

Determining the effectiveness of an herbal mixture consisting of extracts of
Sutherlandia Frutescens and Nerium Oleander on increasing the CD4 cell count of
HIV/AIDS patients.

by

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ABSTRACT

The CD4 T-lymphocytes cell count in people who are HIV positive is generally used as a surrogate marker for disease progression towards full-blown AIDS and the FDA uses it as an indicator of the effectiveness of anti-retroviral treatments. This study investigated the effectiveness of an herbal combination consisting of water extracts of *Sutherlandia Frutescens* and *Nerium Oleander* on increasing the CD4 counts of people who are HIV positive with a starting CD4 count below 400 and clinical symptoms of AIDS. Twenty randomly selected participants who met the selection criteria took part in a double blind, placebo controlled study over a 60-day period. The study was conducted at an AIDS clinic and the CD4 count of each individual was done by an independent pathology laboratory at the start of the study and again after 30 and 60 days. The results showed that the CD4 counts of participants who received the herbal mixture increased by an average of 135 cells per cubic millimeter during the 60-day study period while those of the placebo group decreased by an average of 87 cells per cubic millimeter.

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LIST OF ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
ALT	Alanine aminotransferase, a liver enzyme
AST	Aspartate aminotransferase, a liver enzyme
AZT	Azidothymidine (or Zidovudine)
CD4	Cluster of Differentiation 4, a glycoprotein used as an indicator to help physicians decide when to begin treatment in HIV-infected patients
CTscan	Computed tomography scan or computed axial tomography scan (CAT scan)
DAIDS	The AIDS division of the NIH
FDA	Food and drug administration
GABA	Gamma-aminobutyric acid
HAART	Highly active anti retroviral therapy
HIV	Human immunodeficiency virus
IFNs	Interferons
MRI	Magnetic resonance Imaging
NIAIDS	National institute of allergy and infectious diseases
NIH	National institute of health
PCR	Polymerase chain reaction, a test to establish viral load
PET scan	Positron emission tomography, a nuclear imaging technique
TB	Tuberculosis

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CHAPTER ONE

INTRODUCTION TO THE PROBLEM

Statement of the Problem

HIV/AIDS is considered a growing problem, especially in developing countries. It not only affects the economically active people in those societies, but also has a devastating effect on the many orphaned children that are left in its wake. The medical infrastructure in developing countries may not always be adequate to deal with epidemics in general and the practicalities of regular anti-retroviral medication place an additional burden on those facilities.

Anti-retroviral treatment has known long-term side effects and may not always be the preferred treatment route for many individuals in cultures where traditional healing methods still play an important role. Such individuals often turn to various herbal remedies that are frowned upon by orthodox medicine. Pressure groups, often funded by special interests, sometimes go to inordinate measures to convince the public that alternative treatment modalities are dangerous and that they prevent the use of “proven” medication. In this respect, the media also plays a role in glamorizing the successes of modern medicine while denigrating the use of herbal mixtures, diet and other “esoteric” methods.

The present situation regarding HIV/AIDS is as follows:

- except for anti-retrovirals, properly structured studies that investigate the

effectiveness of alternative HIV/AIDS treatments are still few and far between and successes are mostly anecdotal.

- Few people realize that the role of the HIV retrovirus in AIDS progression is not as clear-cut as we are led to believe.
- The co-factors which may be involved in HIV/AIDS progression have been postulated but have not been identified.

Given these facts, it is important that more research is done on the effectiveness of alternative treatment modalities especially as these could relate to the postulated co-factors in HIV/AIDS progression.

Background and History of the Problem

Since Robert Gallo announced in 1984 that the virus responsible for AIDS had been discovered, billions of dollars have been spent on finding a cure. During this time, some researchers, like Peter Duesberg, have questioned the causative link between Gallo's HIV virus and AIDS. They maintain that a.) it does not comply with the requirements of Koch's Laws relating to the differentiation between correlation and causation, b.) that it is totally uncharacteristic for a retro-virus to act in this way, c.) that the concentration of HIV viruses in CD4 cells, even in advanced AIDS cases, are too low to explain the virulent nature of advanced AIDS, and d.) that the extraordinary as well as unpredictable long period between the initial HIV infection and the development of full-blown AIDS needs an explanation (Bialy, 2004; Duesberg, 1995; Farber, 2006). They have also questioned the changing definition of AIDS, the

inaccuracy of the various tests for HIV anti-bodies, the variability of the tests in different countries and the relevance of concepts like “viral load” when tested by using the polymerase chain reaction (PCR) method (Bialy, 2004; Culshaw, 2007).

Other researchers, convinced that HIV was the single cause of AIDS have tried their best to find ways of destroying it. In pursuit of this objective, pharmaceutical companies have spent billions of dollars on “anti-retrovirals” to delay the onset of full-blown AIDS. Unfortunately, all the anti-retrovirals have side effects that can be quite severe. These effects can be liver failure, severe anemia and even destruction of CD4 T-cells (Farber, 2006).

Although the controversy about the connection between HIV and AIDS has not been resolved satisfactorily, many researchers believe that AIDS is the result of the destruction of CD4+ T-cells mediated by the HIV virus. Exactly how this happens is not yet clear. It is thus not surprising that a third group of researchers, including Luc Montagnier, the co-discoverer of the HIV virus, have postulated that certain “co-factors” are required before HIV, a member of the family of normally harmless retroviruses, can become a virulent T-cell killer (Farber, 2006). And it is this “co-factor” aspect that should be of great interest to herbalists and other practitioners of alternative therapies.

Anti-viral herbs have been used for centuries, especially in China, to combat various viral diseases like shingles, herpes simplex, measles, chicken pox, influenza and the common cold and they may well have a role to play in the unknown co-factors that have been postulated in the development of full-blown AIDS. Herbal remedies are normally used in a palliative role with HIV/AIDS (supporting the immune system, fighting opportunistic infections and relief of the side-effects of anti-retrovirals). In

Sub-Saharan Africa where AIDS is reported to be pandemic, herbal concoctions are being administered by traditional healers who claim various degrees of success. Such claims, although anecdotal, may well be based on the fact that substances derived from plants, including alkaloids, coumarins, flavonoids, lignans, phenolics, quinines, saponins, terpenes, sterols and xanthenes all have some degree of anti-HIV activity (Singh, Bharate & Bhutani, 2005). On a more scientific basis, it has been shown that the *Trichosantin* in the Chinese herb *Trichosantes kirilowii* can inhibit HIV infection through its action on the chemokines and chemokine receptors. (Zao et al, 1999). Aqueous extracts of the African *Sutherlandia frutescens* and *Lobostemon trigonus* have been shown to have anti-HIV activities (Harnett, Oosthuizen & Van de Venter, 2005). In 1997, an extract of Nerium Oleander was patented in the USA under the name Anvirzel and, in the patent application Dr Ozel, who used the extract for more than 30 years in Turkey as a treatment for cancer, made the claim that it is also effective in controlling HIV/AIDS (Ozel, 1992).

Significance of the Study

In South Africa, where this study was conducted, HIV/AIDS has become a major problem. Combined with this, is the government's reluctance to implement the general administration of pharmaceutical anti-retrovirals on a national scale. The government, through the Minister of Health, has already indicated that they see a role for natural medicine in combating the disease. This attitude has led to widespread criticism in the media and a general ridicule of natural remedies in this field.

A properly conducted, placebo controlled study of a locally produced herbal mix contributes greatly to dispelling the so-called “unscientific” basis of natural remedies. At the same time, it provides impetus to additional research that may well show that herbal treatments can play an important role in controlling the co-factors that have been postulated in HIV/AIDS progression.

This study gives additional options to those practitioners who believe that herbal treatment is an important modality in the yet-unresolved HIV/AIDS crisis. It is also an important step towards finding treatments without the debilitating side-effects of the current and still controversial HAART (Highly Active AntiRetroviral Therapy) treatments. The present use of AZT for pregnant mothers-to-be, sometimes on a non-voluntary basis, can have devastating effects on the future of the yet-to-be born child. A harmless herbal remedy is a welcome substitute as well as an affordable treatment for HIV/AIDS.

Research Question

Is a standardized herbal mix consisting of *Sutherlandia Frutescens* and *Nerium Oleander* effective in increasing CD4 counts in a statistically significant way when administered over a period of 60 days to a randomly selected group of HIV/AIDS patients with an initial CD4 count below 400?

