

East African Medical Journal Vol. 81 No. 10 October 2004

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ABSTRACT

Background: Very few clinical studies have been conducted in South Africa to assess the value and efficacy of traditional herbal medicines that are commonly used by traditional healers for the treatment of HIV-positive patients.

Objective: To assess efficacy of a South African traditional herbal medicine in reducing viral load and increasing CD4+T cell counts of HIV/AIDS patients.

Design: A descriptive, prospective, follow-up study of 33 HIV-positive volunteers over a one year period. Viral load and CD4 counts were taken three times from each participant.

Setting: From November 2001 to October 2002, patients were treated at the Rustenburg Community Based Centre for traditional therapy. Clinical and paraclinical treatments and screening of patients were done at Pretoria Gynaecological Hospital.

Participants: Seven men and 26 women aged between 22 and 43 years took part in a 12-month long follow-up study. HIV monitoring was done at the beginning and after 4 and 8 months in symptomatic and asymptomatic patients with CD4 counts below 200 cells/mm³ or viral load counts above 10,000 copies.

Intervention and assessment: ab initio and after 4-months, viral load, CD4+T cell count, FBC, LFT, glycaemia, U/E, cholesterol, pap smear, clinical and subjective assessment, modern drugs plus hospitalisation for opportunistic infections and resuscitation where needed, powder or suspension of herbal medicine followed by meals.

Main outcome measures: Improvement in overall health condition and immune system, increase in CD4+T cell count and decrease in viral load count. The two sample paired t-test was used to compare initial and final counts at the 5% level of significance and power of 80%. Ninety five per cent confidence intervals were obtained for differences between mean values.

Results: After four and/or eight months of therapy, significant health improvement was achieved: better physical appearance (80% of patients), increased appetite (65%), feeling of well-being (60%), disappearance of skin marks (70%) and urogenital lesions (100%), resumption of workplace duties (60%), weight gain (80%), significant reduction in viral loads (85.4%, p=0.0015) and significant increase in CD4+ T cell counts (226%, p=0.0000).

Conclusion: Achievement of health improvement within eight months indicates that herbal medicine can be used as supplementary or alternative treatment for HIV/AIDS patients, and that it is an obvious immune system booster and probable "virus-cidal" factor. The apparent safety and efficacy of herbal medication warrants further research with a larger sample size of study.

INTRODUCTION

In Africa, the high cost and scarcity of essential dsf5s often forces HIV/AIDS patients to use traditional herbal medicines. As the majority of traditional herbal medicines used have not been thoroughly researched by means of properly organised clinical trials, there is a need to evaluate the efficacy and safety of traditional medicines currently being used by patients. Doing so would minimise side-effects and assist patients better(1).

The WHO/AFRO conference held in Harare in the year 2000 declared the current decade (2000 to 2010) a decade for the development of African Traditional Medicines with a particular emphasis on finding a cure for HIV/AIDS. At the conference, it was proposed that original forms of traditional medicines should be used instead of their active ingredients. To back up the proposal, an illustration was given with a traditional south American wound healing agent, which proved to be far more effective when used in its traditional formulation than in its apparent "active" ingredient(1).

The HIV/AIDS Research Initiative on Traditional Health Care in Africa (HARITHAF) recommended *inter alia* that research priority must not be pharmaceutical development, but providing rural communities with advice on safe and effective use of traditional medicines. That is, emphasis should be placed on the evaluation of traditional preparations for uniformity and absence of micro-organisms, clinical observational studies of patients under traditional treatment with viral load and CD4+ T cell counts as well as general clinical assessment.

Lady Olga Siphwe Mokwena is a South African daughter of a modern medical doctor who has been trained as a traditional healer from the age of seven years. She has never attended a formal medical or paramedical school, but has acquired a great deal of knowledge on the use of traditional herbal medicine for a number of health problems and diseases including HIV/AIDS.

