

Role of exercise and herbal therapy for HIV infection

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ABSTRACT

HIV infection is identified on the basis of the amount of CD4+ cells in the blood and the presence of certain infections. CD4+ cells are the main target for HIV infection. To increase this CD4+ count as well as immune power, different dimensions were tried. The present medication has more side effects and High cost. The herbal extract is non toxic. The MAP 30 (Momordica anti HIV protein) is a basic protein of about 30 kda, which isolated from *Momordica sarantia*. This protein can acts as a new inhibitor of HIV. Herbal therapy and physical exercise therapy had been tried among volunteers of infected individuals. This therapy has showed more development in infectious individuals. Volunteers CD4+ count increased drastically when compared to control. Herbal treatment with Physical exercise increases more CD4+ count. The antiviral activity of plant extracts has been proved, herbal approaches stimulate the immune system and this produces more immune cells and immuno chemicals. The specific use of antiviral herbs disrupts the replication cycle. Physical exercise helps to build muscle mass by strengthening lungs and heart. Exercise maintains or build muscle mass, reduces cholesterol and triglyceride level, increases energy, regulates bowel strengthen bones improves blood circulation, increases lung capacity, helps with sound, restful sleep, lowers stress improves appetite.

Key words: Herbal therapy, MAP 30, Exercise Therapy, ARV, CD4+, HIV and AIDS.

INTRODUCTION

Acquired immunodeficiency is the major complication of HIV infection. A one third decline in new HIV infection in the worst hit regions of India is in Tamil Nadu, Maharastra, Karnataka and Andrapradesh (Woodman, 2003). HIV does not kill by itself but by depleting the immune system makes the person vulnerable to other infections. The HIV infects susceptible lost cell by binding to the CD4+ receptors present in the surface of lymphocytes, which are the critical factor for body's immune system. (Mala Rao, 2000). The higher rate of infection was among the age groups of 26-35 years. Bitter Melonis a fruit that is widely used as food as well as medicine in Asia. It believed to increase the number of beta cells of the pancreas. Two

properties, alpha and beta – momorcharin in the seeds of bitter melon happen to modulate the activity of lymphocytes and could suppress macrophage activity but were non cytotoxic. (Virdi et al., 2003). MAP 30 was anti HIV plant protein were identified, purified and cloned from the medicinal plant *Momordica Charantia*. These agents are capable of inhibiting HIV type I infection in T Lymphocytes and monocytes as well as replication of virus in already infected cells. (Lee Huang et al., 1995). This MAP 30 protein has anti HIV activity *invitro* in p24 expression or reverse ranscriptase assays (sylvia lee – Hung., 1991). Bitter nmelon use in HIV infection infroms of extracts and powdered formations of the fruit are most frequently used. Teas made from leaves are also recommended (Tennekoon et al., 1994). The

inhibition of HIV 1 integrates by MAP 30 that impediment of viral DNA integration may play a key role in the anti HIV activity of these plant protein (Lee Huang *et al.*, 1995).

The physical exercise should be recommended as an additional therapy to patients in all stages of HIV infection. The exercise makes the body healthy or men improve the health by keeping immune system strong. Strong immune system helps to fight infections and gives more energy. (Mustafa *et al.*, 1999). Exercise can help an HIV patients to minimize some of the long term side effects of many medication including changes in body composition and elevated blood pressure, cholesterol, triglycerides and blood sugars though the warm up to body, the CD4+ count is increased (Glenn and Preston., 2001). Aerobic exercise strengthens the lungs and heart. The present study gives the information about the effects herbal therapy and physical exercise therapy on HIV infection among age group 26-35.

MATERIAL AND METHODS

Treatment

Treatment for AIDS is very tedious and completely cured cases also very rare. If the CD4+ count falls to 200 and below, special treatment is started as ARV. But these are serious side effects. The patients who are undergoing this treatment report major side effects like giddiness, nausea and sores in mouth and stomach. This study tried to avoid or reduce this type of side effects as well as increased the CD4+ counts. 3 sets of patients were analyzed (26 -35 age groups) based on the Regular treatments. Data were collected for patients who are undergoing ARV treatment and normal therapy was examined. Simultaneously the CD4+ count report also examined and all information were tabulated.