Hypothesis

Null Hypothesis (H_0) – The placebo group and the group receiving the herbal mixture will show no difference in respect of the change in their CD4 cell counts. That is, the average change in the CD4 cell count of the placebo group will be equal to the average change in the CD4 cell count of the group receiving the herbal mixture.

$$(H_0: m_1 = m_2)$$

Research Hypothesis (H_r) – There will be a difference in the change of CD4 cell counts between the placebo group and the group receiving the herbal mixture. That is, the average increase in the CD4 cell count of the placebo group will be lower than the average increase in the CD4 cell count of the group receiving the herbal mixture.

$$(H_r: m_1 < m_2)$$

Scope, Delimitations and Limitations

The study was undertaken to show that the effectiveness of herbal remedies is not only anecdotal but that they can be shown to work in an experimental setting. The study is limited to the objective effectiveness of only one herbal mixture and does not show anything about herbal mixtures in general. As in the case of orthodox medicine, there are probably many herbal mixtures that do not achieve what their proponents claim. Others may work because of the psychosomatic effect that a sympathetic healer has by the way that he/she shows empathy towards a client and may be completely ineffective when applied by somebody else. This study does not address such issues.

The study also has a limitation in that it is aimed at showing that a specific herbal mixture works and not why it works. By showing that it works, a whole range of

research opportunities are opened for those researchers who are inclined to discover the specific role of the active ingredients.

Summary

Although HIV/AIDS has been around for more than 20 years, there is still no cure available. Scientists are also not in complete agreement about the etiology of AIDS and the role of HIV in mediating the destruction of T-cells. Some scientists, including the co-discoverer of HIV, have suggested that certain co-factors may be involved in the development of full-blown AIDS.

At present, anti-retroviral medications are used to treat HIV positive people who are showing clinical symptoms of AIDS. The side-effects of the treatment can be severe and warnings about the possible long-term dangers cannot be ignored.

Many people, especially in developing countries, have turned to alternative treatments like herbal remedies to treat the disease. Anecdotal evidence suggests that herbal mixtures could have a role in controlling the postulated co-factors and thus prevent the development of AIDS. Unfortunately, there is a lack of scientific evidence that herbal mixtures are effective in combating HIV/AIDS and the orthodox medical establishment is skeptical about the anecdotal claims by alternative practitioners.

CD4 cell counts are used as proxies for the development as well as the severity of HIV/AIDS and the American Federal Drug Administration (FDA) uses the CD4 cell counts to judge the effectiveness of anti-retrovirals. In line with this, the present study measured the effectiveness of a specific herbal mixture in a double blind, placebo controlled experiment by checking the change in the CD4 cell count of participants over a 60-day period. Although the results cannot be generalized for all herbal

mixtures and they also do not provide information about the reasons for the effectiveness, they clearly suggest that there are safe and affordable herbal alternatives to anti-retrovirals with their unwanted side-effects.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

The bulk of the literature on HIV/AIDS frowns on treatments that are not based on anti-retrovirals. At the same time, any researcher that questions the orthodox theories regarding HIV, the way it is transmitted, the various antibody tests or the validity of concepts like “viral load” is ostracized by the scientific community and is labeled an “AIDS denialist” with consequent loss of access to research funding. In South Africa, where both the President and the Minister of Health have expressed concern about the side-effects of anti-retroviral treatment, they are mocked by the media, the scientific community and by AIDS support groups. Newspaper articles continue to praise the use of anti-retrovirals while, at the same time, denigrating the possibility that healthy lifestyles or herbal mixtures could be of any value. Cartoons of the Minister of Health appear regularly where she is portrayed as an incompetent that promotes beetroot and garlic as a cure for HIV/AIDS.

In a paper presented during a April 2001 Conference on Science and Democracy in Naples, Anthony Liversidge, a science reporter that had been following the HIV/AIDS debate for 15 years, said the following:

...The current paradigm in AIDS has enjoyed unprecedented endorsement from all major institutions in science, government and health around the world, including the US federal government, the National Institutes of

Health, the New York Times, The current the National Science Foundation, the United Nations and national governments around the world. The now almost automatic support of overseas governments is possibly related to the prospect of expanded aid from the US and the UN if they adopt the HIV-AIDS model.... The outcome is a situation where the unproven claim of one individual scientist, Robert Gallo, certified by the federal government before publication, confirmation or review, has been adopted by colleagues in the field without final proof and despite contradicting review, and certified by national and international institutions around the world...” (Liversidge, 2001, p. 15).

As a result of this situation, one has to research articles, books and documents written by the so-called “Denialists” to get an understanding of the theoretical problems surrounding HIV/AIDS, the side-effects of antiretroviral treatments, the problems related to the antiretroviral research projects or the possibility that alternative treatments could be effective.

Contemporary Theoretical Perspectives

On April 23, 1984 at an international press conference, Dr. Robert Gallo of the National Institute of Health (NIH) announced that the “probable” cause of AIDS was a newly discovered retrovirus. The New York Times published the announcement and changed the “probable” cause to a definite cause. Shortly after this Dr. Luc Montagnier of the Pasteur Institute in France confirmed that he had in fact sent the HIV virus to Dr. Gallo and that he should be considered the discoverer. To prevent a major

diplomatic fiasco, the discovery was announced as a joint effort of Gallo and Montagnier. From the time of Gallo's announcement, funding for alternate explanations of the AIDS phenomena was halted and the official and universally accepted theory of HIV/AIDS as an immunodeficiency condition caused by a retrovirus transmitted through sexual contact and blood, was born. The use of anti-retrovirals as the only accepted treatment for HIV/AIDS is based on this model.

The first so-called "denialist" who questioned the above theoretical model was Dr. Peter Duesberg, a contemporary and former colleague of Dr. Gallo. Duesberg's book, *Infectious AIDS: Have We Been Misled*, contains a collection of 13 articles that were published in scientific journals from 1987 to 1995, criticizing the basis of the accepted model. The first paper that branded him as a "denialist" was commissioned by the prestigious cancer journal *Cancer Research*. In the paper entitled "Retroviruses as Carcinogens and Pathogens: Expectations and Reality" published in March 1987, Duesberg criticizes the theory of retroviruses as cancer-causing agents. As an aside in the same paper, he discussed the role of HIV in AIDS and proposed that something other than HIV must be involved in the progression of the disease. He also pointed out that the long latency period between infection and the clinical disease was atypical of the generation time of retroviruses, that the number of HIV viruses actually found in the blood of AIDS patients could not explain the immune deficiency problem and that HIV does not kill T cells directly. Many other researchers have confirmed the fact that HIV does not kill T cells. The HIV/AIDS theoretical model was thus adapted and now postulates that the HIV virus mediates the destruction of T cells in a yet unknown manner. In Duesberg's opinion, in Western countries at least, recreational drug use and other non-contagious factors are probably the main culprits responsible for the

immune deficiency problem associated with HIV/AIDS - with the HIV virus an innocent passenger. He maintains that anti-retroviral drugs like AZT can actually lead to AIDS. He argues that AZT is used as an anti-HIV drug because of the fact that it is a DNA chain terminator, effective against viruses that replicate through a DNA intermediate. AZT's DNA chain termination action kills all cells that divide, including the rapidly dividing cells of the bone marrow where the T-cells originate. AZT itself can therefore lead to a rapid killing off of T-cells which, according to Duesberg, is then blamed on AIDS. He points out, with references, that the "Concorde trial" as well as other studies have shown that HIV-positive people receiving the anti-retroviral drug AZT had a substantially higher risk of developing AIDS than those on a placebo (Duesberg, 1995).

Duesberg argues extensively that HIV alone cannot be the cause of AIDS in spite of the fact that it is highly correlated with it. He refers to the many inconsistencies in its epidemiology when one looks at the USA compared to Africa and concludes that "...unidentified, mostly noninfectious pathogens cause AIDS" (Duesberg, 1995, p. 122). His contention is that the existing HIV/AIDS theoretical model has not moved from a correlation phenomenon to a causation phenomenon.

Celia Farber, an investigative journalist, discusses the various controversies surrounding HIV/AIDS in her book *Serious Adverse Events: An uncensored History of AIDS*. Unlike Duesberg, she is not proposing that HIV does not cause AIDS, but she looks at the many theoretical perspectives that surround the HIV/AIDS problem. Her research also highlights the totally unscientific and unprofessional bias of the established orthodoxy against those who question the theoretical basis of the existing HIV/AIDS paradigm. She documents the difficulties experienced by critics of the

existing model to obtain institutional funding for their research. She specifically points out that scientists and researchers of today are totally dependent on the funding of the closely-linked government-biotech-pharmaceutical conglomerate and concludes “The myth of science is that it is a profession that prizes curiosity, confusion and wonder..” (Farber, 2006, p. 57). Duesberg, she reports, found that because of his controversial criticism in his paper of 1987, all of his 23 grant requests for research were turned down.

