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, Maharashtra, 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 informs 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 throughout the course of their illness. Moderate exercise has been given for patients 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 undergoing physical exercise. Water: Drink it before, during and after your exercise. When you feel thirsty you have already lost important fluids and electrolytes 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 mortar 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 juice 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 have been given in the following mode:

<table>
<thead>
<tr>
<th>Group I (Herbal)</th>
<th>Group II (Herbal + Physical exercise)</th>
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</thead>
<tbody>
<tr>
<td>Batch I</td>
<td>Batch I</td>
</tr>
<tr>
<td>Batch II</td>
<td>Batch II</td>
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<tr>
<td>Batch III</td>
<td>Batch III</td>
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</tbody>
</table>

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 were 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 combined 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

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Herbal Extract (30 ml)</th>
<th>Herbal Extract (40 ml)</th>
<th>Herbal Extract (50 ml)</th>
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</thead>
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<tr>
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<td>3rd month</td>
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<tr>
<td>4</td>
<td>200</td>
<td>250</td>
<td>320</td>
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### Table 2: Physical Therapy for HIV infected people

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Resistant and Aerobic exercise</th>
<th>Herbal Therapy (50ml) and Resistant, Aerobic exercise</th>
<th>Resistant, Aerobic exercise and ARV Treatment</th>
<th>ARV Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Month and CD4 Count</td>
<td>No. of Month and CD4 Count</td>
<td>No. of Month and CD4 Count</td>
<td>No. of Month and CD4 Count</td>
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<td>10</td>
<td>200</td>
<td>270</td>
<td>340</td>
<td>400</td>
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</table>
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.

REFERENCES