Research questions: The study will find out if the use of traditional herbal medicine is an effective tool in improving the health condition and quality of life of HIV/AIDS patients in Africa and elsewhere. The study will also identify the most effective method of using traditional herbs as a treatment for AIDS. Is herbal medication most effective when administered alone or in combination with HAART? If herbal medication is significantly helpful to AIDS patients, what would be the impact on public health policy in South Africa and elsewhere with regards to the treatment of HIV/AIDS patients? In view of the fact that the majority of AIDS sufferers live in Africa, should the academic curriculum of modern African medical schools include teaching on traditional herbal medicine?

Objective of study: To evaluate and assess the degree of effectiveness of herbal medicine in improving the health condition and quality of life of HIV/AIDS patients.

MATERIALS AND METHODS

Project team: Following recommendations from the International AIDS Conference hosted by Traditional and modern Health Practitioners Together Against AIDS (THETA) in Kampala in February 2000, a project team decided to collaborate with Lady Olga Siphwe Mokwena and assist her in the supervision of 200 HIV/AIDS patients over a 24-month study period.

Patients: From November 2001 to June 2002, 33 South African HIV/AIDS patients (7 men and 26 women) aged between 22 and 43 years, participated in an eight month long clinical and paraclinical survey where only traditional herbal medicine was used as a treatment for HIV/AIDS. Modern medication was used to treat opportunistic infections such as influenza, broncho-pneumonia, urogenital infections, parasitism, gastro-intestinal disease, meningitis and TB. Five categories of patients were included in the study: those referred by friends or family members in critical or desperate condition, symptomatic patients without improvement after

hospital or western-doctor management, symptomatic patients who have not yet been diagnosed as HIV-positive, asymptomatic patients who have been diagnosed as HIV-positive with advanced stages of AIDS, and patients without any hope of recovery.

Methods: Initially, patients were examined clinically and biologically, as well as after every four month management. Systematic tests were performed for viral load, CD4+ T cell count, FBC, U/E, LFT, glycaemia, cholesterol (24 cases), pap smear (17 cases). Seven patients needed hospitalisation and resuscitation with dextrose infusion + polyvitamins + antibiotics + anti-diarrhoea and hematinics. Five chest X-rays confirmed a clinical suspicion of respiratory infection: Three cases of pneumonia and two cases of TB were successfully treated. A regular four month check-up including formal clinical assessment, biological monitoring and self-evaluation by the patient was carried out for each participant in the study.

Herbal Medicine: As the collection and preparation of herbal medication is considered a sacred ritual, only Lady Mokwena or her assistant could administer herbal medication involving wood shavings and powder to patients.

(i) **Wood shavings:** All in all, five varieties of plants were used, two for general health management (A and B) and three for HIV healing (C, D and E). Wood shavings were dried up in the sun for seven days.

(ii) **Herbal powder:** Burnt (A) and uncooked (B) shavings were kept in 100 gm containers of herbal powder, and were administered before meal at different dosages. The dose for powder A was one teaspoonful twice daily. The dose for powder B was three teaspoonfuls once daily in porridge before breakfast and/or before the last evening meal of the day.

(iii) **Suspension:** A mixture of 20 shavings of C, D and E (weighing between 350 and 400 gms) was slow-cooked in 20 litres of water for 15 minutes. Fifty ml of boiled mixture was administered in a plastic cup one, two or three times daily to adult patients until health recovery was achieved. The concoction was kept in a fridge at a temperature of 5°C centigrade in order to preserve its colour, taste and odour. The freezing procedure was an essential criterion for ensuring reliability, stability and efficacy for at least three months although patients were given their medication once every month.

(iv) **Consultation or treatment fees:** Lady Mokwena's fees were determined arbitrarily. In most cases, diagnosis was quite obvious and speedy. In a few cases, she had to use special tools such as stones, bones, horns, feathers, nails etc. as well as spiritual methods such as songs, *amaglozi*, partial body paintings, sniffing, etc. Her fees for consultation, diagnosis and treatment varied depending on the type of patient. Most patients were asked to pay a deposit of R 1,500 or 2,000. She had no claim recovery system, but the majority of patients paid up their fees as expected. Some patients had no money on them, and had to pay their fees in kind by performing manual duties for weeks or months. The maximum fee paid by patients of the entire course of treatment does not exceed R 3000.

