtbenand' (DC.) Kyal & Boaiwr. (n,.zwan 33); Legumino,ae	**Ulnlchay**	Sark, root	Four (0.07)	(1) The ground roots oF *Vach,lia* sitberiana, *Vww,tria irl[amca* and *Ximt'1lia caffra* are mixed and soaked in warm water. The infusion 025 ml, hair a cup) is taken **orilllly or .iis an enema once in ii while for** blood cleansing. (ii) It is used in combination withScleroca,ya *birrea* as described previously for imemal cleansing of infanlS.	Blood pwification (H Jld\.f\l• la1 19%)
Vachellia ;ranthophlo•a Benlh. (ns.zwan 26); Leguminosae	Umkhanyakude	Deli<	**Two(004)**	(i) The bark is ground and boiled in water, strained, and taken orally for blood **cleansing or as an emetic.** (n) The bark is boiled m water and used to steam and ba1h for cleansing of blood and obtaining good luck and love charms. **(iii) The bark is used in steiiming or as a** decoction for fever.	Blood purificRlion (flutchmgs *et* al , 1996), good luck/love charms (Corrigan ct al., 2011)
Vww,eria infamtll" Burch. (ns zwan 15); Rubiaceae	Umvili/uvilapha	**Roou**	S:1 CO.I I)	Ci) Cut or ground roots are boiled in water and taken orally for blood cleansing. (ii) A handful of ground bark is soaked in **warm water overnight One quarler of a** mug (one tablespoon for children) of the infusion is taken orally in the morning prior 10 breakfast as a body cleanser. (iii) It is used in combination with *Vachel/a* ***.sitbaiana*** **and** ***Ximmia caj/ra*** **as** described previously for blood cleansing. (iv) It is used **in** combination with *Garcirlia* livingstonri and *Ochna narallida* as described previously lo cleanse the body and prevent bad luck. (v) It is used in combination with Prosopis *cirleraria* and *Sirychnos spinosa* as described previously to treat dysmenorrhea and cleanse blood.	Blood purification (\lc,r, 'ICc,,n n. 2001)
Wallheria indica L. (ns.,wan 36); S!erculiaceae	**Uvemvane**'''	Root>	OM(0,02)	(i) The roots are used for steaming for unblemished skin and cleansing. **(ji) Ground roots are soaked in warm Waler** and used as a wash for sores.	Sores (Von Kocn n. 2001)
Withania somni[mi (L.) Dunal (ns.zwan 24); Solanaceae	Ubuvimba/uvimba	Whole plant	Eight (0.15)	The roots or whole plMt is ground and **soaked in warm water, strained, and used as** an enema lo cleanse the body and to treat fever.	Cleanser (Von Koenen, 2001; Mo1cctcc and Kose, 2016)
Ximtnia caffrd' Sond. (ns. zwan 13); Olacaceae	Amathunduluka/ umthunduluka	loou	f-ow(0.07)	(il The roots are ground and allowed to boil in water. The decoclion is 1aken orally for blood purification and haemorrhoids. (ii) Ground rools are mixed with *Hyporis hemerocallidoo* ground corm, *Rammculw* mulrifidw ground shoals, *Scadw:us* pWli<rw ground bulb and sulphur as described previously 10 drain vaginal **dis-charge, gel rid or the smell in urine,** dirt in the blood, and for pimples. **(iii} II is used in combination wilh** ***Vachelia sieberiana*** and *Vaniueria in[awta* as	Blood purification (Von Kc>rnt'<l, 1001)

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Table 1 (conrin)

Botanical name (Voucher number); FMtily name	**Vernc1cuhu name in Zulu**	Plan! parts used	Number of times mentioned (RFC)	Preparation, dosage and administration and ailments associated with blood cleMSing	Previous Sludies **pertaining** 10 associated use that may link to blood purification
				described previously 10 cleanse the blood.	
Zisip#ws mucronatd' Willd. (S. Nciki 32); Rhamnaceae	Umphafa	Roots	One (0.02)	11 i$ used in combination with *Combre!JJm ma* ond Tffl71inalia *sericta* os described previously lo cleanse the body.	Body pains, skin conditions and as a tonic (Mhlongo and Van Wyk, 2019)

Bold - Plant species mentioned for the 1!rst time.
- plants used in combination.
  voucher unavailable due to seasonal plant collection.
- Zulu name recorded for the first time.

calculated. There is a very clear distinction of plant species demonstrating importance with the top three species in order of highest RFC obtained for *Tenninalia sericea, Bridelia cathanica* and *Cymbopogon marginatus* respectively. Of the 39 families mentioned, Verbenaceae was the most frequently used.

