

# Preliminary Case Reports of Dietary Supplementation from Cameroonian Traditional Food Plants for potential management of Immunodeficiency and Hemorrhagic Syndromes

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**Abstract:** This is a preliminary case reports of the healing potential of Cameroonian traditional foods used since time immemorial and now used to enhance the immune systems of patients of HIV patients with lessons that can be applied in the clinical management of Ebola hemorrhagic fevers. Dietary supplements was made from 0.9% salt and aqueous extracts of *Flammiluna* spp, *Termitomyces titanicus* and *Pleurotus ostreatus*. These macrofungi have been used in African traditional medicine and traditional diets for the management of HIV/AIDS and its accompanying opportunistic infections amongst tribes in north west Cameroon. The study indicated that the prevalence of HIV/AIDS in North West region of Cameroon is increasing with girls and women having the highest rate of infection (60%) with increasing shortage of antiretroviral drugs especially in the rural areas of that region. Approximately, 95% of patients encountered in this study even when receiving antiretroviral drugs still depend on Traditional medicines. More than 98% of patients in the rural areas who are seropositive but with a CD4 counts of more than 400 cells/ml sustain their lives on African nutritional supplements and traditional medicines. Phytobiotechnology Research laboratories documented 23 mushroom species belonging to 23 families used in various therapeutic preparation for the management of HIV/AIDS in rural North west region of Cameroon. From this *Flammiluna*, *Termitomyces* and *pleurotus* were selected as they are frequently used and available. They were extracted and used in combination in the management of HIV/AIDS patients at the Phytobiotechnology Research Clinic. From 1000 patients who consented through an ethical clearance process to follow the intervention, 600 were already receiving antiretroviral drugs from the regional hospital, while on this supplements an increase of CD4 counts (Facs count method, Beckton Dickenson) by 85% was observed with a 94% decrease in Viral loads (Viral load machine, ABI Prism 7300, Biocentric method applied). For the 400 patients who were not qualify to receive ART, a 95% increase in CD4 counts and 95% decrease in Viral loads were recorded. In all study groups, an 80% increase in body weight, clearance of frequent fevers, dysentery and diarrhea symptoms ceased. Haematological analyses indicated 70% in White blood cell counts with a balance neutrophils and lymphocyte counts. Conclusions from this studies stresses the potentials of medicinal food supplementation in the effective management of HIV/AIDS with potential application to other viral diseases such as Ebola hemorrhagic fevers in Africa.

**Keywords:** Diet, Nutrition, Supplementation, Traditional Food Plants, HIV/AIDS, Ebola Virus, Lessons

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## 1. Introduction

Human Immuno deficiency Virus (HIV) and Acquired Immune deficiency Syndrome (AIDS), Cancer and many other infectious diseases are plaguing the world with a greater burden in Africa. Global and regional estimates of HIV/AIDS strongly indicate that the pandemic is growing despite enormous efforts invested in awareness campaigns and the administration of antiretroviral drugs (Yongabi and Chia-Garba, 2014) Some of these antiretroviral drugs are being used to treat Ebola virus infected patients recently. Apparently, the aetiology, pathogenesis, pathology virulence, epidemiology, modes of spread and prophylaxis of HIV/AIDS as well as most viruses in the last couple of years have been well researched and related issues addressed with enormous supportive literature on this. Yet, developing a therapy for HIV/AIDS as well as many other viral infections such as the current Ebola remains a dreaded feat.

Rarely in modern times, have humankind witnessed a disease with myriads of scientific, social and psychological challenges like HIV/AIDS as well as other viral infections such as Ebola. The real challenge, however, is the lack of effective treatment. "What we know, what we believe is in the end of little consequence, but what we do is what matters". Conventional remedies (i.e. the intervention with the use of antiretroviral drugs: Duovir, combivir, kaletra, Triomune etc) are proving inefficient to contain the scourge especially in sub-Saharan Africa (Ramadhani et al., 2007) It would appear that antiretroviral resistance is becoming widespread and little or no studies are tailored toward highlighting and addressing this. Antiretroviral drugs, not withstanding, have been very instrumental in prolonging the lives of many HIV patients globally, especially, in Africa. There is certainly no pandemic in modern times has gathered the level of awareness globally like HIV and AIDS.