Statistical methods: Comparison between related samples was performed using the two-sample paired t-test at the 5% level of significance, 95% confidence intervals for the difference between means were constructed. The statistical package STATA version 8 was used for data entry and analysis. Bar charts were used to summarise results graphically.

RESULTS

Clinical assessment: Subjective assessment: Out of 33 patients who took part in the study, only 29 complied strictly with instructions and medical advise given to them during the period of treatment. After four and eight months of therapy, the majority of patients achieved a significant improvement in their overall health condition. Over 60% of patients reported an increased appetite for food, a better tolerance for physical exercises. Over 50% of patients resumed normal duties at their workplace, 60% of patients experienced a satisfactory feeling of well-being, and 80% of patients showed better physical appearance.

Objective assessment: Coffee skin marks disappeared (70% -100%) as well as uro-genital lesions (90%), significant body weight gain was achieved (80%), with five patients deciding to be on diet in order to lose weight. The body weights of the five patients were increased from 46 to 67 kg, 56 to 70 kg, 55 to 80 kg, 49 to 74 kg, and 63 to 78 kg respectively.

Three patients with advanced stages of AIDS died within their first four months of herbal medicine treatment.

Before coming to Lady Mokwena, the patients had taken several months of HAART. One of them died in hospital, while the other two died at home, and were not supervised by Lady Mokwena. Hence, their complete treatment history is not known.

Biological assessment : Table 1 shows viral load and CD4+ T cell counts at the start of the study period, at the end of the 4th month, and at the end of the 8th month of the treatment period for the 33 patients who took part in the study. Two patients (No 4 and 18) recovered their immune system and had an undetectable level of viral load (<50 copies) after eight months. One patient (No 14) who had been forced to resign from his post as a theatre nurse in a state hospital and was given a severance package because of his final stage of AIDS dramatically improved his health condition with satisfactory weight gain (+30 Kg), better physical appearance and normal CD4 + T cell count after four and eight months of treatment. His attorney managed to have him reinstated in his previous post at the same hospital after 11 months of treatment.

Table 1

Viral load and CD4 counts at start, after four months and after eight months

Case Number	VL count at start	CD4 count at start	VL count after 4 months	CD4 count after 4 months	VL count after 8 months	CD4 count after 8 months
1	186667	295	50341	593	19095	602
2	36667	215	29327	615	10370	446
3	>750000	62	17087	136	18284	236
4*	1238	202	476	369	<50	467
5	49644	121	12907	253	2166	346
6	872	72	-	-	1841	213
7	92564	81	67941	144	28549	236
8	640691	2	481980	26	140871	57
9	6545	802	6422	544	-	-
10	118000	12	40612	62	18284	136
11	37500	81	20620	447	-	-
12	6542	802	6422	544	-	-
13	428000	35	1500000	270	169515	97
14	69366	113	31418	418	6022	619
15	19291	158	5618	367	2111	602
16	43820	212	11220	569	3600	611
17	6557	160	4402	201	3466	462
18*	1171	76	457	386	50	587
19	34408	213	11464	293	7960	510
20	37401	66	11400	180	7135	299
21	18966	124	10110	299	4120	482
22	> 750000	3	-	-	-	-
23	> 750000	8	-	-	-	-
24	69411	91	20111	266	11018	317
25	29512	14	21077	126	11514	316
26	252150	81	94115	193	4912	418
27	81541	163	21014	268	8120	561
28	478000	23	128796	67	89160	126
29	49524	271	23164	318	13500	363
30	>750000	31	518000	126	49116	238
31	128160	141	42105	277	13600	517
32	81857	80	34110	127	8160	257
33	244286	76	81713	156	19102	236

* viral load decreased to below 50 after eight months of herbal treatment, - no data was available as patient either died or did not attend testing

Five patients (No 1, 2, 5, 7 and 27) had their immune system significantly boosted, achieved a sharp decrease in viral load levels, and started diet to lose weight, their mass being increased from 46 to 67, 55 to 80, 49 to 74 and 63 to 78 Kg respectively. One symptomatic AIDS patient (No 13) had more than three times an increase of viral load copies within her first three months of treatment because of acute pneumonia, but recovered after four and eight months of treatment with her viral load count decreasing from 405 560 to 169 515 and CD4 + T cell count increasing from 76 to 97. Another patient (No 2) not only gained weight (15 Kg) in four months of treatment, but also fell pregnant with her asymptomatic husband (No 1). The couple decided to terminate the pregnancy since HAART would be necessary if the pregnancy were to be continued. In general, a sharp decrease in viral load copies and a sharp increase in CD4 + T cell counts were observed at the end of four months and eight months of treatment (Figures 1 and 2).

