

CLAIMS

[Claim 1]

A method of testing an immune state, the method comprising:

a step of calculating a total number of white blood cells serving as
immune cells in a body of a subject and a number of each of immune cell
subgroups based on test information on blood counts of blood
components and white blood cell images of the subject and analysis
information on CD classification of monoclonal antibodies that bind to
surface antigens of the white blood cells; and

a step of analyzing the immune state of the subject based on a
proportion and a change in the numbers of the immune cell subgroups,
wherein the step of calculating

calculates the total number of the white blood cells based on the
test information,

calculates a number of granulocytes, a number of monocytes, and
a number of lymphocytes in the immune cell subgroups based on
the total number of the white blood cells and the analysis
information on the CD classification,

calculates a number of T cells, a number of B cells, a number of
NK cells, and a number of NKT cells in the lymphocytes based
on the number of the lymphocytes and the analysis information
on the CD classification, and

calculates, based on the calculated number of each of the immune
cell subgroup, at least a number of helper T cells, a number of
killer T cells, a total number of the NK cells and the killer T
cells, a total number of the NKT cells and the B cells, and a total

number of non-T cells together with a ratio of each of the immune cell subgroups.

[Claim 2]

5 The method according to claim 1, wherein the step of calculation calculates, based on the analysis information on the CD classification and the number of each of the immune cell subgroups:

 a number of Th17 cells,

 a number of Treg cells,

10 a ratio of granulocytes, monocytes, and lymphocytes,

 a magnitude relationship between a total number of the NKT cells and the B cells and a total number of the NK cells and the killer T cells, and

 a ratio of a number of the B cells and a number of the helper T cells.

15 [Claim 3]

 The method of testing an immune state according to claim 1 or 2, wherein

 the total number of the white blood cells is calculated according to following formula (1) or (2),

20 a total number of the granulocytes, a total number of the monocytes and a total number of the lymphocytes are calculated according to following formulae (3), (4) and (5), respectively,

 a total number of T cells is calculated according to following formula (6),

25 a total number of helper T cells and a total number of killer T cells in the T cells are calculated based on the total number of the T cells according to

following formulae (7) and (8),

a total number of non-T cells other than the T cells is calculated according to following formula (9), and

a total number of the B cells, a total number of the NK cells and a total
 5 number of the NKT cells are calculated based on the total number of the non-T cells and the total number of the T cells according to following formulae (10), (11) and (12):

[Math. 1]

The total number of white blood cells = the number of white blood cells ($/\mu l$) $\times$ 5,000 (blood volume) ml $\times$ 1,000 ($1,000 \mu l = 1 ml$) (1)

The total number of white blood cells = the number of white blood cells ($/\mu l$) $\times$ 4,500 (blood volume) ml $\times$ 1,000 ($1,000 \mu l = 1 ml$) (2)

The total number of granulocytes = the total number of white blood cells $\times$ granulocytes (basophils + eosinophils + neutrophils) (%) (3)

The total number of monocytes = the total number of white blood cells $\times$ monocytes (%) (4)

The total number of lymphocytes = the total number of white blood cells $\times$ lymphocytes (%) (5)

10 [Math. 2]

The total number of T cells = the total number of lymphocytes $\times$ CD3(+) (%) (6)

The total number of CD4(+) T cells = the total number of T cells $\times$ CD4(+) (%) (7)

The total number of CD8(+) T cells = the total number of T cells $\times$ CD8(+) (%) (8)

The total number of non-T cells = the total number of lymphocytes $\times$ (100 - CD3(+)) (%) (9)

The total number of B cells = the total number of non-T cells $\times$ (CD16(-)/CD56(-)) (%) (10)

The total number of NK cells = the total number of non-T cells $\times$ ((CD16(+)/CD56(+)) + (CD16(+)/CD56(-))) (%) (11)

The total number of NKT cells = the total number of T cells $\times$ ((CD16(-)/CD56(+)) (%) (12)