Observations on the use of some known and suspected toxic Liliiflorae in Zulu and Xhosa medicine

ANNE HUTCHINGS, S. E. TERBLANCHE

Summary

The usage as well as some of the known family chemical characteristics of Xhosa and Zulu traditional medicinal plants belonging to various families of the superorder Liliiflorae are related to some of the clinical effects of Xhosa medicine observed by Solleder in 1972. Symptoms and effects of some fatal cases of human and animal poisoning are tabled. Fewer cases of acute poisoning appear to take place than might be expected. If hospital staff were seen to be more understanding in their attitude towards herbal medicine, tracing and eventually discouraging the use of harmful plants and practices might be easier.

This article attempts to address some of the problems posed by cases of suspected poisoning by traditionally used herbal medicines where the plants used are not known. Effects and usage of 95 plants belonging to 11 families of the superorder Liliiflorae, known to include many toxic species, are considered and related to observations made by Solleder from inpatient cases in a mission hospital in Ciskei. One of the present authors, A.H., collected plants extensively in Transkei from 1982 to 1986, much of the work being done in an area similar and adjacent to the area where Solleder worked. A limited amount of field-work on medicinal plant usage was undertaken and various traditional healers and villagers in Transkei were interviewed. Further information has been extracted from a literature survey currently being undertaken towards the compilation of a Zulu pharmacopoeia and from a recent meeting with a group of traditional healers in Natal.

Plants and usage

Eighty-five species belonging to the families normally referred to in South Africa as Liliaceae and Amaryllidaceae have been recorded for this study. The habit of many of the plants of withering down to bulbs in the winter makes them well adapted to an arid-moist climate and also easy to collect or store for medicinal use. Usage is as follows, with the number of plant species used indicated in brackets:

Medicines related to procreation

These include: (i) aphrodisiacs and love-charm emetics, taken by men (17); (ii) cures for barrenness, impotence and sterility and medicines to procure the desired gender in a child, taken by men and women, often as a purge, enema or emetic (5); (iii) cures for venereal diseases (3); and (iv) medicines associated with pregnancy, childbirth and menstruation — most of these are taken during pregnancy to ensure an easy birth or a healthy child and are taken on a regular daily basis for 4 - 5 months (14).

Medicines for infants

These include purges and enemas thought necessary at birth and weaning for the cleansing away of impurities believed to be passed on by the mother and, in the case of medicine for the newly born in Transkei, are administered regularly (sometimes at every second feed) for up to 3 months (17).

Medicines for internal complaints

These include remedies for: (i) abdominal complaints (constipation, dyspepsia, stomach pain, diarrhoea and dysentery, intestinal parasites), treated with purges, enemas, and emetics (18); (ii) renal complaints (kidney and urinary tract complaints, ascites and dropsy) — treatment includes purges, emetics and diuretics (10); (iii) hysteria and headaches (5); (iv) heart complaints (2); (v) chest and lung complaints and coughs (14); and (vi) febrile complaints (influenza, malaria and rheumatic fever) (9).

Externally applied medicines

These include remedies for: (i) rheumatism, backache and sprains, and washes to reduce fever (4); (ii) earache, eye complaints and sinus headaches (9); (iii) skin complaints, sores and wounds (6); and (iii) lice or flea infestation (1). Medicines are also worn as protective charms, sprinkled in the home or yard or cultivated for protective purposes (30).

Chemical characteristics and revised families

In 1982 the taxonomists Dahlgren and Clifford divided the families of the superorder Liliiflorae into a number of smaller families. They acknowledged the increasingly important role of chemical characters in botanical taxonomy and in their later work with Yeo, the known characteristic chemistry of the families was outlined. The revised families occurring in southern Africa and used in Zulu or Xhosa medicine are shown below with chemical characters abstracted from the above work. Names of the genera involved are given and the total number of species medicinally used is shown in brackets.

Alliaceae. Steroid saponins and agapathagenin (as sapogenin) are present in Agapanthus; chelidonic acid is present in several genera; and sulphur compounds are present in Tulbaghia. (Agapanthus, Tulbaghia (5).)

