Mononuclear cell

Mononuclear cells refer to blood cells that have a single, round nucleus,

When isolated from circulating blood, they are called peripheral blood mononuclear cells (PBMC), but other sources exist, such as the umbilical cord, spleen, and bone marrow.

Mononuclear cells include lymphocytes, monocytes, and macrophages.

Lymphocytes: These are a type of immune cell involved in the adaptive immune response. There are two main types of lymphocytes: T cells and B cells. T cells are responsible for cell-mediated immunity, while B cells produce antibodies and are involved in humoral immunity.

Monocytes: Monocytes are a type of white blood cell that can differentiate into macrophages and dendritic cells. They play a key role in the immune system by phagocytosing (engulfing and digesting) pathogens and foreign substances. Monocytes are produced in the bone marrow and then circulate in the bloodstream before migrating to tissues where they differentiate into macrophages.

These mononuclear cells are crucial components of the immune system, working together to defend the body against infections, pathogens, and other foreign invaders. They are often studied in various medical contexts, including immunology, hematology, and infectious diseases, as abnormalities in their numbers or functions can indicate underlying health issues

Autologous bone marrow mononuclear cell

Autologous bone marrow mononuclear cell

Currently, the most available tissue that reflects the immune system is peripheral blood mononuclear cells (PBMCs).

Li et al. found that various biological functions or pathways related to the immune system and glucose metabolism changed in peripheral blood mononuclear cells (PBMCs). from type 1 diabetes mellitus (T1DM) patients. In the protein-protein interaction (PPI) network, the differentially expressed genes (DEGs) of module 1 were significantly enriched in processes including inflammatory and immune responses and in pathways of proteoglycans in cancer. Moreover, they focused on four vital hub genes, namely, chitinase-3-like protein 1 (CHI3L1), C-X-C motif chemokine ligand 1 (CXCL1), matrix metallopeptidase 9 (MMP9), and granzyme B (GZMB), and confirmed them in clinical PBMC samples. Furthermore, the disease-gene-drug interaction network revealed the potential of key genes as reference markers in T1DM.

These results provide new insight into T1DM pathogenesis and novel biomarkers that could be widely representative reference indicators or potential therapeutic targets for clinical application [1].

1)
Li X, Liao M, Guan J, Zhou L, Shen R, Long M, Shao J. Identification of Key Genes and Pathways in Peripheral Blood Mononuclear Cells of Type 1 Diabetes Mellitus by Integrated Bioinformatics Analysis. Diabetes Metab J. 2022 Apr 1. doi: 10.4093/dmj.2021.0018. Epub ahead of print. PMID: 35381625.