Figure 1

Average viral load counts at beginning and end of study

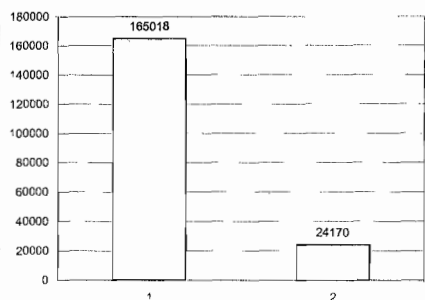
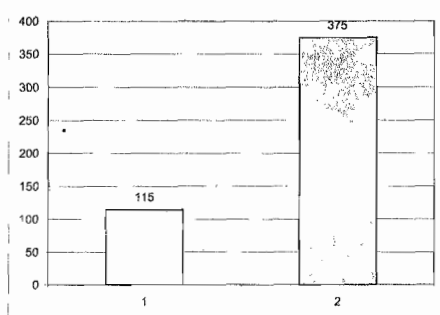


Figure 2

Average CD4 + T counts at beginning and end of study



Side-effects: Liver dysfunction occurred in only patient No 1: some liver enzymes such as alanin-amino-transferase (ALT) and gamma-glutamino-transferase (GGT) were elevated within a four month period, while asparate-transferase (AST), lacticodehydrogenase (LDH), bilirubins and total protein remained strictly normal. No other anomalies were noted in liver, kidney, pancreas

and bone marrow. Detailed and exact conditions of death were unknown for three patients in the study as relevant information was only received weeks after they died. These patients had a poor prognosis at the beginning of the study.

DISCUSSION

Strong/close collaboration between western and indigeneous doctors: There are many definitions or categories of traditional healers, according to Bantu culture and philosophy of life: sorcerer or witchcraft, fetishist, clairvoyant, health-healer etc.

Thousands of traditional healers exist in almost all African communities. Some are quite helpful to desperate patients, while others cause more harm than good. A sorcerer may be consulted about unexplained familial death, infertility, male impotence and TB. In such a case, diagnosis is often made using spiritual methods based on family history, past practice or traditional belief. Often, recommendations are made to sacrifice an animal with a particular trait or even a member of the family. Ritual reconciliation of family members and ancestral intervention are commonly practiced. This category of traditional healers help their client kill an opponent or eat the opponent ritually. A fetishist utilizes spiritual forces uncovered in fetishes, stones, bones, statues, horns etc. With these tools she/he may make the diagnosis and recommend the curative solution. A clairvoyant can predict future events in the lives of individuals, and make recommendations needed to avert possible future disasters.

Only one type of traditional healer should be recognized by any healthcare system: an indigenous doctor who utilizes natural substances with or without spiritual methods to heal those who are suffering. In order for a traditional healer to serve the community optimally, he/she must be recognized by the national healthcare system.

Modern doctors must recognise that traditional and herbal medicines do have a complementary role to play in improving the health condition of patients. Up until recently, not enough has been done to bring traditional and herbal medication closer to modern medical practice due to the reluctance of modern doctors to recognize the merits of traditional and herbal medicines. For example, Lady Mokwena's contributions to South African patients were not recognized by the South African medical fraternity up until 2001. Her contributions were recognized only by the South African Old Mutual Insurance Company, and not by the South African medical fraternity because she could diagnose HIV patients either by "throwing bones" or "dream vision". We are of the opinion that western and modern doctors should start working with traditional healers as it was called for by THETA in Kampala, Uganda, during the establishment of the East and Southern African Task Force on Traditional Medicine and HIV/AIDS. In this respect, a lot is expected from both modern doctors as well as traditional healers. Traditional healers themselves