Farber discusses the findings of army researcher, Dr. Shyh-Ching Lo from the Armed Forces Institute of Pathology, who had isolated an agent other than HIV from a patient. This “agent” which was not a retrovirus like HIV, caused AIDS symptoms and even death in animals. She mentions that even Dr. Gallo had suggested that a certain herpes virus, HBLV, could be a co-factor in the development of AIDS. She also points out that Dr. Luc Montagnier, the co-discoverer of the HIV virus, had reported in the 1990 issue of the French *Research in Virology journal* that mycoplasma, a microbe, could be a co-factor in the destruction of T-cells. In this regard the Miami Herald had reported that Montagnier believed that HIV was a “..benign virus that only becomes dangerous in the presence of a second organism” (Farber, 2006, p.89). Farber writes “..To this day, Montagnier insists that HIV cannot lead to AIDS without other contributing causes..” (Farber, 2006, p.93). She laments the fact that, to date, no serious studies have been done to establish what OTHER factors, apart from HIV, AIDS patients have in common, especially if one considers that Duesberg has reported more than 4000 documented cases of people with full-blown AIDS but who are not HIV-positive.

The assumption, disputed by Duesberg and other researchers, that the HIV retrovirus is the only cause of AIDS, has led to anti-retroviral drugs being the only substances tested for treatment efficacy. All of the five different categories of anti-retroviral drugs aim at the disruption of some or other action of the HIV virus as follows:

- The Nucleoside/Nucleotide Reverse Transcriptase inhibitors interfere with the action of the reverse transcriptase protein of the virus.
- In a similar way, the Non-Nucleoside Reverse Transcriptase Prohibitors inhibit the reverse transcriptase protein.
- The Protease Inhibitors disrupt the Protease protein that is involved in HIV replication. Farber warns about the dangers in using this class of antiretrovirals, based on a paper by Dr. Paul Saftig that was published in the journal *EMBO*. Saftig reported that when researchers removed the aspartyl protease cathepsin D from mice, they seemed normal initially but all of them suddenly died on the 21st day with a total loss of T-cells and B-cells. As the cathepsin D protease is essential for life, any medication that could possibly interfere with it, should be considered extremely dangerous (Farber, 2006, p. 241).
- The Fusion or Entry Inhibitors prevent the HIV virus from entering the immune cells. The latest of these block the CCR5 co-receptor, preventing the virus from attaching to the surface of the immune cells.
- The final group, the Integrase Inhibitors, inhibit the integrase enzyme which is required by HIV for inserting its genetic material into the immune cells.

Farber discusses the problems experienced during the supposed double-blind, placebo controlled trial of Zidovudine, better known as AZT. This failed cancer drug

was approved in 1987 as the first antiretroviral treatment for AIDS. The approval for AIDS treatment was based on a single highly flawed study. Both the FDA and Burroughs Wellcome, the pharmaceutical owner of the drug, admitted weaknesses in the study. Patients admitted that they knew whether they were getting the placebo or the real drug and that they then obtained the drug on the underground market. The study was thus not double-blinded. It was also not completed. Seventeen weeks into the study, all the patients were put on AZT. Ellen Cooper, a director of the FDA who was aware of the problems in the study, remarked that approval would be a “..significant and potentially dangerous departure from our normal toxicology requirements..” (Farber, 2006, p. 116). In spite of the reservation of many people, political pressure prevailed and the head of the FDA’s Center for Drugs and Biologics intervened personally to have the drug approved, faster than any drug in the organization’s history. All the patients who had taken part in the 1986 AZT study had died by 1989. Farber reports that several follow-up studies on the clinical effects of AZT found that although AZT was effective for a few months, its effects drop dramatically thereafter. A December 1988 study conducted at the Claude Bernard Hospital in France that was published in *The Lancet* showed that AZT had no lasting effect on HIV levels, it left people with fewer CD4 cells than when they started the study and that it was too toxic for most people to tolerate (Farber, 2006, p. 123). This was confirmed by the 3-year Anglo-French “Concorde” study. The results of a study by Dr. Jens Lundgren, published in the April 1994 issue of *The Journal of the American Medical Association*, suggested that the use of AZT shortens the lives of AIDS patients. The study involved 4,484 patients over a 5-year period. The death rate

of those who took AZT was substantially higher during the third and fourth years than those who never took it (Farber, 2006, p. 127).

In spite of its ineffectiveness in the long-term survival of AIDS patients, AZT is nowadays used extensively to prevent mother to child transmission of HIV through some unknown mechanism. Farber condemns this usage on the basis of the many false positives that HIV tests produce in the case of pregnancy as well as the possible long-term adverse effects of an extremely toxic drug like AZT. AZT used to be classified as a mutagenic agent, similar to thalidomide, and is therefore not a substance that one wants a fetus to consume. The study, known as ACTG 076 and reported in the 1994 *New England Journal of Medicine*, on which the FDA's AZT approval for this purpose was based, showed that HIV transmission during birth was reduced from 25.5% for the placebo group to 8.3% for the mothers who received AZT throughout their second and third trimesters. However, the authors of the study admitted that due to the small number of infected babies involved, the efficacy could not be quantified with a reasonable measure of accuracy. At the same time, a Malawian study showed HIV transmission to be closely related to Vitamin A levels of the mother. In that study, mothers with the lowest Vitamin A levels had a transmission rate of 32.4% while those with the highest Vitamin A levels had a transmission rate of only 7.3% which is LOWER than that of the mothers receiving AZT. Preliminary results from a Thailand study showed no difference between transmission rates of AZT treated mothers and a placebo group. The more disturbing fact is that the use of AZT on animals show anemia, bone marrow depletion, leukemia, T-cell depletion, atrophy of the thalamus gland, lymphotoxicity, nephrotoxicity, cell death, lung, liver and vaginal cancer, retarded development, and fetal death (Farber, 2006). Farber also mentions the

interesting fact that it takes from 6 to 18 months for babies born to HIV-positive mothers but who are NOT infected with the HIV virus themselves, to revert to a negative status. HIV tests on babies during this period can thus often return false positives – an aspect that is not taken into account when conducting studies on mother to child transmission.

The use of a cocktail of antiretroviral drugs (Highly Active Antiretroviral Therapy or HAART) resulted from work done by researcher David Ho and Dr. Marty Markowitz at the Aaron Diamond AIDS Research Center. They worked out a mathematical model based on a.) the assumption that the HIV virus replicated at a very high rate from the date of infection and b.) their measurements of the changes in the viral loads of a small number of patients who received their cocktail therapy during the experiments. Although the model was challenged by a number of scientists, the publicity received by David Ho, including being named *Time* magazine's 1996 Man of the Year, ensured the immediate popularity of the HAART treatment as a possible cure for AIDS. It became the standard treatment of all AIDS patients including adults, children and pregnant women. The criticism of the model centered around the use of the Polymerase Chain Reaction (PCR) test to establish the viral load of patients. Even Kary Mullis, who received the Nobel Prize for his PCR invention and who is a supporter of Duesberg's theories, is critical of the use of the PCR test as used by David Ho. Detecting viral particles, magnifying them 60,000 times or more and then to use that as a quantification of actual infectious HIV viruses is simply not an accurate barometer of reality. However, the media and the HIV/AIDS support groups did not heed the critics and the antiretroviral cocktails (most containing AZT and Nevirapine) are now the general mode of treatment for AIDS as well as for people

who are HIV-positive. Dr. Robert Giraldo, an expert in infectious and tropical diseases maintains that the reason why HAART initially works for some patients is due more to the anti-oxidant, anti-viral and anti-microbial properties of some of the ingredients than on its effect on HIV. The long term effects are liver and kidney failure as well as a disruption of the body's fat-distribution mechanisms. As Farber says: "AIDS drugs can cause death far more effectively than AIDS itself.." (Farber, 2006, p. 251).

Farber's contention is that the persistence of the present HIV/AIDS model is based more on the role of the media as well as other pressure groups like AIDS organizations who receive massive funding from the purveyors of anti-retroviral drugs than on the results of properly conducted, placebo controlled studies. She uses as an example the HIVNET 012 Nevirapine trial sponsored by the National Institute of Health (NIH) and conducted in Uganda. Nevirapine had been rejected twice by Canada in 1996 and 1998 after it had shown no effect on CD4 count and viral load and because of its high toxicity. The FDA, however, gave it conditional approval in 1996 for use in combination with other drugs and according to the initial protocol, a randomized, placebo controlled trial to study the safety and efficacy of the drug on pregnant women was started in Kampala, Uganda in 1997. The Phase I trial on 21 pregnant women that preceded it was not very promising. Four of the 22 babies that were born died. There were 12 serious adverse events and no lowering in the viral load of the mothers. The subsequent Uganda trial was to be conducted on 1500 HIV-positive pregnant women with 500 receiving AZT, a further 500 receiving Nevirapine and two placebo groups of 250 each. The safety of and tolerance to the two drugs would be tested and the HIV mother to child transmission would be measured by checking the number of babies alive and HIV free 18 months after birth. Farber reports

that the trial ended up being no placebo, no double-blind or even single-blind with only 626 mother/infant pairs. Eventually the study simply compared AZT with Nevirapine.

