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ARTEMISIA ANNUA TEA AS A REJUVENATIVE THERAPY FOR HIV INFECTED NON ART AIDS PATIENTS

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ABSTRACT

More than a million people with HIV/AIDS express life-threatening opportunistic infections and suffer from immune deficiency syndromes. New traditional herbal sources are needed for complementary control efforts. A two year study was conducted to document the supplementary effect of *Artemisia annua* in 10 non-ART respondents below the age of 40 at the Jeevan Jyothi Hospice for all HIV infected patients at Theni district. which is a charitable Institution run by The presentation Sisters and supported by TANSAC Tamil Nadu and Anamed International. Antibacterial and antifungal properties of the said plant were studied and the absence of toxic heavy metals was confirmed. Allopathic medicine with a supportive herbal diet as Cure for Aids is under clinical research but women and children infected need support and Rejuvenation. Apart from the regular and continuous treatment, herbal nutraceuticals were found to play a significant role in improving the life style of the ART patients with CD4 count< 400. ***Artemisia annua***, a herbal drug reported to have antimalarial activity, with artemisinin was found to improve the quality of life of NON ART patients. The rejuvenative effect of *Artemisia annua* tea as a daily dose of 5g. per patient for a period of 2 years and half yearly blood test reports are presented. The plant was also subjected to Acute, Chronic and Sub chronic toxicity animal studies. After 2 years there was considerate improvement in CD4 count with > 1000 and increase of 2 to 3.5 kg in weight and 1.5 g/dil Haemoglobin. The patients were able to take up physical work, college level education, run petty grocery shop and tailoring centre.

INTRODUCTION

A growing need of research on the immunomodulatory and antiviral potential of plant-based medicines had been highlighted by Bodeker G *et al., (2006). Hibiscus sabdariffa L., Plumeria obtusa L., and Abutilon guineense (Shumach.) Baker. F* had been widely used as the nutri-medicinal plants by traditional Healers of western ghats in India. .Lamorde M et al., 2010, had documented herbal medicines used in the treatment of HIV/AIDS and related opportunistic infections in Sembabule, Kamuli, Kabale and Gulu districts in Uganda.

High cost of drugs and unavailability of anti-HIV drugs had lead many patients to turn to indigenous medicine. Traditional health practitioners had been managing HIV-related illness by preparing herbal tea as infusions to treat fevers in China. There had been discrepencies about quantity of active ingredients present in the plants cultivated in different seasons of the year and varying soil conditions. The usage of *Artemisia* tea infusion for prevention and firstline treatment of uncomplicated malaria had been reported by De Ridder S *et al.*, 2008. Half or more of those with AIDS use complementary medicines in conjunction with their antiretroviral therapy. The majority of herbal Healers treated patients who were already receiving allopathic medicines including antiretroviral drugs (ARVs) prescribed by allopathic practitioners with more than 103 species of medicinal plants. Priority plants include *Aloe barbadensis., Erythrina abyssinica, Sarcocephalus latifolius, Psorospermum febrifugum, Mangifera indica and Warburgia salutaris.*

CD4 cells are a type of white blood cell that fights infection. CD4 -T-helper cells are made in the spleen, lymph nodes, and thymus gland, which are part of the lymph or infection-fighting system. These cells move throughout your body, helping to identify and destroy germs such as bacteria and viruses. The CD4 count helps to find out the strength of the immune system indicating the stage of HIV disease , keeping the count high can reduce complications of the disease and extend life. A normal CD4 count is from 500 to 1,500 cells per cubic millimeter of blood. In general, HIV disease is progressing & the immune system is getting weaker if the count is going down. Public health guidelines recommend starting on preventive antiretroviral therapy for all positive patients whether or not there are symptoms. When the infection of HIV in blood is lowered by ART, it allows the CD4 cells to reproduce and increase in number. The higher the CD4 count, there is better ability to fight HIV and other infections. If therapy is effective CD4 count should go up or become stable. Regular respiratory problems, such as a daily cough and a higher risk of lung infections. mental

illness, depression, anxiety, less motivation to study and work with extreme weight loss are found among middle aged. Artemisia afra (Jacq. Ex. Willd), "African Wormwood" is widely used traditionally in South Africa with no literature evidence substantiating its safety. *Artemisia annua L. is chosen for the current study as a complementary drug to evaluate the rejuvenative effect in improvement of weight of the patients, Haemoglobin and CD4 count.*

MATERIALS AND METHODS

An experiment was designed to study the positive role of Artemisia annua in improvement of weight, Haemoglobin content, CD4 content and rejuvenative behaviour. The investigators study would have a minimum of 30 respondents in Phase 11 trial. HIV /AIDS patients registered in JEEVAN JYOTHI hospice, who had been under the allopathic drugs and supplementary herbal diet were chosen for the study getting due consent. Under exclusion criteria patient above 40 years of age, Patients with CD4<200 and Diabetics were deleted and ten non ART patients under allopathic drugs were selected for the observational trial.