are not so enthusiastic about collaborating with modern doctors. This is mainly for fear of giving away their hard-learned knowledge on herbal medicines. At the workshop held on November 2002 in Pretoria by the Department of Science and Technology on Research in the use of herbal medicinal plants, medical practitioners and traditional healers were invited to join forces for the integration of both types of medicines in an attempt to contain the HIV/AIDS pandemic. Unfortunately, the majority of traditional healers still think that they might be required to use modern medical doctors as consultants or experts in their businesses, thereby being forced to pay them for their services and share their skills with them. Most traditional healers wrongly believe that collaboration with modern doctors means a net loss to the traditional healer while improving the capacity of the modern doctor. They do not believe that collaboration helps both parties as well as the patient. The literature has shown that patients stand to benefit the most from any possible collaboration between traditional healers and modern doctors.

Lady Mokwena's collaboration with modern doctors serves as a textbook example of how patients benefit from collaborative efforts. The study team has been given the full collaboration of Lady Mokwena during the entire study period. Lessons gained from Lady Mokwena were quite invaluable. It is true that definitive generalisations cannot be made on the basis of an eight month long study, but it is worth noting that severely ill AIDS patients almost fully recovered from their illness, and that over 50% of patients in the study were fit enough to resume their previous jobs.

Value and efficacy of Lady Mokwena's herbal medicine as a cure for AIDS: The rapid and effective recovery of the immune system observed in this study certainly represents a big victory in the battle against HIV/AIDS. The third round of testing of this cohort was eagerly anticipated, but could not be performed due to shortage of funds. If patients who took part in this study maintain their improved state of health for a longer period, there will be a credible proof that traditional herbs used by Lady Mokwena for the treatment of HIV/AIDS patients should be recognized as an alternative or supplementary medicine to fight the AIDS pandemic. The dramatic increase in CD4+T cell counts and sharp decrease in viral load counts within eight months of treatment by herbal medicine shows that the success achieved by Lady Mokwena could be a result of an immune boosting factor. Bouic and Lammprecht(2) reported immunomodulation properties of plant sterols and sterolins that are helpful for the treatment of HIV infection. However the possibility of viral destruction or inhibition that may result directly from the action of herbal medicine cannot be excluded since almost 53.5% of the decrease of viral load counts occurred within four months of treatment.

The remarkable progress made by patient numbers 8, 13 and 30 is probably the best possible proof of the probable "virus-cidal effect" of Lady Mokwena's herbal

medicine. Viral load counts decreased almost dramatically shortly after the study began. Counts decreased from 1,500,000 to 169,515 from 518,000 to 49,116 and from 481,980 to 140,871 while the immune system of the patients was still severely depressed. Such a speedy and exponential decrease could not be attributed to a "boosting factor" of the immune system alone. Collins *et al*(4) reported HIV type-1 inhibition *in vitro* by partially purified aqueous extracts of Chinese medicinal plants. Similar anti-viral activity against HIV types 1 and 2 was described by Asres *et al*(5). Other studies have also described the presence of an anti-viral factor in *Calendula officinalis* (6), *Agastac Rugosa* (7) and many other plants(8-11).

Traditional medicine is not like a tennis match with two opposing players called "disease" and "drug". It is more like a football game with many types of players in different roles. Some herbs might be star quarterbacks while others play a role in boosting efficacy or tackling toxic side effects. A combination of a variety of herbs and their sub-components is believed to produce a significant effect. By contrast, western clinical trials are often set up to examine the efficacy of a single component or drug at a time. Traditional remedies tend to consist of several components of herbs. Despite the apparent ignorance of the exact mechanism or action of herbal medicine, the outcome of trials combining 1, 2 or 3 antiretroviral agents with herbal medicines used by Lady Mokwena would be of great clinical interest.