CD4+ count

Isolated and counting of Cd4+ has been performed by taking blood from each 3 sets of infected people. Blood samples were examined for glucose level, hemoglobin content and Cd4+ counted for infected individuals. (Results were tabulated) (All analysis were performed in government hospital with free of cost).

ARV treatment

After that CD4+ count, treatment has been given for infected individuals. Synthetic drugs were used for antiretroviral therapy. Antiretroviral therapy was given based on their CD4+ level. Patients who had CD4+ count 400 and above are eliminated. Patients who had CD4+ count 200 and below were administrated with antiretroviral therapy.

Physical exercise

Exercise therapy for HIV infection showed remarkable changes in immune system development Volunteers were identified and treatments in various stage with various alternatives were given. Among the infected individuals the patients who are in chronic stage were selected. Willingness was analyzed and treatment for volunteers who are pursuing their ARV therapy were identified. Among that 10 individual volunteers were selected for each therapy.

I set – Patients undergone only physical exercise.
II set – Patients undergone with physical exercise and ARV therapy. III set – Patients undergone only ARV therapy.

Step-I

Before going into each alternative, CD4+ count of each patients were analyzed by the help of HIV positive network with free of cost in the government hospitals.

Step-II

Evaluated the physical condition of each patient and consulted a doctor before choosing an exercise programme.

Step-III

Patients were intimated to choose an exercise, to enjoy; they could incorporate into their regular routine. Patients were motivated to choose early exercise like walking, lift weights or an aerobic exercise such as swimming and bicycle ergometer.

Step-IV

The physical therapist must emphasize and educate the patient on the importance of consistent and moderate exercise. Ideally, individuals with HIV should begin exercising while asymptomatic and adopt strategies to help them

maintain an exercise programme through out the course of their illness. Moderate exercise has been given for patients those who are asymptomatic. (for example aerobics for 30-45 minutes, three or four times a week).

Step-V

Symptomatic patients were selected and exercise was given based on doctor/physical therapist suggestion about choosing a specific exercise programme to aid in their rehabilitation.

Step-VI

Fitness regimens were monitored from individual to individual and the patients were allowed to do their exercise half an hour/day in the beginning stage. Note: The important thing in doing exercise is consistency. This is an on going programme and one will not benefit without consistency.

Step-VII

After one month of the continuous exercise each patient was subjected to CD4+ count reports were tabulated for different sets of alternatives. Once in a month the patient's blood samples were taken and CD4+ was counted. Patients in alternative treatment were analyzed individually and the CD4+ count was tabulated for each individual in different set and the results were compared.

Cautions

The patient needs to be educated on the importance of maintaining a high calorie diet during the exercise programme. It would be beneficial to obtain baseline values for weight, lean body, mass values and lab values including CD4+ count and viral load prior to starting an exercise programme. Following instructions have been given for patients who were under going physical exercise. Water: Drink it before, during and after your exercise. When you feel thirsty you have already lost important fluids and elecroytes and may be dehydrated. Patients are instructed to eat well, and sleep well.

Herbal treatment

The extract was obtained from Bitter melon fruits were taken and grind using a motor

and pestle or by using mixer. 50 gms of fresh bitter melon was taken and was grinded with water. Bitter melon juice was filtered. This extract was given to patients through orally. Patients were recommended to take Bitter melon jice in the early morning with empty stomach, daily. Patients were segregated into two sets according to their CD4+ count. Before starting the herbal treatment, patients, CD4+ count were analyzed and noted. Two sets were again segregated in three batches consists of 4 volunteers. Treatments has been given in the following mode:

Group I (Herbal)	Group II (Herbal + Physical exercise)
Batch I	Batch I
Batch II	Batch II
Batch III	Batch III

The volunteers were subjected to various concentrations of about 30ml, 40ml and 50ml of herbal extract in each respective batch for set I and set 2 with physical exercise.

Glucose level monitoring

Glucose level for each patient were observed one in a month and monitored. The results ere tabulated.

CD4+ count

The final step in this treatment CD4+ counting was performed by taking blood sample from individual. Count was observed and the results were noted.