Amaryllidaceae. Particular alkaloids, not known to occur in other plants, are constantly present, including lycorin, belladina, haemanthenin, homolyrin, lycorin, galantham, crinid and tazettin (steroid saponins, allyl sulphides and similar compounds are probably lacking throughout). Chelidonic acid is widely distributed and the carbohydrate-rich bulbs also
contain organic acids and soluble nitrogenous compounds; calcium oxalate is found mainly in raphide bundles in mucilage-rich cells or sacs. *Ammocharis, Apodolirion, Brunsvigia, Boophane, Cleivis, Crinum, Cyrtanthus, Haemanthus, Nerina, Scadoxus* (25.)

**Anthericaceae.** Steroid saponins appear typical; anthraquinones are lacking; chelidonic acid is widespread; and cyanogenic compounds are present in *Chlorophytm.* *(Trachychandra, Chlorophytm* (3.))

**Asparagaceae.** Oxalate raphides are widespread; chelidonic acid, acetidine carbonic acid and steroid saponins have been recorded in various species; and rhizomes and tubers of *Asparagus* are rich in saponins. *(Protasparagus, Myrsiphyllum* (3.))

**Asphodelaceae.** Members of this family lack steroid saponins; they quite frequently synthesise anthraquinones, which are accumulated in the alomine cells. *(Aloe, Bulbine, Gasteria, Hassorhiza, Kniphofia* (24.).)

**Colchicaceae.** Members of this family lack steroid saponins and oxalate raphides, and chelidonic acid and alkaloid bases are present in most genera. The alkaloids represent colchicine and related compounds and are highly poisonous. *(Gliracea, Littomia, Sandersonia* (3.))

**Eriospermaceae.** Chemical characteristics are little known (a colchicine-like alkaloid has been isolated in a South African species). *(Eriospermum* (2.))

**Draecanaceae.** Steroid saponins occur; chelidonic acid is present in *Dracaena*; and resins yielding polycarboxylic dracaenic and draco acids are produced by oxidation with nitric acid in bark. *(Dracaena, Sansevieria* (2.))

**Hyacinthaceae.** Members of this family produce steroid saponins, often abundantly as in *Albca* bulbs, and chelidonic acid; carditoxic glucosides occur in various species. *(Albca, Bowiea, Dipcadi, Drimia, Drimiopsis, Eucomis, Ledeboutia, Ornithogalum, Scilla urticae* (17.).)

**Luzuriagaceae.** Saponins are lacking in *Luzuriaga* at least. *(Behnia* (1.).)

**Smilaceae.** Oxalate raphides contained in mucilage cells occur frequently in saponin-rich rhizomes or tubers. *(Smilax* (1.).)

### Toxic compounds and therapeutic indications

Toxic compounds found in the families are resins and alkaloids, near-alkaloids, carditoxic glucosides and steroid saponins. The function of these compounds is believed to be a protective, survival-ensuring one, and the high energy demand in synthesising the compounds is thought to account for the observation that species rich in toxic alkaloids usually lack steroid saponins where, from a phylogenetic point of view, they might have been expected. 15

The alkaloids crinine and galathamine found in the *Amaryllidaceae* family show some analgesic effect. 1 Cardiovascular effects tested in dogs showed that caranine, crinine and lycorine produce tachycardia, crinamine produces respiratory depression and montanine and coccicine produce cardiovascular convulsions; fatal doses varied from 10 mg/kg for crinamine to 42 mg/kg for montanine and 71 mg/kg for tazaritine. 2 Members of the *Amaryllidaceae* family are traditionally used for kidney-related diseases, in lung and chest conditions, as aphrodisiacs, for stomach complaints, fevers and hysteria and also externally for skin complaints, wounds and earaches. Colchicine has been used in the West for the treatment of gout, but the therapeutic and toxic doses are very close. 16 The toxin induces progressive paralysis in all warm-blooded animals and acts cumulatively, with no tolerance being induced. 17 Colchicine is found in *Gliriosa superba* L., *Littomia modesta Hook.* and *Sandersonia aurantiaca* Hook., which are all used as aphrodisiacs; *Gliriosa superba* is also used for treating childless couples or those wanting a child of a particular gender, the form of the corm being said to determine the result. 3