Side effects and toxicity: Anything strong enough to induce pharmacological activity also carries the risk of toxicity. Usually the problem with herbal medicine includes allergic reaction and interactions with other prescribed drugs. Toxic impurities and incorrectly combined herbs can result in kidney or liver failure and even death. In this study, none of the above side effects was encountered during the eight months of treatment. Is eight month period enough to rule out the possibility of kidney or liver failure resulting from the anti AIDS herbal administration? On May 14th, 2004, the pharmaceutical company Boehringer Ingelheim advised medical doctors and pharmacists that severe and life-threatening hepatic and cutaneous reactions are well-documented major clinical toxicities of nevirapine. This constitutes a great risk of hepatic events and skin reactions leading to severe and potentially fatal outcomes in the first six weeks of therapy(12).

It should be noted that western medicine is also risky regardless of its efficacy and high standard of purity. The analysis of 39 selected prospective studies (1966-1996) from US hospitals showed that in the year 1994 alone, 2, 216, 000 patients were hospitalised for serious adverse drug reaction (ADR), and that 106, 000 of them died(13). The purpose of this study is not to undermine the merits of evidence-based medicine, but to recognize that herbal medicine is not "invalidated voodoo". The objective of the study is to test the merits of alternative therapies such as herbal medication in the management and treatment of HIV/AIDS patients.

Need for improvement in modality of treatment: The HARITHAF recommended the use of original forms of traditional medicines instead of their active ingredients. For small groups of people, this could be feasible. But for the multitudes in Africa that are affected with HIV/AIDS, Lady Mokwena's powder or suspension may not be a practical solution although it is safe and non-toxic. Efforts are currently being made by the research team to persuade Lady Mokwena to assist and collaborate with the team in the botanical identification and study of her medicinal plants and to refine and develop her herbal medication techniques even further.

Research ethics: Ethics approval was not obtained from the South African Medical Association Research Ethics Committee (SAMAREC) for a randomised placebo-controlled clinical trial because all herbal traditional medicines used for the management of HIV/AIDS patients must be proven safe before conducting trials on human beings. Although Lady Mokwena did not obtain ethics approval from SAMAREC, she did give each patient in the study a detailed explanation about the purpose of the study and procedures involved. She obtained verbal consent from each patient in the study in accordance with the African tradition. Lady Mokwena willingly collaborated with the research team that conducted the study although she did not demonstrate the preparation of her herbal medication to the study team. Preliminary results of the study were presented at the 28th Congress of the South African Society of Obstetricians and Gynaecologists that was held in Durban in April 2003, and at the 1st South African HIV/AIDS Conference held in Durban in August 2003.

CONCLUSION

The short period of study could not allow any definitive affirmation. Nevertheless, the remarkable improvement of health in the HIV/AIDS patients who took part in the study suggests that: i) Herbal medicine can be used as an additional or alternative option in managing HIV/AIDS. ii). The sharp decrease in viral load counts may have resulted from a probable *virus-ccidal* power associated with a strong immune system boosting factor. iii). Further studies are necessary to confirm the apparent safety and efficiency of herbal medicine when administered alone and in combination with one, two or more currently used anti-retroviral agents. iv). Since the worldwide majority of HIV/AIDS sufferers are Africans, there is an urgent need to incorporate the use of traditional and herbal medicine into the academic curriculum of African medical schools with a view to used them in combination with modern anti-retroviral drugs for the treatment of AIDS sufferers.

ACKNOWLEDGEMENTS

To the management of Pretoria Gynaecological Hospital, Dr. F. Malik, (Pathologist, Louis Pasteur Hospital, Pretoria),

Dr. W.D. de Villiers, (Histopathologist, Centurion), Prof. M.S. Ngandu, (Tuskegee University, Alabama), Prof. G.B. Lindeque, (University of Pretoria), Mr. H. Brat (UAE/Free University of Brussels), Prof. P. Piot (UNAIDS - Geneva), Mr. T. A Mabe, (Executive Mayor of Rustenburg Local Municipality), Mr. Miko Rwayitare (Telecel International), Mr. Z. Sekweyiya (the South African Minister of Social Development) and Her Majesty the Queen-Mother of Phokeng Kingdom (Rustenburg) for their invaluable assistance to the study.

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