CHAPTER VI

DISCUSSION

In this randomized control trial study that was involving 40 HIV patients who have earned a minimum of 6 months of antiretroviral drugs, patients were divided into two groups in which 20 patients received mangosteen peel extract and 20 patients received placebo for 30 days. Laboratory tests performed twice, before and after administration of treatment.

Delta change in the number of $CD8^+$ T cells in the group of patients receiving antiretroviral therapy and mangosteen peel extract was not significantly different from the group of patients receiving antiretroviral therapy and placebo, both when compared between pre-test and post-test ($p=0.601$ in extract group and $p=0.135$ in placebo group) as well as when compared between the extract and placebo groups ($p=0.703$).

Whereas for the delta changes in $CD8^+CD38$ expression, there is a significant decrease between pretest and posttest both in a group given antiretroviral therapy and mangosteen peel extract ($p=0.001$) as well as the group given antiretroviral therapy and placebo ($p=0.001$), but when compared between the extract and placebo group, there was no significant differences ($p=0.352$).

Furthermore, when the delta value comparison is done between the extract and placebo groups, the value of the delta decline in the number of $CD8^+$ T cells in the placebo group 1.14 times higher than in the extract group. Otherwise, in $CD8^+CD38$ expression, the delta decline in the extract group 1.035 times higher compared to placebo group.

According to individual graphic in fig.6.1 seen that the decrease in $CD8^+$ more frequently in the placebo group, in accordance with the results of Wilcoxon calculation, in the extract group, decrease occured in 11 patients while in the placebo group, decrease occured in 14 patients. This finding is dealing with the delta decline of the $CD8^+$ T cells of placebo which is 1.14 times higher than in the extract group also delta Th/Tc ratio in placebo group higher (0.09) than in extract group (0.07). Despite the delta decrease of the number of $CD8^+$ cells and delta Th/Tc ratio in placebo group seem better than in extract group, we should see if there is improvement in their functions and activation. Another thing that we should noticed is "placebo effect", the placebo effect has been shown to improve symptoms in a way similar to active medication. The placebo effect can be as great as or higher than the effects of active drugs being tested. Placebo have been shown to activate quantifiable changes in neurotransmitters, immune regulators and hormones.[85] It may lead to the same reaction whether patient given mangosteen extract or placebo.

Chronic immune activation has been reasoned to be a significant contributor to disease progression in HIV-1 infected patients which has prompted the use of the expression of cell surface activation markers such as CD38 to monitor disease progression. Results from several such studies have documented a correlation between plasma viral load and the increased expression of CD38 as strong predictor of disease progression.[27] In this study there were a significant decrease in $CD8^+CD38$ after treatment compare to baseline both in the extract group and the placebo group, it may because of the response to ARV despite to mangosteen peel extract.

There were no correlations between $CD8^+$ T cells and the level of $CD8^+CD38$ seen in fig. 6.1 and fig. 6.2. In the placebo and treatment groups, each equally experienced a significant reduction of $CD8^+CD38$ but it is not in line with the decline in $CD8^+$ T cells.