The glucosides in *Urginea* and *Scilla* species and in *Bowiea volubilis* are carditoxic. *Urginea* species have been used in Europe both as heart medicines and as rat poisons. 2 The bulbs of various *Urginea* species growing in Transkei and Zululand are irritating to touch, and the leaves of a species growing in Transkei produce such skin irritation that they are used by small boys in endurance battles — their irritant qualities would make them effective but damaging purges. They are also used as anthelmintics and for bronchial, asthmatic and heart conditions, for fevers and during pregnancy. *Scilla* species are used as infant and adult purges, for the treatment of fevers, and as an ingredient in a medicine taken regularly during pregnancy. The bulb of *B. volubilis* Harv. ex Hook. has been estimated to have 30 times the intensity of action of digitalis. 2 It is taken as a purge, for barrenness, dropsy, asches and headaches, during pregnancy and as a love charm potion. The sale of the plant in herbalist shops in Zululand is now banned — not, apparently, on account of its toxicity, but because it is becoming endangered on account of over-collection.

Steroid saponins are frequently haemolytic — their soapiness would make them effective emetics, but regular administration would be likely to produce anaemia. Many of the plants used for infants, during pregnancy and for stomach or lung complaints belong to the plant groups containing steroid saponins, most notably from the family *Hyacinthaceae.*

The mucilage observable in many of the bulbs would be effective in producing purgation and would also be soothing by forming a protective layer over irritated mucosa or above any wound to which they were applied.

Although some cases have been recorded of patients given single lethal toxic doses, 18 the people most at risk from these medicinal plants would be those to whom medicines are administered on a regular basis over a given period of time, such as infants given purification purges at birth and weaning, women taking herbal preparations regularly during pregnancy, and patients taking regular medication for stomach, chest or kidney complaints.

### Plants known to have caused fatal poisoning

A list of species known to have caused fatal poisoning to humans, stock or experimental animals is included in Table I. In the cases of human poisoning the parts of the plant found below the ground have been involved, and these are nearly always the parts used medicinally. Stock animals would consume the parts growing above the ground. Four of the 11 families discussed are involved; they are *Eriospermacaeae,* *Colchicaceae,* *Amaryllidaceae* and *Hyacinthaceae,* and any members of these families should be viewed with suspicion.