The published preliminary results of the trial *The Lancet* of September 4, 1999 clearly show how flawed results can be massaged to present a rosy picture. Nevirapine was shown to be much more effective than AZT and the percentage of infected infants was reduced from 25% to 13%. On the basis of the published preliminary results, the owner of the drug, Boehringer, applied for licensing of the drug for pregnant mothers. The FDA, to its credit, decided to do an on-site inspection to confirm the published data. Boehringer did its own inspection first and discovered that the trial was in total chaos in respect of both management and reporting of serious adverse events. A private company, Westat, was hired by the FDA to also do an inspection and their findings confirmed the problems of lost data, mixing up of records, drugs given to wrong babies, altered documents, a down-grading of serious events and deaths or still-births reported as serious adverse events. Additionally, they found that half of the HIV-positive babies were also on a Vitamin A trial which made their drug-data totally invalid. However, DAIDS (the AIDS division of the NIH) director Tramont brought out a report that ignored all the safety and incorrect data problems “thus saving HIVNET 012 from the scrapheap of failed scientific studies” (Farber, 2006, p. 302).

During this period of connivance, a medical officer of the NIH, Betsy Smith, noticed a problematic increase in liver enzymes with the babies who had received AZT. She forwarded her safety report to her superior, Mary Anne Luzar, who sent the report to the FDA. Director Tramont rewrote the safety report and ordered Jonathan Fishbein, a recently appointed staff member at the NIH with duties to oversee staff and

clinical trials, to chastise Luzar for insubordination. Fishbein checked the records himself and decided that she was quite correct in doing what she had done. The result of this was that Fishbein himself was sidelined and he eventually had to seek whistleblower protection against intimidation from his superiors. In the end, in spite of the two reports on the faulty nevirapine/AZT study and the discovery of the later liver toxicity symptoms in the infants, Nevirapine was approved as an effective drug to prevent mother to child transmission of HIV. (Farber, 2006).

Mae-Wan Ho et al in their book *Unraveling Aids* maintain that the proclaimed efficacy of antiretroviral drugs is not borne out by the evidence. In a 2004 study at the Necker Hospital in Paris, follow-ups were done on 217 patients who were considered “highly successful” recipients of HAART treatment. They found that 13 had died and only 41, or 20%, could be considered successful. Although the 41 had undetectable viral loads, 2 died after 60 months and 58.5% had lipodystrophy syndrome. As in the case of Farber, Mo et al also report the fact that the Concorde study in Paris had shown that AZT could not prevent HIV-positive people from progressing to AIDS. Even Dr. Anthony Fauci, director of the National institute of Allergy and Infectious Diseases (NIAID) had to admit to *The New York Times* that “There is an increasing percentage of people in whom, after a period of time, the virus breaks through. People do quite well for six months, eight months or a year, and after a while, in a significant proportion, the virus starts to come back” (Ho et al, 2005, p. 42). In a December 2003 study, the results of using HAART on 2,947 people were analyzed, showing that after an average of 20.4 months 272 had died, 332 had developed an AIDS-defining condition and a severe or life-threatening side effect was experienced by 675 individuals. An Italian study that looked at HIV-positive infants whose mothers had

received AZT during pregnancy found that those born to a mother who had received the drug were 1.8 times more likely to develop severe disease, 2.4 times more likely to have severe immunosuppression and 3.2 times more likely to die than HIV positive babies born to mothers who had NOT received the drug. Unfortunately, the conclusion from the researchers was that the treatment had failed BUT that MORE AGGRESSIVE treatment should be applied at an earlier stage (Ho et al, 2005).

The problematic situation of HIV/AIDS vaccine development also needs to be stressed. Although it has become a massive business, the inherent dangers require a very cautious approach. Most of the potential vaccines contain the glycoprotein gp120. Researchers like Dr Veljko Veljkovic has already warned that any vaccine containing the gp120 protein or the gene coding for it could actually accelerate AIDS progression in symptom free HIV carriers due to its potential for interfering with the immune system. The gp120 protein also contains so-called recombination hotspots where genetic recombinations or exchanges happen more often than usual. This allows the sequence of one gene to convert the sequence of another gene in the genome and could generate new pathogens if HIV should recombine with bacteria and viruses. Dr. Anthony Fauci, director of NIAID already acknowledged this possibility in 1994 when he admitted that “..there was a remote chance that the vaccines would compromise the immune system and make the recipient more vulnerable to infection..” (Ho et al, 2005, p. 56). If one considers the fact that “disarmed” Salmonella, Equine Encephalitis, Herpes Simplex and Canary pox virus vectors are being used for these vaccines, then the possibility that deadly pathogens may recombine from them, cannot be overlooked. Even if plant viruses like the tobacco mosaic virus are used for making vaccines, there is still a danger. In genetically engineered plants there have already been many

examples of recombinations between viral coat proteins and infecting viruses, including “..evidence that a plant virus has switched hosts to infect vertebrates and recombined with a vertebrate virus..” (Ho et al, 2005, p. 60). Veljkovic has adequately shown the dangers of generating deadly bacteria and viruses that can spread through the vaccinated population. Using third world countries to do these vaccine trials is a highly unethical practice (Ho et al, 2005).

Dr. Howard Urnovitz and his colleagues have suggested an alternative hypothesis about HIV/AIDS progression. They had discovered that the particular type of HIV virus from a patient that had died of the disease, had originated from human chromosomal DNA and had included parts that were similar to the immunodeficiency virus envelope protein gene of the African green monkey. They eventually hypothesized that “AIDS is a genomics disease with an associated virus called HIV” (Ho et al, 2005, p. 90). According to this theory, latent viruses in the human genome can be activated, possibly by HIV infection and that these latent viruses are the ones that do the damage to the immune system. Urnovitz postulates that HIV may be simply a marker indicating previous exposure to toxic agents that could lead to AIDS but that it may not necessarily be the cause of AIDS. In this respect, his theory is similar to that of Duesberg who considers HIV a “passenger virus” (Ho et al, 2005).

There are HIV/AIDS treatments other than antiretrovirals that have shown promise without the severe side-effects of the orthodox drugs. An oral vaccine developed in Thailand targets mucosal immunity and initial trials show that it could reverse AIDS progression. Researchers Dr. Aldar Bourinbaiar and Vichai Jirathitikal of the Immunitor Corporation, based their research on the assumption that HIV/AIDS is a disease that affects lymphocytes and monocytes in the lining of the small intestine and

their vaccine targets antigens at mucosal surfaces. The vaccine is currently licensed in Thailand as a food supplement (Ho et al, 2005).

A joint study by the Harvard Medical School in Boston and the Muhimbili University College of Health Sciences in Dar es Salaam, conducted in Tanzania, showed that AIDS progression can be delayed through multivitamins supplementation and suggested its early use by HIV-infected women. Ho et al report that there is also evidence of the association between micro-nutrient deficiencies and AIDS progression. In this respect it is important to note that a decline in blood serum levels of selenium is a predictor of AIDS mortality. The fact that Senegal in West Africa with the highest selenium-enriched soil also has the lowest incidence of AIDS (as well as cancer) compared to other African countries, confirms the importance of this trace element. Prof. Harold Foster of the University of Victoria in Canada has studied the relationship between selenium and CD4 cell counts. He maintains that retroviruses (like HIV) can depress selenium by encoding the gene for glutathione peroxidase, an enzyme that depends on selenium. The encoded gene allows the virus to replicate continuously by depriving its host of glutathione. This, in turn, results in a decline of selenium and CD4 cells. AIDS patients can thus be treated by interrupting this process. Prof. Foster uses a protocol of selenium, cysteine, glutamine and tryptophan, a treatment that he considers similar to treating diabetes with insulin. His theory is that HIV/AIDS is a nutrient deficiency disease caused by a virus. Prof. Luc Montagnier, the co-discoverer of HIV, also maintains that one of the characteristics of AIDS is “a persistent oxidative imbalance and a decrease of glutathione” (Ho et al, 2005, p. 124).

Ho et al's main contribution, from a naturopathic perspective, is their discussion of the herbal approaches to HIV/AIDS. Astragalus, for example, is an immune boosting herb that has many anecdotal success stories with AIDS but without any human trials to confirm these. *In vitro* trials by Chu et al have shown that it induces lymphokine-activated killer cell activity in HIV patients (Chu, Lin & Wong, 1994).

Ginseng, including the Siberian, American and Asian types, is also known as a powerful immune booster with a history going back thousands of years. In studies conducted at the University of Milan, F Scaglione and others showed that American ginseng increases cell-mediated immune parameters, including T4 cells.(Scaglione, Ferrara & Dugnani, 1990).

Licorice root (*Glycyrrhiza glabra*) has also been used as a treatment for AIDS. Ho et al reports on various studies done in Japan to test the effectiveness of this herb. In all cases there was a marked improvement in the clinical symptoms and CD4 counts of a meaningful number of patients (Ho et al, 2005).

