The world health organization (WHO) estimates that 46 million people are infected with HIV. AIDS is a collection of symptoms and infections, which affects the immune function of people rendering them prone to opportunistic diseases. Thika District in Kenya comes only second after Kisumu with 34% prevalence of HIV/AIDS. The management of HIV/AIDS is through antiretroviral drugs (ARVs), nutrition and traditional medicine. However, more emphasize is given on ARVs. An emerging therapy is nutrition. Foods rich in vitamins are readily available though actual levels on local varieties are not established. Changes in vitamins levels in blood correspond to the health of an individual including PLWA. AIDS reduces the levels and monitoring them determines the extent into which the disease progresses. The purpose of the study was to assess the levels of vitamins with consumption of food supplements and its effects in boosting the immune function of people living with AIDS (PLWA) and lowering their viral load. The study involved 66 eligible subjects (women and men aged 25-60 years) at Thika District Hospital, in Thika District of Kenya, which has been categorized among the most AIDS stricken area nationally. The study analyzed the content of β-carotene in some local foods and used those with high levels to feed PLWA while assessing their immune-boosting abilities. HPLC was used both in analyzing β-carotene, retinol and -tocopherol levels in whole blood of PLWA and food samples while flow cytometry was used in assessment of CD4 counts. The study realized that 42% of PLWA were consuming unbalanced diet mostly consisting of carbohydrates and starch. The mean CD4 counts for the study group was 212.0±0.5, 289.9±0.5 and 366.7±0.5 cells/µl of blood at the on-set, mid-term and end-term of intervention period respectively indicating significant improvement. The blood vitamins concentrations of most subjects were found to increase with supplementation of the indigenous foods rich in immune boosting vitamins. For the control group, the mean CD4 count was 199.6±0.5, 192.8±0.5 and 176.2±0.5 cells/µl of blood during the intervention period. At the end of intervention the study group had the retinol, β-carotene and -tocopherol blood levels increase by 2.3, 4.5 and 62.6 g/dL respectively. On the other hand, at the end of intervention the control group had β-carotene and -tocopherol blood levels decrease by 6.6 and 8.1g/dL respectively while retinol blood level increased by 0.6 g/dL. There was a positive correlation between levels of the vitamins in blood, CD4 counts and body mass index (BMI) at 95 confidence limit. This indicates that use of indigenous foods rich in immune boosting vitamins can improve the health and well-being of HIV/AIDS patients.