RESULTS

The data on herbal therapy for HIV infected people were recorded on 1-6th month and are presented in table 1 and fig. 1. These results were compared with the results of only herbal treated patients and only ARV treated patients. These results showed in Table 2 and fig. 2. AS compared to antiviral therapy, the CD4+ count were increased in all the herbal treatment (50ml, 40ml and 30ml). They showed maximum increased CD4+ count (mean value of 680) in herbal therapy combines with physical exercise. The decreased level of CD4+ count was observed in lower dose of herbal therapy and antiretroviral therapy.

Table 1: Herbal Extract therapy for HIV patients

S. No.	Herbal Extract (30 ml)						Herbal Extract (40ml)						Herbal Extract (50ml)					
	1 st month	2 nd month	3 rd month	4 th month	5 th month	6 th month	1 st month	2 nd month	3 rd month	4 th month	5 th month	6 th month	1 st month	2 nd month	3 rd month	4 th month	5 th month	6 th month
1	200	250	300	350	420	500	200	260	320	400	480	520	200	260	310	400	460	540
2	200	260	310	390	270	520	200	270	330	400	480	520	200	250	310	400	480	550
3	200	260	310	390	480	510	200	250	330	410	490	540	200	280	380	440	490	580
4	200	250	320	390	480	500	200	260	330	400	470	530	200	210	360	400	500	580

Table 2: Physical Therapy for HIV infected people

S.No.	Resistant and Aerobic exercise						Herbal Therapy (50ml) and Resistant, Aerobic exercise and ARV						Resistant, Aerobic exercise and ARV Treatment						ARV Control					
	No. of Month and CD4 Count						No. of Month and CD4 Count						No. of Month and CD4 Count						No. of Month and CD4 Count					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	
1	200	260	320	400	480	580	200	280	370	450	520	200	280	360	420	500	590	200	260	320	380	450	510	
2	200	250	320	410	470	550	200	260	320	420	520	200	260	350	400	490	580	200	240	300	380	450	530	
3	200	240	310	400	480	560	200	250	330	400	480	560	200	270	330	410	500	200	250	320	400	460	580	
4	200	270	320	390	480	580	200	240	340	410	530	620	200	270	320	430	510	580	200	270	320	380	460	540
5	200	250	310	400	490	570	200	240	310	400	480	600	200	290	380	460	510	600	200	260	310	400	480	540
6	200	280	380	480	550	600	200	280	390	490	580	620	200	220	280	380	470	550	200	260	320	400	470	520
7	200	270	350	420	480	550	200	270	330	410	500	580	200	230	300	370	440	540	200	250	300	380	470	500
8	200	260	370	470	560	600	200	290	370	460	590	680	200	240	310	380	470	550	200	260	310	390	470	500
9	200	260	350	450	530	600	200	290	380	400	520	590	200	280	360	420	510	620	200	270	310	400	460	520
10	200	270	340	400	500	590	200	300	400	510	590	640	200	270	330	400	500	590	200	270	320	400	460	530

