ABSTRACT

Mononuclear cells obtained from peripheral blood of healthy donors and malaria patients during acute and convalescent phases of infections were differentiated into three subpopulations by the following procedures. After Ficoll-Hypaque(FH) gradient centrifugation of the peripheral blood, the white ring of mononuclear cells was collected and the cells was washed with RPMI 1640 medium. Contaminating phagocytic cells were removed by carbonyl iron and magnet application from the cell pool. The "pure" lymphocytes (TL) were mixed with sheep erythrocytes and fetal calf serum to form lymphocyte-E-rosette (mature T cells). These rosettes and free red blood cells were removed by FH gradient centrifugation. The remaining lymphocytes deprived of E-rosette forming cells (TL-ERFC) were mixed with 19S-EAC and were removed thereafter by FH gradient centrifugation as above. This process was used to deprive $Fc\mu$ and complement receptor lymphocytes (mature B cells) from the remaining pool of lymphocytes. The last remaining lymphocyte subpopulation is null cells.

Na $^{51}CrO_4$ labelled K562 was used as the target cell in the Chromium release cytotoxic assay. Equal volume of different effector cells (TL, TL-ERFC and null cells) at a concentration of 5×10^6 cells/ml were incubated with the target cells (i.e. effector : target cell ratio is 50 : 1) in flat-bottomed microtitre plates. The plates were incubated for 18 hours at 37° C in humid candle jar. After in-

cubation, the plates were recentrifuged and supernatant from each well was collected into glass tubes. The radioactivity was counted in Packard automatic gamma .Scintillation counter.

These studies show that (in healthy Thai persons) the percentage of mature T cells, B cells and null cells represent about 78, 12 and 11 percent respectively. Natural cell-mediated cytotoxicity was found in the null cell subpopulation. There was no alteration in the percentage as well as the number of lymphocytes subpopulations during the acute period of infection when compared to those from healthy persons. A marked decrease in the percentage of T cells was found in the convalescent period while the percentage of both B cells and null cells were increased when compared to normal persons and malaria patients at the acute illness. The percentage cytotoxic activity of these null cells in acute blood samples show the same degree as found in normal samples. On the contrary, the cytotoxic activity of this lymphocytes subset recovered from the patients at convalescent period was markedly decreased when compared with the cytotoxic activity in normal persons and acute patients. The possible explanations for these findings are discussed.

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