Many regional and international bodies, religious organs and governments have certainly done a lot of sensitization and follow up treatment with ARTs and of course, deserve succinct acknowledgement. Despite all these enormous efforts, the prevalence of the disease is rather galloping globally. For as much as we do know, there are many people living with HIV and AIDS in many rural areas in sub-Saharan Africa that do not have access to ART, some of these areas are not accessible and designated ART centers are far off. Besides, the glaring dwindling quality of lives and mortality rate of patients who are on antiretroviral regimen for a long period of time provokes serious research questions. Prolonged use of synthetic antiretroviral drugs have generated elevated liver and kidney transaminases and as such accelerated deaths in many circumstances.

In Cameroon, for instance, there are certain clinical experiences observed with the CD4 counts of some patients on antiretroviral follow up that makes clinical success of these of patients' tasking:

What do we do with patients whose CD4 counts are significantly high and unqualified for ARV intervention, but

with a high prevalence of a number of opportunistic infections, yet treatments for opportunistic disease alone don't yield significant progress. Additionally, what do we do with HIV/AIDS patients whose CD4 counts are significantly low but when placed on ARTs, they encounter fierce side effects and thus suspend treatment (Kanters et al, 2013) What about those patients who have been on ART for more than 10 years and start to deteriorate in health yet with a significantly high CD4 counts.

These are some experiences that have motivated the need to research into nutraceuticals from mushrooms. The need therefore, to evolve and standardize alternative medical biotechnology from the ethno mycology of Cameroon to combat this scourge. Efforts in the past and present have also focused heavily on vaccine development which may not likely yield dividends in the foreseeable future, yet millions die daily. A lot of studies on HIV therapy have been done but this degree and academic based researches have not been translated to contain this epidemic at grassroots. Yet, there are many HIV/AIDS patients in the rural Africa who live and manage their status using indigenous knowledge, traditional medicine and medicinal plants. If this is carefully studied, it could lead to novel leads for HIV/AIDS management. Africa is host to more than 25% of the world mushroom biodiversity that remains grossly under exploited for medicine. A survey of local mushrooms in Cameroon used in therapeutic meals to manage HIV/AIDS and other immune syndromes were catalogued with three extracted and formulated into nutraceuticals and given to patients. We are reporting this results here with the hypothesis that the same formulae can be used to treat and manage Ebola hemorrhagic fevers.

## 2. Methodology

The mushrooms were surveyed amongst the people of Boy Division, Menchum Division, Mezam and Many Division division of the North West and South West Regions of Cameroon. From the many Oral interviews and questionnaires were given to organized womens groups and faith based groups where HIV/AIDS patients are members. Their knowledge of the use of mushrooms in therapeutic meals was explored. All in all, 25 groups comprising of 1000 women and men were interviewed. The respondents indicated that the use many mushrooms and medicinal plants in food to improve their nutrition in the fight against HIV/AIDS. We roughly classified the type mushrooms in to 23 families. Three most frequently occurring mushrooms used in the recipes were ear marked for screening. These included: *Termytomyces titanicus*, *Flammiluna spp*, and *Pleurotus ostreatus*

A phyto-based nutraceutical was then prepared by harvesting 1kg of each of the mushrooms, carefully rinsed off with clean water, dried in an oven under mild heat. The mushrooms were individually pulverized into powder and steeped in 0.9% of salt solution ( 1 litre of salt solution) this was done for each of the mushroom powders and left to

extract for 48 hours. After this the mixture was allowed to dry in the oven under mild heat for 24 hours, the water dried leaving behind the powders. The powder was used as nutraceuticals directly.(Yongabi et al., 2014) A tea spoonful of the powder (0.2 g) was served in a quarter glass of hot water (taken as a tisane) twice a day. This was used at our clinic to manage HIV/AIDS patients. The patients consented to be placed on this mushroom through an exit pool system. They willingly accepted to be placed on this after leaving their various hospitals. All the mushroom used was selected based on their anthropogenic use and form part of the local diets.

