Naïve, Memory and Effector T Cell Subsets

General information

Assay principles: This test is usually done in conjunction with lymphocyte subsets surface markers (ID), in which case a separate sample is not required. This assay is used in the investigation of Naïve, Memory, and Effector (NME) T cells in various clinical contexts including autoimmune diseases, immunodeficiency states, T-cell recovery post hematopoietic stem cell transplant, DiGeorge syndrome, and as a measure for T-cell immune competence. These T cells subsets can be identified by their expression of cell-surface markers CD45RA and CD27 and are reported as a % gated on CD4 and CD8.

Assay interferences: Older samples may exhibit loss of surface antigens and therefore the sample should be as fresh as possible.

Laboratory information

Analyte: Naïve, Memory and Effector T Cell Subsets Panel

Units: %

Specimen type: Peripheral blood - EDTA

Frequency of analysis: Dependent on clinical indication

Turnaround times: 1-2 routine working days, Assay run daily Monday to Friday 09:00-15:00

Specimen transport: At room temperature

Additional/special requirements: Note that samples should be received in the laboratory no later than 3pm on a Friday. Samples should be kept at room temperature.

Method: Flow Cytometry

Participation in EQA Scheme: N/A

Clinical information

Interpretation: Use of this panel in the investigation/monitoring of immunodeficiency should be discussed with the appropriate Consultant Immunologist (adult or paediatric).

The T cell subsets that are reported are detailed in the below table. These subsets are reported for both helper (CD4) and cytotoxic (CD8) T cells. Reference ranges are not available for most of these cells groups and any results should be discussed with a consultant immunologist.

T cell subset *either CD4 or CD8	Immunophenotype	Clinical comments
Naïve	CD197+ (CCR7) CD45RA+	Decreased in autoimmune disease (AI) / lymphoproliferation in CVID
Central memory	CD197+ (CCR7) CD45RA-	Possibly decreased in AI cytopenia
Effector memory	CD197- (CCR7) CD45RA-	No clear clinical association
Effector / terminally differentiated	CD197- (CCR7) CD45RA+	Possibly increased in AI / lymphoproliferation in CVID
Early differentiated	CD28+ CD27+	Decreased in AI / lymphoproliferation in CVID
Intermediate differentiated	CD28- CD27+	No clear clinical association
Late differentiated	CD28- CD27-	Possibly increased in AI / lymphoproliferation in CVID
+ Senescent	CD57+ (based on CD57 and SS)	Increased in Activated PI3K delta syndrome (APDS)
Exhausted	CD279+ (PD1)	No clear clinical association

Naïve T cells are also assessed as part of newborn Severe Combined Immunodeficiency (SCID) screening, in which context low numbers of naïve cells may support SCID.

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