The potentially dangerous plants listed below (Table II) include species which may not have been tested for toxicity but are related to species where some toxicity is known. Sotho, Xhosa and Zulu usage of medicinal plants is closely allied and so Lesotho and the eastern Cape are included under distribution. Plants used for infants, children or pregnant women are frequently collected and administered by the child's grandmother, who relies on traditional information which has been passed on by word of mouth. Plants used as emetics, enemases or taken orally for minor complaints may be self-gathered in the rural areas but in more densely populated areas are likely to be purchased from herbalist shops. Plants in these shops are frequently supplied by central suppliers or individual collectors.
<table>
<thead>
<tr>
<th>Botanical name, family, local names</th>
<th>Indicated features of poisoning</th>
<th>Deaths, postmortem indications</th>
<th>Traditional medicinal usage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Gloriosa superba</em> <strong>Colchicaceae</strong></td>
<td>Colchicine, <em>superbine</em>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Recorded human and stock deaths due to exhaustion or respiratory failure&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Barrenness (X, Z), sterility (Z), sex determination (Z), ascites (Z), aphrodisiac (Z)</td>
</tr>
<tr>
<td><em>Eriosepermum sp.</em> <strong>Eriosepermaceae</strong></td>
<td>Colchicine-like alkaloid&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Recorded human death following medication&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Emetic to clear liver (Z), given to wife and husband after miscarriage (Z)</td>
</tr>
<tr>
<td><em>Albuca sp.</em> <strong>Hyacinthaceae</strong></td>
<td>Haemolytic sapogenin&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Death in experimental rabbit: hyperaemia of lungs, acute catarrhal gastritis, patchy hyperaemia of intestinal mucosa&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Purge (Z), venereal disease (X, Z)</td>
</tr>
<tr>
<td><em>Bowenia volubilis</em> <strong>Hyacinthaceae</strong></td>
<td>3 cardiac glucosides, bovosides A, B and C&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Recorded human death following medication&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Ascites, dropsy, purge (X), barrenness, headaches (X), pregnancy (X, Z), love-charm emetic (Z)</td>
</tr>
<tr>
<td><em>Eucomis autumnalis</em> (= <em>E. undulata</em>) <strong>Hyacinthaceae</strong></td>
<td>Haemolytic saponin&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Death in experimental sheep: general cyanosis, ascites, hydrothorax, hyperaemia of the tracheal mucosa, hyperaemia, oedema and emphysema of the lungs, degenerative changes in myocardium and liver, tympanites of the rumen&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Urinary disease (Z), emetic and enema in fever (Z) ingredient in infusion taken during pregnancy (Z)</td>
</tr>
<tr>
<td><em>Scilla natalensis</em> <strong>Hyacinthaceae</strong></td>
<td>Toxic to experimental sheep with dyspnoea, weak quickened pulse&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Death of experimental sheep within 12 h&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Used as an enema for children (Z), ingredient in infusion taken regularly during pregnancy (Z), dried leaves given to child late in walking (Z)</td>
</tr>
<tr>
<td><em>Scilla nervosa</em> (<strong>Schizocarpus neflosus</strong> = <em>S. rigidifolius</em>) <strong>Hyacinthaceae</strong></td>
<td>Digitalis glycosides&lt;sup&gt;18&lt;/sup&gt;</td>
<td>Recorded human and stock deaths;&lt;sup&gt;13&lt;/sup&gt; death in experimental sheep: generalised cyanosis, fluid in serous sacs, subendocardial and sub-pericardial petechiae, hyperaemia, and oedema of lungs&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Dysentery remedy (X), small doses given for rheumatic fever (Z)</td>
</tr>
<tr>
<td><em>Urginea altissima</em> <strong>Hyacinthaceae</strong></td>
<td>Altoside, scillitoxin, scillipain&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Human deaths recorded.&lt;sup&gt;6&lt;/sup&gt;</td>
<td>Emetic for stomach troubles and high blood pressure (Z), diuretic (X), cararrh, asthma (X), bronchitis (X)</td>
</tr>
</tbody>
</table>
### TABLE I. SOME LILIIFLORAE KNOWN TO HAVE CAUSED FATAL HUMAN OR ANIMAL POISONING (Cont.)

<table>
<thead>
<tr>
<th>Botanical name, family, local names</th>
<th>Indicated active principle</th>
<th>Features of poisoning</th>
<th>Deaths, postmortem indications</th>
<th>Traditional medicinal usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boophane disticha</td>
<td>Ipuranol (glucoside), buphanine (alkaloid), haemanthine (convulsant alkaloid)</td>
<td>Dizziness, visual disturbance, excitation or depression, stupor, coma&lt;sup&gt;21&lt;/sup&gt;</td>
<td>Recorded human death following medication: engorgement of mucous membranes of stomach and intestines&lt;sup&gt;19&lt;/sup&gt;</td>
<td>Hysteria (X, Z), headaches (Z), chest pain (Z), narcotic (X), boils, wounds (X)</td>
</tr>
<tr>
<td>Scadoxus puniceus</td>
<td>Patalensine (= haemanthine)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Dizziness, visual disturbance, excitation or depression, stupor, coma&lt;sup&gt;21&lt;/sup&gt;</td>
<td>Recorded human death&lt;sup&gt;18&lt;/sup&gt;</td>
<td>Ingredient in infusion taken during pregnancy (Z), emetic for coughs (Z)</td>
</tr>
<tr>
<td>Clivia nobilis</td>
<td>Clivine, cliviniane, glucoside of low toxicity&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Feeble emetic&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Suspected human death&lt;sup&gt;18&lt;/sup&gt;</td>
<td>Protective charm</td>
</tr>
</tbody>
</table>

<sup>X</sup> — Xhosa; <sup>Z</sup> — Zulu.