Artemisia annua L. is acommon type of wormwood belonging to the family Asteraceae. A new antioxidant ketone with a high content of 25.6mg g^{-1} and total flavanoids upto 13.06mg g^{-1} had been reported. The Indian grown Artemisia used for the current study had been subjected to Evaluation of the acute and subacute Toxicity studies with an approval by the Institutional Animal Ethics Committee,Sastra University (CPCSEA Approval Number : 323/ SASTRA /IAEC/RPP/12-08-2014) to enable further standardization and dosage fixation for the herbal drug. FTIR and NMR studies are also available.

Interim Pathology report of Acute Toxicity study gave no gross lesion attributable to the administration of the test compound aqueous extract of *Artemisia annua*. All changes were of either agonal or spontaneous in nature. During sub-acute toxicity analysis, enlarged spleen was observed in one rat with a medium dose and otherwise there was no attributable lesion. The test reports on heavy metals further cleared the presence of Cadmium, Mercury and Lead concentration,below detectable limit with low concentration of < 0.005 absorbance. The safety of the drug was further ascertained by subjecting the aqueous extract of *Artemesia annua to* microbial analysis.

The patients under study were initially tested for Haematological Parameters, CD4 count Haemoglobin and weight with a repetition every six months for a period of 2 years every six months . The results were tabulated for statistical analysis and evaluation. Durig this Period

apart from the regular drugs and the herbal supplementary powder all the patients were taking, the group under study were given 5g.leaf powder per day ro be taken as steeped tea in 1 litre of boiled water. Periodical visits and follow up was given by the co –investigator in JJH further checked the patients for clinical symptoms (cold, cough, Diarrhoea, Dysentery, fever, headache,Urinary infection, weakness, wheezing, etc).

RESULTS AND DISCUSSION

The traditional uses of nutri-medicinal plants in the management of immunocompromised ailments associated with HIV/AIDS (*Asiimwe S. et al.,2013*) After a 2 years study the results were tabulated. Two patient had minor itching of the skin, 3 other had intermittent headache, and two others had urinary pus cells. No report of Fever cough, digestive problems, loss of appetite, weakness or digestive problems were reported. Patients were under good normal active status. All the ten respondents had shown positive reports with a gradual weight gain to the effect of 3 Kg and improvement in Haemoglobin levels. The CD4 level has been considerably increased to >1000 showing the efficacy of Artemesia annua Tea. The exact dosage could be less than 5g decoction. Since itis a non toxic herbal drug with no side effects it could verywell be recommende for rejuvenation of NON ART AIDS patients.

Indian *Artemisia annua* has no serious adverse event or severe significant toxicity as per the safety study reports. Collectively, the results indicate that it is almost similar to Artemisia afra-extract ,non-toxic when given acutely, has low chronic toxicity potential and, in high doses, may have a hepatoprotective effect. This is in consistency with the reports of Ribeiro IR *et al.,* 2007.

Ethnobotanical and cultivation practice, Pharmacognostical studies of the plant and its multipotential activity will be futher documented. The Investigating team is working on similar patients in different parts of India with more collaborators. Artemisinin based combination therapy had been widely recommended by WORLD HEALTH ORGANIZATION and the investigators find *Artemisia annua* tea more Patient friendly.

- **Future Scope**: The experimental results can be interpreted with suitable human clinical trials in cancer and AIDS. A preclinical study with phase I & phase II trials on Artemisia as a panacea could help Humanity at large. Such studies can stimulate confidence in traditional medicine and enhance conservation of this valuable plant.

Table 1: WEIGHT of 10 HIV Respondents.