75% of all AIDS patients in Africa rely on some form of Traditional Medicine, including herbal medicines. Of these, Sutherlandia Frutescens, one of the constituents of the mixture in this study, is probably the most used herb as a first line of defense against AIDS and other wasting diseases. It enhances the immune system and increases CD4 count in immune-compromised individuals. Some of the medicinal compounds in Sutherlandia are a.) L-cavarnine, a non-protein amino acid with antiviral, antibacterial and antifungal properties; b.) Pinitol which is used in the treatment of wasting diseases; c.) GABA (gamma-amino butyric acid) which is used to treat anxiety, stress and depression; (d) SU1, a triterpenoid isolated by PhytoNova, a South African company. Sutherlandia has also undergone toxicity tests at the South African

Medical Research Council and massive dosages have not shown any adverse side-effects (Ho et al, 2005).

Other herbal treatments for AIDS are St John's Wort (*Hypericum perforatum*) and Therapeutic Mushrooms like Shiitake and Maitake. St John's Wort seems to interfere with the reverse transcriptase process of the HIV retrovirus and thus "...preventing it from shedding, budding or assembling at the cell membrane.." (Ho et al, 2005, p. 160). The mushrooms have a strong immune boosting effect through their high beta glucan content.

Relationship of Current Literature to Present Study

HIV/AIDS pressure groups and the general media often portray the HIV/AIDS situation as one where all scientists are agreed on the theoretical model and therefore, the appropriate treatment. Peter Gallo and other researchers who share his view, are of the opinion that AIDS is caused by the HIV virus in a manner yet to be discovered and that anti-retroviral drugs and vaccines are the only way to control it. The mathematical model and viral load theory of David Ho led to the wholesale adoption of the so-called HAART treatment for all people who are HIV positive.

Dr. Howard Urnovitz put forward a theory that the AIDS phenomenon is caused by latent viruses in the human genome that could possibly be activated by the HIV retrovirus or some other toxins. Treatment modalities should thus be aimed at these other viruses or the offending toxins.

As the literature discussed above shows, researchers who are not part of the main stream HIV/AIDS orthodoxy are critical of the model with very good reason and they have promoted different treatment modalities. Peter Duesberg maintains that the HIV retrovirus is totally harmless, that it is not transmitted sexually and that anti-retroviral treatment will not make a difference to AIDS. In fact, according to Duesberg, many of the AIDS deaths are brought on unnecessarily by the treatment itself. Dr. Shyh-Ching Lo and Prof. Luc Montagnier are of the opinion that although HIV is an essential component for HIV progression to AIDS, there has to be certain co-factors present before that can happen. In this respect, herbal treatments could well play a role.

As the evidence shows, there have not been any double blind, placebo controlled studies on the efficacy of the antiretrovirals. The two main studies on AZT and Nevirapine that were supposed to be like that, were fatally flawed and therefore invalid. It was only political pressure that resulted in those two drugs being accepted for use on pregnant women. Follow-up studies on the efficacy of antiretrovirals also showed that they could do more harm than good.

Vaccines against HIV/AIDS have long been promoted as the only way to effectively combat the disease. Many researchers question this approach and point to the dangers inherent in taking such a route. The many failed vaccine experiments are a testament to the validity of their concerns.

From the literature it seems that better nutrition as well as herbal treatments hold out more promise than anti-retrovirals. Double-blind, placebo controlled studies to show their efficacy is thus imperative and this study will contribute towards that goal.

Summary

Effective treatment modalities for any disease often start out on an anecdotal basis before they are generally recognized as efficacious. Their general acceptance requires studies that show that they work and a theoretical model to show why they work.

Unfortunately, in the case of HIV/AIDS the studies show neither that the orthodox treatment is effective nor that the theoretical model is correct. Anecdotal reports about nutritional and herbal treatment of HIV/AIDS symptoms indicate that the co-factors which some researchers postulate, could well be an area where such treatment modalities may be effective.

CHAPTER THREE DESIGN OF THE STUDY

Introduction

The study was designed to test the effectiveness of an herbal mixture to increase the CD4 count of HIV/AIDS patients with a CD4 count of less than 400 and clinical symptoms of AIDS over a sixty day period. The research question was whether a standardized herbal mix consisting of *Sutherlandia Frutescens* and *Nerium Oleander* would increase CD4 counts in a statistically significant way when administered to a randomly selected group of HIV/AIDS patients who met the selection criteria. The Null Hypothesis was that there would be no difference between the average increase of CD4 count of the placebo group when compared to the average increase of CD4 count of the group receiving the herbal mix. The research hypothesis was that the average increase in CD4 count of the placebo group would be lower than the average increase in CD4 count of the group receiving the herbal mix.

The herbal mixture used for the study is a patented mixture of two herbal plants, both with a well-documented history of use by indigenous people. The one herb, *Sutherlandia Frutescens*, is found only in certain regions of South Africa while the second one, *Nerium Oleander* is found throughout the world.

The mixture has been used as a herbal food supplement in South Africa for a number of years and to date there have been no reports of any adverse reactions – as

one would expect from the toxicity studies that have been done on both of the constituent herbs. It has no known contra-indications for use with existing anti-retrovirals and can be used either separately or in conjunction with standard anti-retroviral treatment

Sutherlandia Frutescens

Sutherlandia Frutescens, or “cancer bush” as it is known by the indigenous people of Southern Africa, has been used for centuries to treat a variety of ailments. Its popularity has been publicly acknowledged by its appearance on a South African postage stamp. It has powerful immune boosting properties and has been classified as an adaptogen. (An adaptogen is an herbal substance or “tonic” that helps the body to adapt to environmental and internal stress by changing body metabolism). It is found in its natural state only in the drier areas of the Western and Northern Cape provinces of South Africa.

The active ingredients in *Sutherlandia* consist of a mixture of L-canavanine (an amino acid with documented anti-cancer, antiviral, anti-fungal and anti-bacterial action), pinitol (used in clinical settings to treat the wasting syndrome associated with cancer, TB and AIDS), gamma-aminobutyric acid (GABA - an inhibitory neurotransmitter that produces a sense of well-being), L-arginine (an antiviral agent), saponins and gamma sitosterol. Its popular usage as a treatment for HIV/AIDS is based on the activity of the pinitol, L-arginine, saponins and gamma sitosterol. Aqueous extracts of *Sutherlandia frutescens* and *Lobostemon trigonus* have been shown to have anti-HIV activities (Harnett et al, 2005).

A safety study, funded by the South African Medical Council, was conducted over a period of 3 months using 16 vervet monkeys. Behaviour of the animals was

monitored and blood tests as well as various physiological evaluations were normal. No toxicity was found even at large dosages.

Nerium Oleander

Oleander has been used for medical purposes for more than 2000 years. In biblical times it was known as the “desert rose.” In Turkey, it has been used as a folk remedy for centuries. During the 1960s, a Turkish doctor, Huseyin Ozel, saw that people using the remedy were mostly free of cancer and other serious diseases. He knew about the poisonous nature of the plant but soon discovered how to prepare the extract used as folk medicine. As head of the surgical department of the Mugla State Hospital in Turkey, he started experimenting with the extract and subsequently successfully used it as a treatment for cancer for more than 35 years. At the request of his son, Dr. Ozel patented an aqueous extract of *Nerium Oleander* as ANVIRZEL. (US Patent #5,135,745) The *Nerium Oleander* extract used in the proprietary herbal mixture is prepared similarly to the ANVIRZEL extract.

Extensive laboratory and clinical experience indicate both cytotoxic and immunological activities for the *nerium oleander* extract. During research at the M.D. Anderson Cancer Center, it was shown that the polysaccharides present in *Oleander* Extract are capable of activating the immune cells. In vitro research has been conducted by Dr. Robert Newman, Chief of Pharmacology, M.D. Anderson Cancer Center (MDACC), Houston, Texas. Dr. Newman has demonstrated that *Oleander* Extract has a high order of efficacy.

Concurrent research is also being conducted by Dr. Wendell Winters, a noted immunologist with the University of Texas Health Science Center in San

Antonio, Texas. Dr. Winter's work has confirmed that Oleander Extract stimulate the immune system through stimulation of the function and capability of certain subsets of mononuclear cells. In addition, Dr. Winters' research has shown that Oleander Extract specifically stimulates T and B lymphocytes, the cell-mediated and the humoral mediated immune systems.

Because of its strong cytotoxic effect in combination with an equally strong immunomodulatory effect, Oleander Extract is indicated as a therapy, both primary and adjuvant, for cell proliferative disease, certain viral disease, and autoimmune/inflammatory disease. Clinical application of Oleander Extract in the United States, Ireland, and Honduras has demonstrated efficacy against various neoplastic disease, hepatic disease such as Hepatitis C, late and early stage HIV/AIDS, as well as autoimmune/inflammatory disease such as rheumatoid arthritis and psoriasis. The results have been determined both by the clinical practitioner and independent laboratory analysis using PET, CT scan, MRI, and hematological screening.