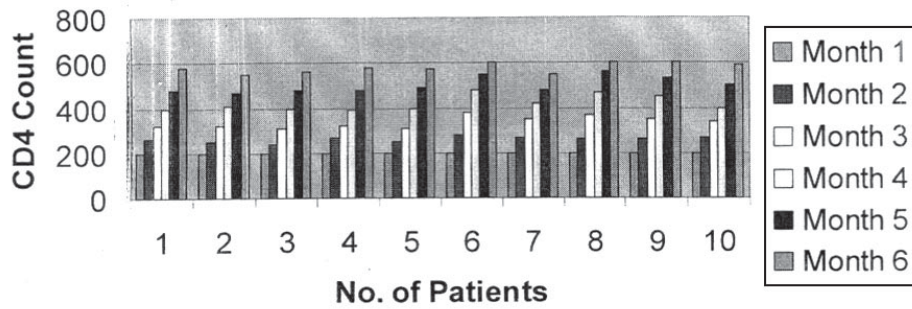


Fig. 1: Resistant and aerobic exercise

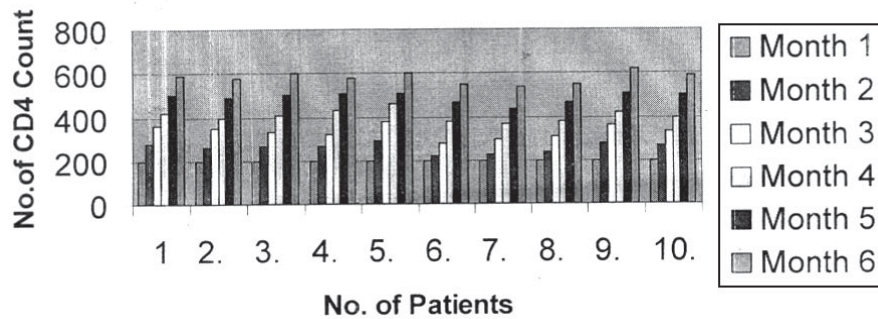


Fig. 2: Physical exercise with ARV

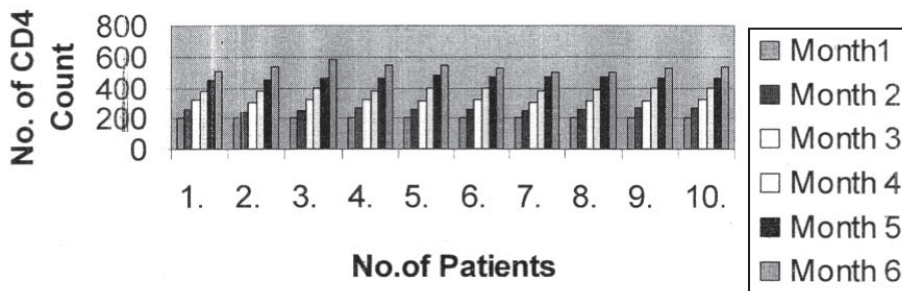


Fig. 3: ARV (control)

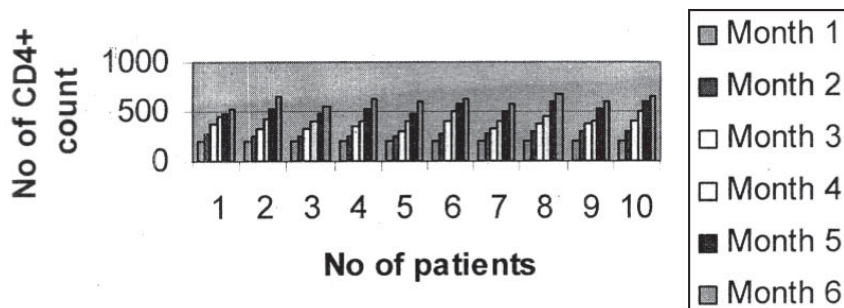


Fig. 4: Herbal therapy (50 ml) and Resistant, Aerobic exercise

DISCUSSION

The ARV treatment increases the CD4+ count in low level. But the herbal treatment to HIV infected people showed better result than ARV. There was no difference between HIV positive and negative since HIV positive patients were doing exercise regularly. The amount of exercise can reduce risks of developing coronary heart disease, high blood pressure, colon cancer and diabetes (Bennal *et al.*, 2002, David Kietrys 2004s). Bitter melon, is widely used as food as well as medicine in Tamil Nadu. The Bitter melon is an anti diabetic, which believe the increase of the number of beta cells by the pancreas, with these findings the current study was performed to HIV treatment (leatherdal *et al.*, 2002). Laboratory studies have

shown that a protein in bitter melon called MAP30 may have antiviral activity. The antiviral activity of plant extracts have been proved in recent studies (Jill Davis 2000, Che-yi chao and Ching-jang Hung 2003). According to Silvia lee-Huang et al (1991) a purified MAP 30 proteins having Anti HIV activity intvitro in p24 expression. This investigation also proved the same.

CONCLUSION

ARV treatment was provided to HIV infected individuals. But it has some side effects due to its synthetic drugs. This study proved that the herbal treatment with the additional treatment of physical exercise showed better result than the individual treatment of ARV and herbal treatment.

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