S.No	Sample	Initial wt In kg	Final wt In kg	Mean ± Std Error
1.	**JJH1**	45	48	46.2 ±0.68
2.	**JJH2**	55	59	56.16 ± 0.74
3.	**JJH3**	47	51	49 ±0.68
4.	**JJH4**	47	52	48.16 ± 1.44
5.	**JJH5**	50	58.5	56.3 ± 1.62
6.	**JJH6**	47	51	48.75 ± 0.85
7.	**JJH7**	60	63	61.07 ± 0.53
8.	**JJH8**	70	73	69.4 ± 0.67
9.	**JJH9**	38	45	41.5 ± 1.16
10.	**JJ10**	56	60	56 ± 0.93

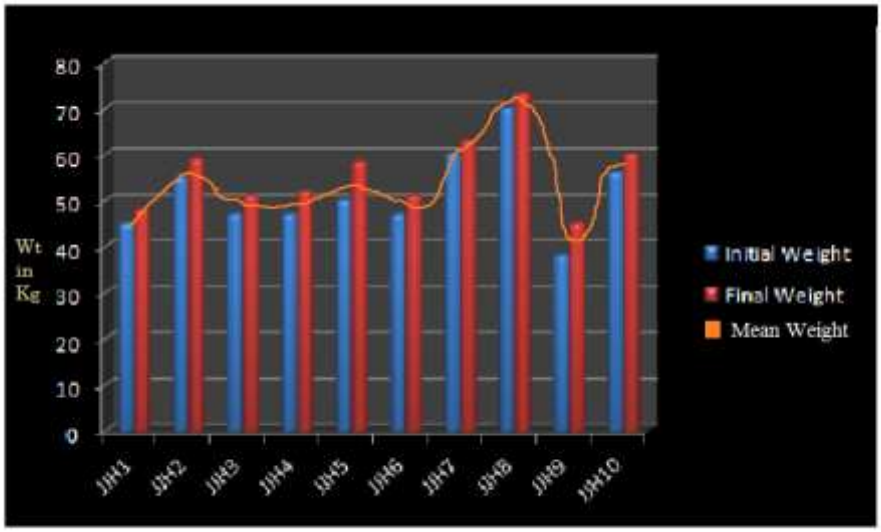
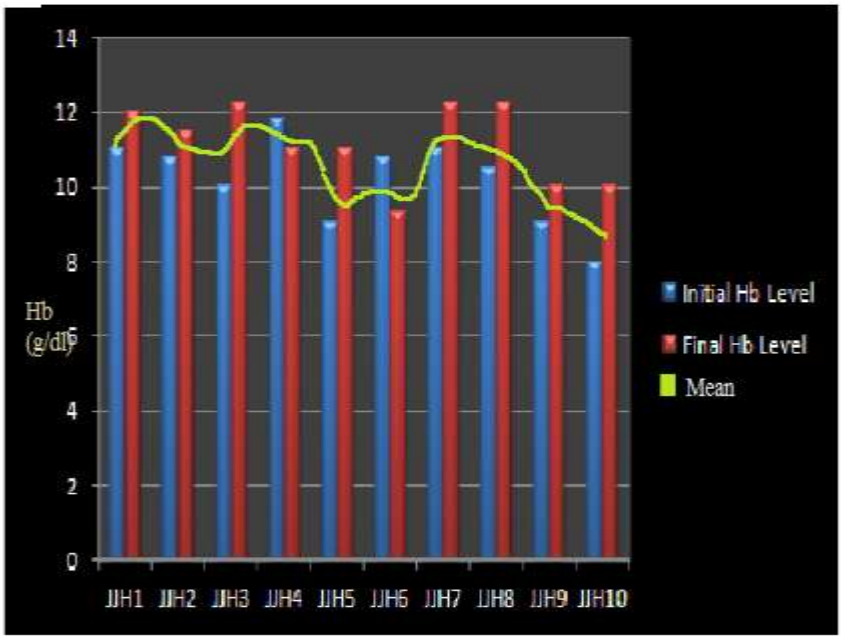


Table 2: Haemoglobin levels in 10 HIV Respondents.

S.No	Sample	Initial wt In kg	Final wt In kg	Mean ± Std Error
1.	**JJH1**	11	12	11.5 ±0.39
2.	**JJH2**	10.8	11.5	10.9 ± 0.34
3.	**JJH3**	10	12.5	11.25 ± 0.3
4.	**JJH4**	11.8	11	10.1 ± 0.4
5.	**JJH5**	9	11	9.7 ± 0.39
6.	**JJH6**	10.8	9.3	9.65 ± 0.47
7.	**JJH7**	11	12.5	10.87 ± 0.48
8.	**JJH8**	10.5	12.5	10.± 0.48
9.	**JJH9**	9	10	9 ± 0.58
10.	**JJ10**	8	10	9.38 ± 0.30



Conflict of Interest: The authors declare no conflict of interests.

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