In addition, the treatment and extraction process employed 0.9% table salt which is used in cooking. This was a non invasive and non intrusive approach. Patients who were tested positive for HIV but were not yet placed on highly active antiretroviral drugs were placed on the booster, while those who were on ART but with dwindling CD4 counts were also placed on the booster. In all these two groups, their initial CD4 counts before treatment were analysed at the regional Hospital in Bamenda while their viral load counts were analysed at the Centre Pasteur Institute virology lab in Yaounde. These values were recorded before patients' commenced treatment. The analysis was done every after 6 weeks for comparison.

A compilation of the specific clinical features, opportunistic infections for each patient were all recorded before commencement of treatment and changes monitored all along while they are on the mushroom booster. A proximate analysis of the Mushrooms was carried out in Nigeria at the Abubakar Tafawa Balewa University Chemistry labs revealing that *Termitomyces titanicus* has about 21% protein by dry weight, while *Pleurotus ostreatus* has about 35% protein by dry weight, with *Flamulina spp* having about 40% protein by dry weight.

### 3.1. Results and Discussion

The preliminary results have been more than 1000 patients whose CD4 counts, general well being had improved significantly and patients lives prolonged. More than 200 patients are observed to live normally for more than two years when they were unable to get antiretroviral drugs due to their geographical location in a very remote area and highly enclave. Similarly more than 30 patients who had detectable Anti bodies for HIV initially using SD Bioline Elisa are now with very faint and undetectable HIV antibodies after taking this mushroom booster for more 14 months, another 40 patients who have been on the therapy have recovered but with an insignificant traceable antibody level for the HIV (Yongabi 2014) .There are equally many patients who have progressed so well while on the nutritional support. About 50 patients while on both antiretroviral drugs and this mushroom support had a twofold rise in the CD4 counts with great improvement in clinical well being.

### 3.2 Conclusion

The conclusion are drawn that Mushroom extracts can

boost the immune system and can act as a co support to patients taking antiretroviral drugs as well as for patients not qualified to be on antiretroviral drugs but with appearance of one or more opportunistic diseases, the mushroom boosters are appropriate nutritional support and this has been previously observed in China (Yantao et al, 2014) Another parallel conclusion we are drawing from this experimental experience is that the same formulae and protocol used in this study can be applied to treat and manage Ebola virus fevers. There is a need to further confirm this finding, probe into the possible mechanism of action using a number of comparative research protocols.

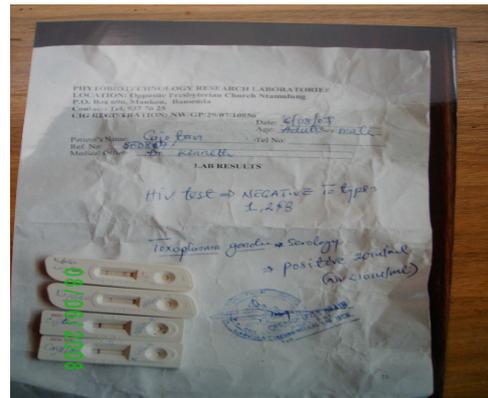


Fig. 3.1. This Patient was tested positive for HIV 1 antibodies, followed Kaybiotics therapy ,9 months later he was not found with the antibodies see the band on the kit at the start \*top\* and at the end\*bottom\*



Fig. 3.2. This lady was tested with antibodies for HIV 1, 13 months later she was found without the antibodies.