Some shop owners claim not to know how the medicines are used, although informed assistants are often employed. The plants listed as currently used by healers are being grown in the Natal/KwaZulu area at their own request. Healers include traditional doctors or herbalists and diviners, whose training by other healers may vary from 2 to 5 years in duration.

### TABLE II. SOME POTENTIALLY DANGEROUS PLANTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Known distribution</th>
<th>Administration</th>
<th>Currently in use by healers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/K</td>
<td>L</td>
<td>T</td>
</tr>
<tr>
<td>Gloriosa superba&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Littonia modesta</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Sandersonia aurantiaca</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Bowiea volubilis&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Eriospermum sp.</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Agapanthus africanus</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Agapanthus praecox</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Albucia sp.</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Urginea aitissima&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Urginea macrocentra&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Urginea physodes</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Drimia robusta&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Scilla natalensis&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Scilla nervosa&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Eucomis autumnalis&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Eucomis comosa</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Ledebouria cooperi</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Ledebouria ovatifolia&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Haemanthus albiflos</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Haemanthus coccineus&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Scadoxus multiflorus&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Scadoxus punicus&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Boophane disticha&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Clivia miniata&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Clivia nobilis&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Brunsvigia sp.</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Ammocharis coranica&lt;sup&gt;*&lt;/sup&gt;</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

* Known to be toxic.

EC = eastern Cape; N/K = Natal/KwaZulu; L = Lesotho; T = Transkei; i = administered to infants or children; P = taken during pregnancy; e = administered as an emetic; en = administered as an enema; o = orally administered for purposes other than above.
Possible clinical effects

In her paper on morbid and toxic effects of Xhosa medicine, where intake was confirmed but the substances used were not known, Solleder cites records of severe respiratory distress (dyspnoea, tachypnoea, tachycardia) in 26 infants between the ages of 3 and 12 months; most of them were well nourished and had been given herbal medicine for minor complaints or for more magical reasons such as ‘driving out a ghost’. Six of the 17 members of the Hyacinthaceae family are recorded as being used specifically for infants, and another 6 are used for fevers or chest or stomach complaints. All of them grow in the area and, as may be seen from Table I, a number have been found to cause severe respiratory distress in animals. Members of the same family could have been responsible for some of the cases of unexplained anaemia observed by Solleder. Eucomis autumnalis (Mill.) Chitt., which is recorded as having produced anuria in a man, and the notorious Bowiea volubilis Harv. ex Hook. have both been used for kidney-related complaints and could have been taken by Solleder’s 18-year-old patient who,
Fig. 2. 1 — *Eucomis autumnalis* (Mill.) Chitt. (Zulu names: uMakhandakantsele, uMuthungu; Xhosa names: umgwali, ubuhlungu becantr; Sotho names: khapsu, khafo, mathebethebale, moboni, mohale-on-marumo, mothusa). 2 — *Bowiea volubilis* Harv. ex Hook. f. (Zulu names: uGibisisila, gibisila, uguteni; Xhosa name: uMgaqaqana). 3 — *Scilla nervosa* (Burch.) Jessop (Zulu names: iNgcino, iNculo).
Fig. 3. 1 - Scadoxus puniceus (L.) Friis and Nordal (Zulu names: idumbi-lika nhloyile, umPhompo). 2 - Boophane disticha (L.f.) Herb. (Zulu names: iBadi, inCotha, inCwadi, iswadi; Xhosa name: inCwadi; Sotho names: khutsana-ea-noha, leshoma, thibi).
having recovered from an attack of Hodgkin's disease, returned
with severe anaemia and anuria and died.1 The woman
who died of paralytic ileus2 after taking Xhosa medicine for 'pains
in the joints' could have been treated with Boophane disticha
(L. f.) Herb., which was responsible for the death of a Zulu
woman recorded in 1947; postmortem findings included
diffuse congestion of the viscera with engorgement of the
stomach and intestines.3 The herbalist involved in the case
said that he sometimes used the plant for hysteria and also for
a condition characterised by the development of cramp-like
pains in the calf muscles associated with a feeling of tightness
in the fingers and toes.4 Similar symptoms have been referred
to and ascribed to evil spirits by a traditional healer interviewed
by A.H. in Transkei. B. disticha (L. f.) Herb. occurs widely in
Ciskei and Transkei and is known as 'inCowozi' by both the
Xhosa and the Zulu.