Fig. 6.1 Individual Graphic of $CD8^+$ T cells

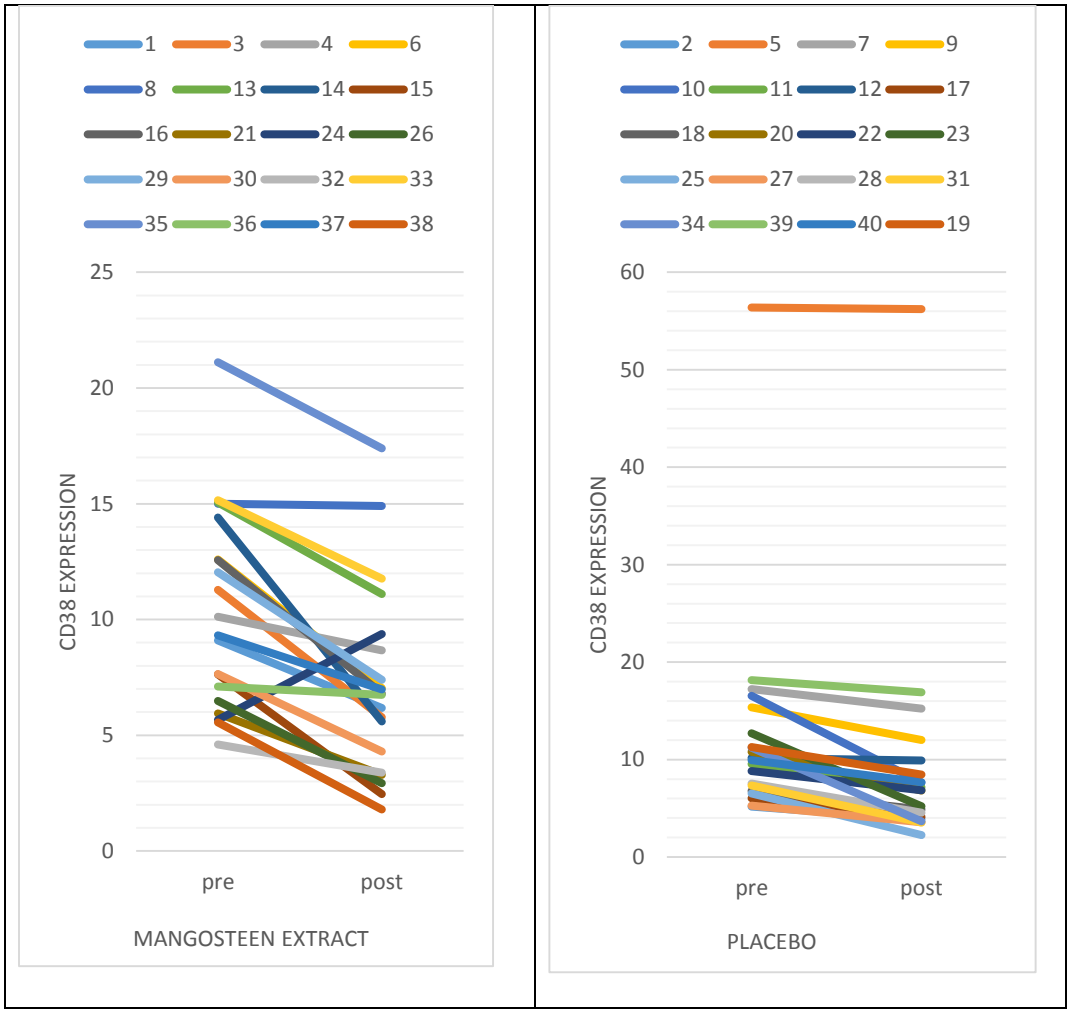

Fig. 6.2 individual graphic for CD38 expression

Although the bioavailability of mangosteen xanthones is limited as it is for many phytochemicals, the gastrointestinal (GI) tract is exposed to high concentrations of these compounds and their metabolites.[79] It may lead to improvement in patients defecation.

On the previous study about mangosteen, the study population was very homogeneous in terms of nutritional status and other lifestyle factors. They are representative of ordinary, generally healthy adults.[43] It may take a different result dealing with this study, whereas study population was an HIV patient where in HIV patients, there was progressive dysregulation of the immune response with progressive disease.

Although they were accepted antiretroviral therapy, ART only partially correct these deficits.[51]

This study has several limitations. First, the intervention period may not be long enough to demonstrate the full spectrum of the effects on immunological parameter and the effect of mangosteen peel extract as an antioxidant. Despite the fact that strict monitoring for medication adherence but the researchers were not able to monitor the patient's intake of food and drink, even though the patient is not taking vitamins and other drugs that act as antioxidants and immunomodulator. Second, this study did not examine viral load of the patients, so we can not ensure if CD38 decrease was inverse with decrease of the number of viral.