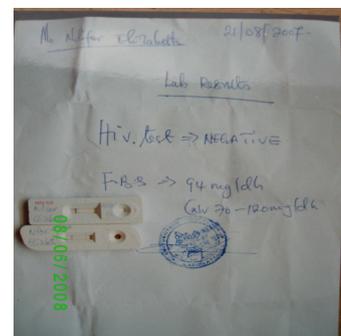


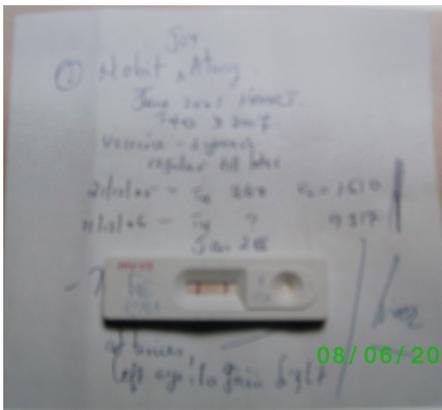
Fig. 3.3. This woman in her late 55 took kaybiotics for 5 months and had undetectable antibodies; she was actually at a late window phase with a few opportunistic infections.



**Fig. 3.4.** A woman in her 50s did a voluntary HIV test after noticing that her friend is doing well on Kaybiotic therapy, after 9 months, one of the test panels determine shows she is positive while another test panel SD BIOLINE shows undetectable antibodies, at the moment she has lived for than a year since she stopped our therapy and with no health malaise at all.



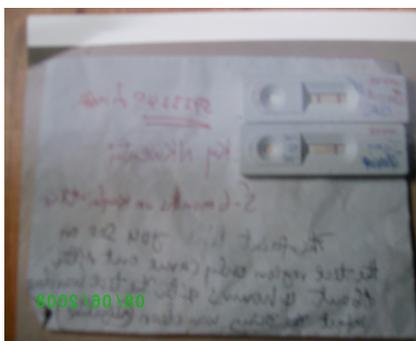
**Fig. 3.8.** A case that had been on vaccine for 6 years still with antibodies for HIV and a declining health status, now placed on kaybiotics.



**Fig. 3.5.** Slide above show continuous presence of HIV antibodies for a patient who has been on antiretroviral drugs for more than 8 years with deteriorating health status now.



**Fig. 3.9.** Slides show similar success cases with details at our clinic.



**Fig. 3.6.** A lady in her mid 30s who tested HIV positive and had followed a Vaccine and a traditional treatment elsewhere, reported to us later and we tested and found her positive, but after following Kaybiotics for 7 months, a follow up test found undetectable antibodies for HIV, she has lived healthily for two years now since completion of treatment.



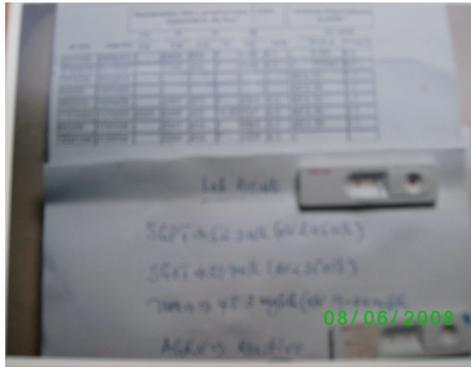
**Fig. 3.9.1.** Preview of kaybiotic immune boosters and other co products for tackling opportunistic diseases.



**Fig. 3.7.** Sample capsules and tablets of kaybiotics



**Fig. 3.9.2.** This case was sent to us from Mbingo Annex Tiko and after 7 months the hospital run the test and found no antibodies for HIV and results sent to our clinic.



**Fig. 3.9.3.** A case that has been on ART for 6 years now with elevated liver enzymes indicative of liver anomaly, he is doing well now on kaybiotics. These are but a few cited case study out of the many patients we have. There are many other details.

## Recommendation

Our ultimate goal is to continue these studies, build further works on these results especially with management of hemorrhagic fevers such as Ebola.

“The most damaging phrase in the language is: it’s always been done this or that way” Real Admiral Hopper.

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