Discussion
The above conjectures serve merely to illustrate possibilities.
Given the wide use and potential dangers of the group of
plants considered, a much higher number of fatalities might be
expected than has been recorded. There are several possible
explanations. Toxicity in plants is known to vary with season;
the amount of toxin is often low in proportion to the high
water content, as in the case of the Amaryllidaceae, and methods
of preparation involving heating would tend to destroy some
of the toxins and are sometimes employed for the very purpose
of making the medicines 'less strong'. Doses are often delibe­
rately kept low by traditional healers to avoid the dangers of
over-dosing. Plants that were seen to kill off patients would
not continue to be used - the herbalist in the fatal
case mentioned above4 was convicted of culpable homicide
but told the interviewer that he could not believe that the
plant was responsible for the death as it had been used so
frequently by himself, and even on himself, without harmful
effect. This latter observation we have to accept.

Recording of herbal remedies and ailments by their locally
used names would help in the identification of dangerous
plants. This could be done routinely on admission forms if
patients were allowed to feel less guilty about traditional
medicine and patients with some appropriate pharmaceutical action and
treatment. Although hospitals tend to see the failures of
traditional medicine, it should be remembered that traditional
herbal medicine also plays a positive role. It is the first and
sometimes the only resource of people living in the rural areas.
Plants investigated for the treatment of easily diagnosable
diseases often do show appropriate pharmaceutical action and
traditional healers, despite the bad image of the 'witch-doctor',
appear to be both intelligent and compassionate. Operating
from within the social system of their patients, their under­
standing and therefore treatment of stress-related disorders
would tend to be more effective than hospital-based treatment.
The results of a recent study by Edwards5 indicated a signifi­
cant agreement in both diagnosis and treatment by traditional
healers and modern practitioners working with the same group
of psychiatric patients, with a corresponding patient perception of
helpfulness.

The research for this study was partly undertaken through Zulu
Folk Medicine Research, funded by the De Beers Chairman's
Fund Educational Trust, who are thanked for their support. A.H.
is grateful to the University of Transkei for enabling her to pursue
her interest in medicinal plants while she was working on the Wild

REFERENCES
1. Solleder G. Clinical observations on toxic effects of Xhosa medicine. S Afr
2. Watt JM, Breyer Brandwijk MG. The Medicinal and Poisonous Plants of
Southern and Eastern Africa. 2nd ed. London: E & S Livingstone, 1960:
19-42, 699-725.
5. Gerstner J. A preliminary checklist of Zulu names of plants with short
6. Gerstner J. A preliminary checklist of Zulu names of plants with short
7. Gerstner J. A preliminary checklist of Zulu names of plants with short
8. Batten A, Boekelman H. Wild Flowers of the Eastern Cape. Cape Town:
9. Holme MM. Wild Flowers of Natal. Pietermaritzburg: Shuter & Shooter,
1954.
14. Dahlgren RMT, Clifford HT, Yeo PF, eds. The Families of the Monocotyle­
15. Jensen SR, Nielsen BJ. Chemical characters. In: Dahlgren RMT, Clifford
HT, Yeo PF, eds. The Families of the Monocotyledons. New York: Springer-
Verlag, 1984: 17-22.
17. Verdoucct B, Trump EC. Common Poisonous Plants of East Africa. London:
20. Edwards SD. Traditional and modern medicine in South Africa: a research
Pharm 1987; 54: 45-50.
22. Vahem users J. Poisonous Plants of Southern Africa. Cape Town: Tafelberg,
1981: 18-44.