Dr. Anibal Villatoro of Tegucigalpa, Honduras, Former Executive Director of the Honduran Institute of Social Security (administrator of the public health system) has since January of 1999 been conducting a compassionate use trial with Oleander Extract for HIV (SIDA) patients in Tegucigalpa. His results indicate a strong level of response to Oleander Extract therapy with a feeling of homeostasis (feeling of well being) and an improved quality of life, as well as significant improvement in their immune systems.

Most of the toxic cardiac glycosides of Nerium Oleander are reportedly destroyed by heat during processing of the hot water extract. They are also insoluble in water. A toxicity study was performed on Nerium Oleander extract by Southern

Research Institute, Birmingham, AL, on 28 beagle dogs, and the results showed that none of the dogs had any clinical signs of toxicity. Another lethality assessment in a murine (laboratory mouse) population was conducted by Southwest Research Institute, San Antonio, TX., where it was shown that Nerium Oleander Extract did not result in any mortality and/or morbidity in any of the laboratory animals.

Mode of action

Nerium Oleander contains the following compounds: Oleandrin, Adynerin, Ursolic Acid, Kaneric Acid, Neriucoumaric Acid, Oleanderen, Oleanderol, Kamerin, Dihydrourosolic Acid, Kanerocin, Oleanderolic Acid, Kanerodione, Kaneroside, Neriumoside, cis-Karenin, trans-Karenin, Pregnane Saponins and Cardenolides Saponins. The active ingredients of the Nerium Oleander extract have been shown to be 50 to 500 KDa polysaccharides containing trihydroxybutyric acid, ribose, arabinose, xylose, galactose, mannose, talose, glucitol, glucose, arabinose, rhamnose, D-galacturonic acid, acidic homo-poly-galacturonans or arabino-galacturonans. Total saccharides content of a typical extract that has been standardized to specific weight of 1.01 has been measured between 3.9 and 4.1 mg/ml and total polysaccharides content between 1.4 and 1.6 mg/ml. It has also been shown that the polysaccharides are Interferon-inducers. One of the defining characteristics of Interferons is their ability to interrupt viral processes and they provide the earliest line of defense against viral infections. Viruses, in turn, continually evolve defense mechanisms against attack by Interferons.

Antiviral mechanisms of interferon action include dsRNA-dependent protein kinase (PKR), the 2-5A Synthases, and the Mx proteins pathways. PKR pathway

mediates signal transduction, inhibition of protein synthesis and transcriptional control, 2-SA system pathway-RNA cleavage, and Mx proteins interference with viral replication. Viruses that are susceptible to interferon action are Hepatitis A, B, C, or D viruses, the HIV virus, the measles virus plus many others. Any stage in virus replication appears to be inhibited by Interferons, including entry and/or uncoating (simian virus 40, retroviruses), transcription (influenza virus, vesicular stomatitis virus), RNA stability (picornaviruses), initiation of translation (reoviruses, adenovirus, vaccinia), maturation, and assembly and release (retroviruses). Along with antiviral activity IFNs inhibit cell growth and control apoptosis.

The ability of the polysaccharides to induce the production of γ -interferons also has the following effects on the immune system:

- the ability to induce the expression of MHC class II proteins in a wide variety of different cell types, and thereby to promote the development of CD4 T-cell response.
- generation of activated macrophages, a key effector of cell population in innate and adaptive immune responses involved in killing microbial targets.
- Regulation of humoral immunity, by regulating the development of specific T helper cell subsets, or directly at the level of B cells and their functions- development of proliferation, immunoglobulin secretion and IG heavy-chain switching.

It is well documented in the scientific literature that polysaccharides derived from plants, have a wide range of biological activities, including anti-tumor, immunological, anti-inflammatory and anti-viral activities. Immune stimulation occurs as a result of the ability to induce the body's own defense mechanisms. These

substances generally influence the proliferation of the immunocompetent cells. This means that the primary targets of the action of the immunostimulating substances are the (All the above information with scientific references is available on patent applications European Patent EP1397149, United States Patent 20060188585, United States Patent 6565897, Canadian Patent CA2016948)

Participants

The subjects recruited were patients with relatively advanced HIV/AIDS symptoms at a Clinic in Johannesburg. The specific selection criteria were the following:

- Age group 18 -64 years of age
- CD4 T-cell count < 400
- Both male and female
- Pregnant women were excluded
- Not receiving anti-retrovirals
- Not cognitively impaired
- Literate to understand the contents of the consent form

Participation was on a voluntary basis. The purpose of the study and the procedures for administering the herbal supplement was explained to each potential participant in their own language. Virtually all people living in the Johannesburg area have English as a second language and are mostly conversant in that language.

Schooling is done in English and most people are literate in English, more so than in their own languages. However, provision was made for interpreting in both Zulu and South Sotho, the other two languages spoken in the region. The Clinic was responsible for maintaining physical care of the blood draws and for sending these to the pathology laboratory. Blood was drawn under supervision of a senior nursing staff member.

Methodology

Twenty volunteers were selected on a random basis from the final group of volunteers that met the specified criteria. Each of the participants signed a consent form. Two sets of 20 separate envelopes were prepared, each containing a letter from A to T (20 letters). Each of the participants randomly chose an envelope from the first set of 20 and the letter contained therein remained associated with the particular participant throughout the duration of the study. The researcher in turn randomly selected 10 envelopes from the second set of 20 envelopes and these became the 10 which were to receive the herbal mix (the Herbal Group). The remaining 10 were to receive the placebo (the Placebo Group). During the sixty days of the study, each one of the participants received on a daily basis 200ml of a locally produced and commercially available long-life soy mixture, fortified with the recommended daily requirements of important minerals and vitamins. By arrangement with the producer of the soy mixture, 15ml of an herbal mix consisting of *Sutherlandia Frutescens* and

Nerium Oleander was added to the soy mixture of the Herbal Group. Each of the 200ml containers was clearly marked with a letter from A to K so that no mistake could be made as to which person received a specific container. Neither the participants nor the administering staff members knew which containers had the herbal mix as they were all identical, apart from having the letters associated with particular participants on them.

The soy mixture and the herbs were supplied free of charge to all the participants. At the end of the 60-day period, all participants were given the option to continue for a further 60 days on the actual herbal mix.

Data Collection

Before the study commenced, blood samples were taken from each of the participants by a senior nurse and were analyzed at a professional pathology laboratory to confirm his/her HIV status and CD4 T-cell count. Other information collected included Age, Sex and initial weight. After thirty days, a further blood sample was taken from each of the participants and the CD4 T-cell count was again established by a professional pathology laboratory. The weight of participants was also recorded. This procedure was repeated after 60 days, at the conclusion of the study.

Apart from the CD4 counts, the pathology laboratory also took measurements of liver enzymes (ALT and AST) of each participant after the 30-day and 60-day periods to see if the herbal mix had any adverse effect on the livers of participants. The data was recorded by the senior nurse on data sheets supplied by the researcher.

Data Analysis

The collected data was tabulated under separate categories for the placebo group and the group receiving the herbal mixture. As the change in the CD4 count was to be used as the proxy for the effectiveness or not of the herbal mixture, the average change in this count was calculated for both groups. It was then easy to see if the Null Hypothesis was true and whether the Alternative Hypothesis should be discarded. The change in the values of the two recorded liver enzyme indicators was also noted to get confirmation of the safety of the herbal mixture. As the CD4 count and the liver enzymes normally move in opposite directions in a treatment that works without any side-effects, this was an important indicator that would indicate if a possible CD4 increase was achieved at the cost of damage to the liver.

Scope and Limitations

The initial intention was for all participants to start taking the herbal mix and the placebos under the supervision of a senior nurse. This turned out to be impractical as most of the participants live a considerable distance away from the clinic. It was thus decided to provide each participant with ten days' supply of his/her numbered containers. (The containers were numbered from 1 to 60. This means that the person, say, who was allocated the letter K, would receive the containers numbered K1, K2, K3,... to K10 on the first visit and then K11, K12, K13,... to K20 on the second visit

to the clinic and so forth. This resulted in some of the participants sometimes missing a day or two in taking their herbal mix or placebo. Fortunately, unlike the case with anti-retrovirals, this does not affect the effectiveness of the mixture and is another reason why it is preferable to antiretrovirals.

Another limitation was the fact that the research only lasted for a period of 60 days which could be criticized as too short to judge the long-term effectiveness of the herbal mixture. This is a valid criticism and it would be advisable to do a similar study over a much longer period, especially in the light of the positive results of the short-term study.