4, Discussion

An observation was made from the study that males and females had different reasons to use blood purifier plants. Da Costa et al. (2021) reported that ethnobotanical knowledge is gender structured, and females have a connected sharing network that allows for a greater knowledge to be shared, whereas males are less likely to share knowledge. This could be the reason why the males in the study area knew fewer plants and did not know many of the ailments related to blood purification. Age had no effect on the participants· knowledge. A possible explanation for this is that the study focused on plants that Intrigued young people. Furthermore, the use of blood purifiers held relevance to all age categories.

Plant species not previously documented for the use of blood purl• fication does not mean that those plants had not been documented for other ailments. Since this is the first study in Northern Maputaland to focus specifically on documenting blood purifier plants in a region that is claimed to be a botanical biodiversity hotspot (Boon, 2010), there is always a higher possibility that new medicinal plant uses could be reported.

Asteraceae (6.25%), Euphorblaceae (6.25%) and Leguminosae (7.81%) families had the highest number of species. Similar to this study, a review on blood purifier plants conducted by Van Vuuren and Frank (2020) stated that the people of San and Sotho cultures also use the doctrine of signatures principle and the colour red in the plants to associate the plant with blood-related infections. From the survey conducted it was noted that most plant species mentioned as blood purifiers **were** either red which according to the participants insinuated 'blood related· or white insinuating 'clean or cleanser' and therefore such a plant could be used as blood or body cleanser. The preferences for specific plant parts are often influenced by cultural, historical, and pharmacological factors. Roots, for instance, are frequently used because they may contain concentrated bio-active compounds. Leaves are also commonly used, as they can be harvested without harming the plant's survival, and they often contain valuable secondary metabolites.

According to the results of the study, the whole idea of cleansing depends on purging effects in order to remove the toxins in the body or blood. The lay people from this area believe that illnesses are caused by internal disruption or "uncleanliness within the body. Therefore toxic plants can purify the body and blood through purging (Hutchings, 1989). Adverse reactions may induce vomiting or any other type of purging to promote good health (Clement et al., 2017). The two most frequently used plant species, *T. sericea* (cited 22 times) and *B. cathartica* (cited 17 times) were found to be non-toxic when tested in the brine shrimp lethality assay. Most of the recommended mixtures were also found to be non-toxic (Zwane, 202)).

It is important to consider the relative importance of the most frequently used plant species in the context of general medicinal use within the same cultural group and geographical region (Heinrich et al., 2009). Taking this into consideration, the most cited plant species in the current study was comparatively evaluated with the most cited plant species from previous ethnobotanical studies within the same cultural group. When compared to other medicinal plant traditional uses, for example diarrhoea (De Wet *et* al., 2010), respiratory diseases (York et al., 2011), sexually transmitted infections (De Wet et al., 2012), skin disorders (De Wet and Ngubane, 2014), hypertension (De Wet and Ngubane, 2014) and gynecological complaints (De Wet and Ngubane, 2014), the most frequently used plant species *(Tenninalia sericea)* for blood purification holds Jess importance than the most frequently cited plant species for other diseases studied. What is interesting ls that all the species most frequently mentioned *(Bridelia cathanica, Hypoxis hemerocallidea,* Momordica. *balsamina,* Psidium *guajava, Senecio se"atti/oides,* and *Lippia ja11anica)* in previous studies are also used for blood purification.

Kigen et al. (2017), documented the combination of plants in concoctions for blood cleansing. The use of plant combinations is common practice in this study area. Several ethnobotanical studies from northern Maputaland reported the use of combinations to treat diarrhoea (De Wet et al., 2010); respiratory diseases (York et al., 2011); sexually transmitted infections (De Wet et al., 2012); skin disorders {De Wet and Ngubane, 2014), hypertension (De Wet and Ngubane, 2014) and gynecological complaints (De Wet and Ngubane, 2014). Although some plant species were similar ln the last-mentioned studies, only one combination was the same, namely *Hypoxis hemerocallidea* in combination with *Seneclo serraruloides* which was reported by both the current study {treating rash and sores) and De Wet et al. (2012) to treat sores related to sexually transmitted diseases.