Summary

The research design was relatively simple with randomly selected HIV/AIDS patients who met the selection criteria divided into 2 groups with one group of participants receiving a placebo mixture and the other group receiving an herbal mixture that had a reported beneficial effect on AIDS patients. The study was done at a clinic in Johannesburg and blood samples were taken by senior nurses before, during and after the study period. The blood was analyzed by a pathology lab and the CD4 count as well as liver enzymes recorded. Neither the nurses nor the patients knew which participants were receiving the placebo mixture and which were receiving the actual herbal mixture. At the end of the study the data was tabulated and the averages for the CD4 cell count increases were calculated for both groups to see if there was a difference.

CHAPTER FOUR

RESULTS AND FINDINGS

Introduction

In this section the results of the study are presented, analyzed and the conclusions drawn from them discussed. As there are already many anecdotal reports about the effectiveness of the herbal mixture, the results did not come as a surprise.

Analysis of Data

A tabulation of the research data appears in the following tables.

Table 1: CD4 counts and liver enzymes of the Herbal Mixture Group

			CD4 Count					Liver Enzymes					
Code	Age	Sex	Day00	Day30	Day60	Change	%	ALT00	ALT30	ALT60	AST00	AST30	AST60
A	34	F	209	228	309	+100	+48	20	18	20	31	23	21
B	38	M	164	222	348	+184	+112	55	32	15	82	43	27
D	37	M	183	274	356	+173	+95	37	21	18	41	23	22
E	25	M	135	150	398	+263	+195	23	22	18	41	18	22
G	26	F	299	312	339	+40	+13	46	10	21	32	25	27
H	22	F	294	289	373	+79	+27	24	18	19	31	23	23
J	41	F	227	293	448	+221	+97	20	12	22	34	31	23
M	47	M	256	317	383	+127	+50	15	19	16	22	26	18
O	36	M	138	145	156	+18	+13	34	39	18	56	45	22
Q	31	F	298	366	438	+140	+47	29	21	20	25	23	23
Average Change						+135	+70						
ALT = alanine aminotransferase								(normal range 12 - 50)					
AST = aspartate aminotransferase								(normal range 8 - 45)					

Figure 1: CD4 changes in the Herbal Mixture Group

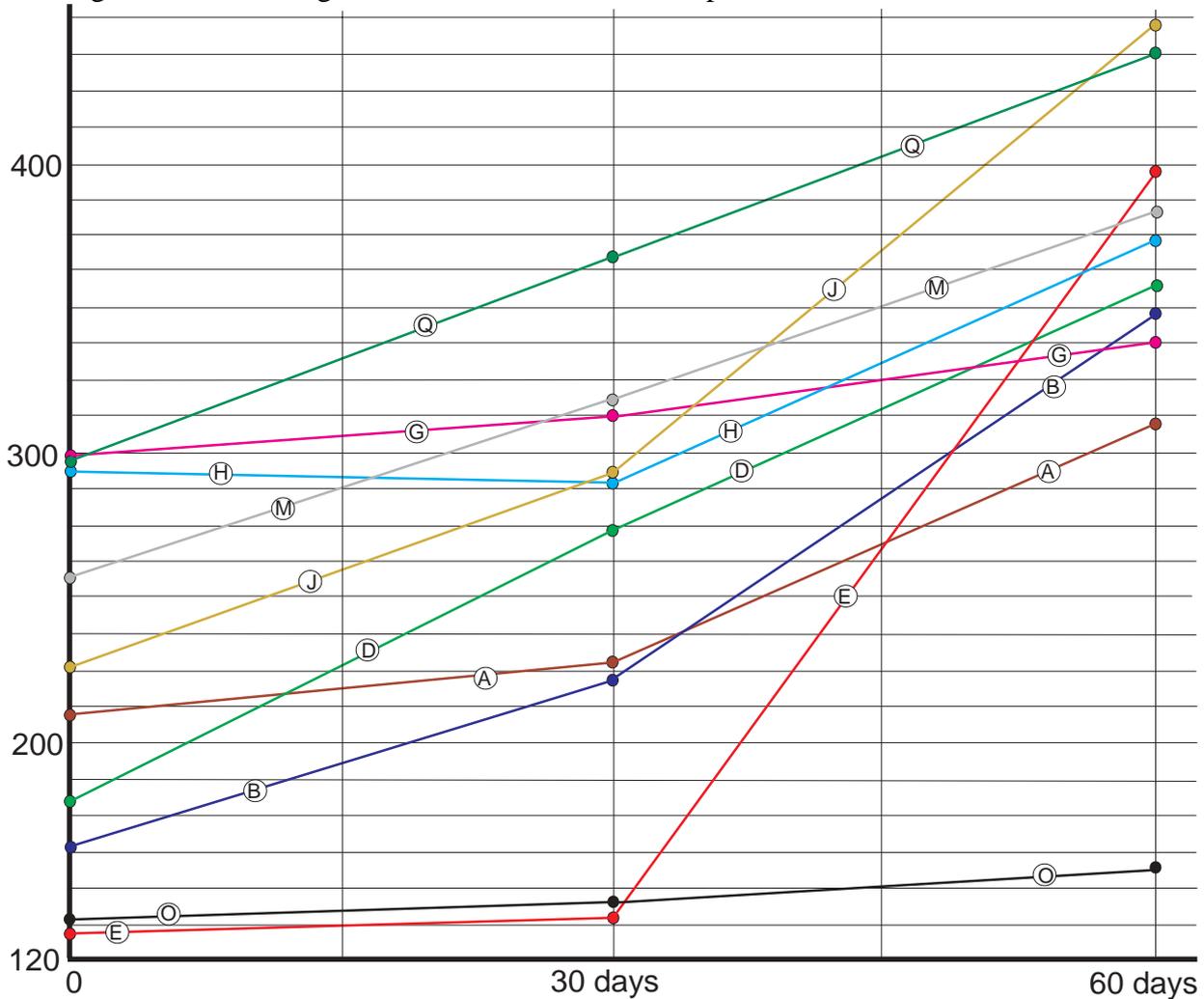
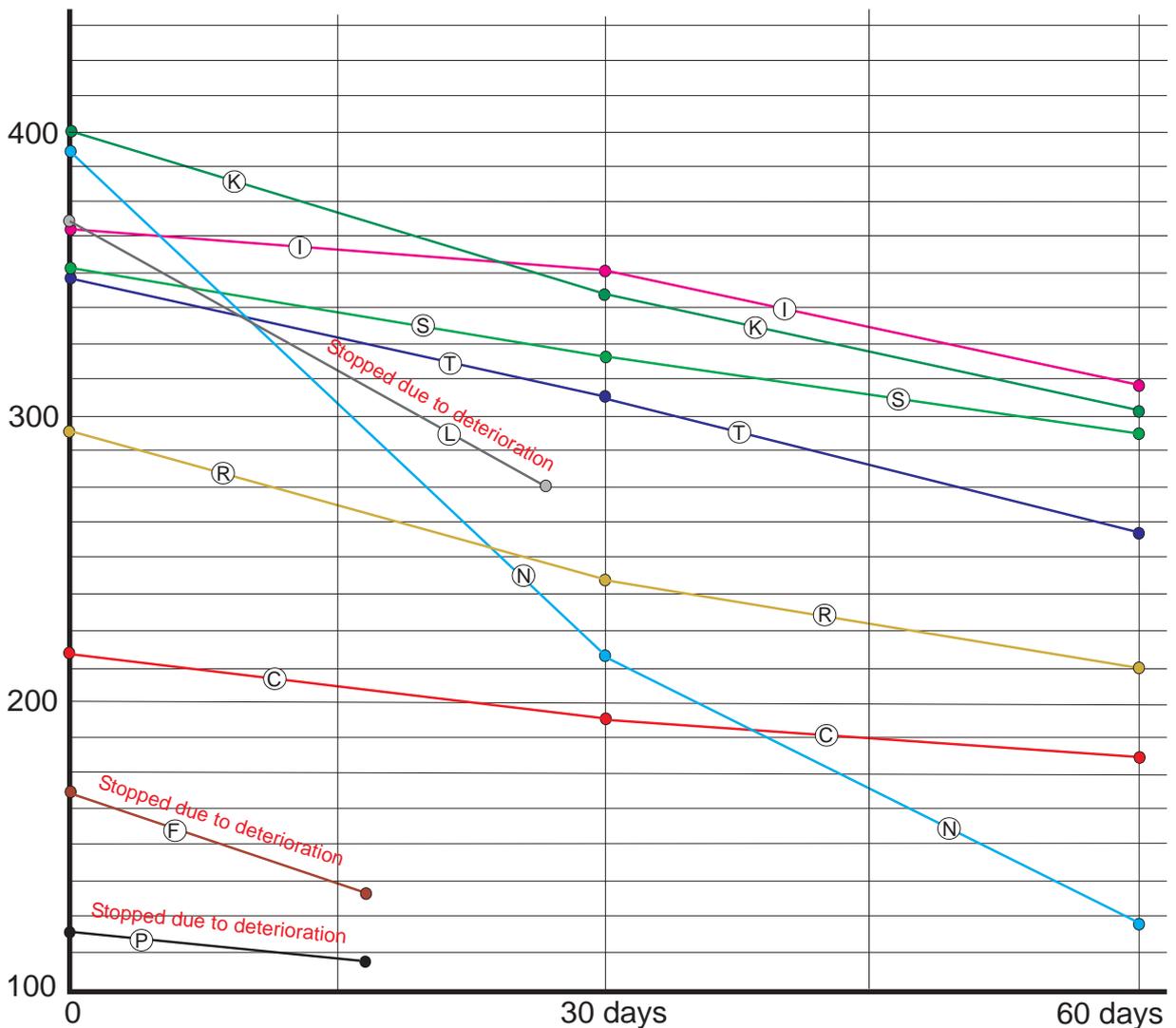