S. Conclusion

Within the traditional practices of using medicinal plants in Northern Maputaland, blood purification plays a significant role in holistic treatment. Plant species and their combinations were used for a number of medically related conditions, cultural and spiritual purposes but with the specific directive of cleansing the blood. While the use of blood purifiers remains a largely unexplored area, this study provides valuable infonnation on traditional use and the participants' perception of why they need to purify or **cleanse** their blood. Most plants reported in this study were used with caution or in low dosages suggesting concern of toxicity or overdosing. There is no doubt that when examining African traditional medicine, holistic terms such as "blood cleansing" cannot be ignored and providing some scientific rationale may forge a link between western and African medical systems.

Ethics approval and consent to participate

Ethical clearance was received from the University of Zululand Research Ethical Committee for this project (UZREC 171110-030 PGM, 2018/609). All participants gave consent for publication.

CRediT authorship contribution statement

N.S. Zwane: Data curation, Fonnal analysis, Investigation, Methodology, Validation, Writing - original draft. H. De Wet: Conceptualization, Funding acquisition, Project administration, Resources, Supervision, Writing - review & editing. S.F, Van Vuuren: Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing - review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Zwane, N.S., 2021 An Ethnobotanical and Ethnopharmacological Study of Plants Used for Blood Purification by Rural Communities in Northern Maputaland, South Africa. Masters Thesis, University of Zululand



Saady van Vuuren (Prof) holds a personal professorship in the Department of Pharmacy and Pharmacology, University of Witwatersrand, where she has been employed for the past 37 years. She obtained a PhD undertaken on the antimicrobial properties of Saudi African medicinal plants.

Some of the most valuable research contributions made have been towards the field of ethnopharmacology and traditional use of medicinal plants in Southern Africa. Furthermore, strong emphasis of her research is in validating the antiinfective role of medicinal plants in traditional healing and Africa. Investigations of the antimicrobial properties of essential oils and structure activity relationships have been a major component of her research, specifically on pathogens related to relevant diseases. Another focus **area,** which brought both national and international recognition, is her scientific contribution towards combination studies where attention is given to interaction between African medicinal plants, essential oils and compounds, and conventional antimicrobials. She has authored 181 ISI accredited publications and over 262 conference contributions, many *of* which have been awarded prizes. She Currently holds a B3 benchmark rating from the National Research Foundation of South Africa.



Nontobeko **Zwane** graduated with **a** Master's degree from the University of Zululand in 2021 with her thesis entitled **"An** ethnobotanical and ethnopharmacologicAl study of plants used for blood purification by rural communities In northern Maputaland, South Africa." She has given two oral presentations at National conferences on the subject matter. She is currently **a** PhD candidate in the Botany department of the University of Zululand, KwaZulu-Natal. She also holds a BSc in Biochemistry and Botany (2016), and a BSc (Hons) in Botany (2017). Her previous research has focused on plant morphology and physiology, ethnobotany, and ethnopharmacology. Her current work focuses on propagating and enhancing Indigenous *fruit* trees for possible domesticatioll and commercialization.



Helene de Wei is a retired Professor from the University of Zululand (South **Africa).** She started her career as Senior Laboratory Assistant in the Department of Botany In 1990. She was appointed as a Lecturer in the same department in 1995. She registered for a PhD part-time in 2001 and graduated In 2006 from the University of Johannesburg (South Africa). Her doctoral research covered a variety of fields such as ethnobotany, taxonomy and the chemical analysis ofsecondary plant products of the South African species family of the Meni•• **permaceae.** After her PhD she establish!i!d herself as an expert in the field or ethnobotany. She is the first ethnobotanist to concentrate on Zulu people s medicinal plllllll knowledge In a region not previously explored by any other ethnobotanist, namely Northern Maputaland. Her focus has been mostly on the plants that are grown in and on the periphery of peopt•• homesteads. Many new medicinal plants and vernacular names used for a variety or infections and other ailments have been documented for the first time. Herethnobotanical surveys also Included medicinal plants used among people of Khoi-San and Cape Dutch descent In the eastern parts of the Karoo.