Table 2: CD4 counts and liver enzymes of the Placebo Group

Code	Age	Sex	CD4 Count					Liver Enzymes					
			Day00	Day30	Day60	Change	%	ALT00	ALT30	ALT60	AST00	AST30	AST60
C	45	F	216	194	182	-34	-16	24	28	34	23	31	30
F	29	M	168	Stopped due to deterioration				31			44		
I	50	F	365	351	311	-54	-15	16	19	23	22	23	29
K	32	F	400	342	303	-97	-24	19	22	23	32	18	24
L	33	F	367	Stopped due to deterioration				33			37		
N	26	F	394	216	121	-195	-49	21	9	36	37	32	90
P	32	F	117	Stopped due to deterioration				33			34		
R	41	F	294	243	212	-82	-28	22	28	31	39	39	39
S	36	M	351	320	294	-57	-16	23	36	34	23	41	38
T	36	F	348	307	258	-90	-26	26	29	36	33	32	37
Average Change						-87	-25						

Figure 2: CD4 changes in the Placebo Group



Results and Findings

Three of the individuals in the placebo group withdrew as a result of continuous deterioration of their condition. In all three cases this happened within the first 30 days of starting on the placebo. They were given the choice of taking antiretrovirals or the real herbal mixture without participating in the rest of the study. Two chose to take antiretrovirals while the third one decided to take the real mixture. From the Tables and Graphs it can be seen that the group that had received the Herbal Mixture had an average CD4 count increase of 135 while the placebo group had an average CD4 count decrease of 87.

This means $m_1 = -87$ and $m_2 = 135$

Therefore the Null Hypothesis ($H_0: m_1 = m_2$) is false

The Research Hypothesis ($H_r: m_1 < m_2$) is true.

The following categorical statement can thus be made:

An herbal mixture of Sutherlandia Frutescens and Oleander Nerium is effective in increasing the CD4 counts of HIV-positive individuals with initial CD4 counts of less than 400 in a meaningful way over a 60-day period.

It is also significant that the liver enzymes, which are indicators of possible liver damage when they keep on going higher, were lowered or stable in all the participants who received the herbal mixture. Apart from a little bit of initial diarrhea, there were also no adverse events in the group which received the

herbal mixture. On the other hand, three participants in the placebo group withdrew from the study due to deterioration of their condition. Two of them opted to go onto antiretrovirals while the third chose to go onto the herbal mixture.

The individual with the lowest increase in CD4 count in the group which received the herbal mixture had a remarkable recovery. When he started on the study, he was lucky enough to draw the herbal mixture. At the time he was on crutches and could hardly walk. He was suffering from tuberculosis and he had sores on his feet and all over his body. Within two to three weeks he started improving and by the end of the 60 day period, he was up and about with no clinical signs of AIDS. His tuberculosis has improved dramatically and his improvement was followed after the 60-day period. His CD4 count has improved continuously and he is very optimistic that he has had a complete recovery.

Summary

The data indicates clearly that the herbal mixture that was used in the study resulted in a dramatic improvement of the participating AIDS patients who received it. While the placebo group continued to deteriorate, the CD4 counts of the group receiving the mixture increased and their liver enzymes stabilized. The Null Hypothesis was thus proved incorrect and the Research Hypothesis was shown to be true. The study showed that an herbal mixture consisting of *Sutherlandia Frutescens* and *Nerium Oleander* is effective in increasing the CD4 counts of HIV-positive individuals who have a CD4 count below 400 and who are showing clinical symptoms of AIDS. It also showed that this improvement came about without causing any liver

damage and that liver enzymes of participating individuals improved or stabilized during the study period.

CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Introduction

The accepted HIV/AIDS paradigm of AIDS being caused by the HIV virus destroying CD4 cells in an unknown way and that antiretroviral drugs are the only medication that will control the disease, have been challenged by a number of people who have proposed alternative theories. One of these theories, proposed by Luc Montagnier, the co-discoverer of HIV is that there are co-factors that are required for HIV to become destructive to the immune system. The fact that Herbal Mixtures and treatment modalities other than antiretroviral drugs can be effective in controlling AIDS give credence to this theory and should be researched further. The present study showed that, at least in the short term, herbal mixtures can be effective in improving the CD4 cell count of AIDS sufferers. Whether this improvement will continue for long periods while taking the mixture, also needs further study.

Conclusions and Implications

This double blind placebo controlled study which was conducted in a clinical setting showed that herbal treatments of HIV/AIDS conditions have a role in the management

of the disease. Although the study was conducted over a relatively short period and with a small group of participants, the overwhelmingly positive results show that one should expect to get the same outcome over a longer period and with more participants.

The results are in line with the theories of skeptics who have been challenging the HIV/AIDS dogma since it was first announced more than 20 years ago. As we have shown in the literature review, many researchers have been questioning the conventional theories about HIV/AIDS for many years but they have been branded as “denialists” and were unable to raise the research grants required to put their own theories to the test. In this respect, the media as well as scientific journals have been foremost in denying them a platform for their opinions. In South Africa, where the President and Minister of Health are not averse to the alternative point of view, they have been ridiculed in the press and by AIDS support groups. After failing to find a solution to the HIV/AIDS problem for more than twenty years and after spending billions of dollars, is it not time to question the orthodox opinions and to give alternative explanations a hearing?

This small study has shown that those alternative theories which maintain that there may be factors other than just the HIV retrovirus involved in the progression to full-blown AIDS, may have a point. Is it possible that herbal mixes, proper nutrition and various other treatment modalities are affecting these “other” factors and are thereby disrupting the AIDS process? The severe side-effects of antiretroviral drugs and the possible dangers of vaccines for reasons described earlier, place the responsibility for trying another route squarely on the shoulders of health authorities

that are presently denying access to funding that will allow the alternative HIV/AIDS theories to be investigated properly.

HIV-positive individuals should take note that there are many long-term survivors who have not progressed to full-blown AIDS and who have not ever taken antiretroviral medicine. Instead, they have opted for life style changes which included proper nutrition and herbal remedies that do not have debilitating side effects. The *Sutherlandia Frutescens*/*Nerium Oleander* mixture is but one example of a treatment modality that can interrupt the progression of HIV to AIDS and which can allow individuals to regain a healthy life.

Recommendations for further research

The present study only lasted for 60 days and the sample size of the placebo and herbal mixture arms was 10 people per group. It is suggested that a longer study be done on a larger group to establish the long-term effectiveness of the mixture. The active ingredients in the herbal mixture that brought about the improvement in CD4 count should also be identified through further studies.

As discussed earlier, the current theoretical model of HIV/AIDS is inadequate in respect of the many criticisms from researchers who maintain that it does not explain the problems associated with the HIV to AIDS progression. The only alternative that makes sense in the context of retaining the HIV retrovirus itself as a component of the HIV to AIDS progression, is the existence of co-factors that activate the onset of T-cell destruction. Dr. Peter Duesberg who maintains that there is only a relatively weak

correlation between HIV and AIDS may not agree with this approach. His argument a.) that retroviruses as a class have never been shown to destroy their host cells, b.) that the perceived role of HIV does not follow most of Koch postulates and c.) that the long time from infection to progression is not explained by the current theoretical model, is viewed by many as a strong argument in favor of discarding HIV as causing AIDS. Against this argument is the consensus view that HIV-positive people are still dying, especially in Africa and that there is no other explanation for this apart from the presence of the HIV retrovirus. The co-factor theory of Prof Luc Montagnier thus becomes the only viable alternative theory.

In the light of this, it is important that researchers design suitable studies that will establish whether there are other factors involved and, if so, what these factors are. Only then will it be possible to develop treatments that will address the co-factors in such a way that the HIV retrovirus is returned to its status as a harmless passenger virus.

Summary

Further studies are required to investigate the long term effect of herbal mixtures in general and this mixture in particular on the immuno-competence of HIV-infected individuals. As the current HIV/AIDS theory does not explain the HIV to AIDS progression adequately, it is time to design studies that will investigate the proposed co-factor theory that has been proposed by some prominent scientists, including the co-discoverer of the HIV virus.

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