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The feasibility of driving nucleated blood cells to safe pluripotency state in cases of leukemia

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Leukaemia are tumors which affect the blood, bone marrow, and lymphoid system, known as tumors of the hematopoietic and lymphoid tissues. [1] Acute myeloid and lymphoblastic leukaemia are characterized by a rapid increase in the number of immature myeloid and lymphoid cells (blasts), crowding due to such cells makes the bone marrow unable to produce normal blood cells. [2] Hematopoietic stem cell transplantation (HSCT) has been an important treatment modality in the management of a portion of high-risk or relapsed childhood ALL or adult AML. [2]. Patients need in this case matched donors which are really difficult to find. [3] FiPS a new cocktail is being used to induce cellular stress through methylation and gradual down regulation of gene expression which leads to up-regulation of stemness genes as the last chance to protect from cell death. Deprogramming of cells through methylation drives the cells to a semi-embryonic status. Unpublished results show that the number of stem cells that can be prepared in this way is several hundred folds higher than the number of stem cells that are naturally occurring in bone marrow. Those induced cells can be used as an alternative to autologous bone marrow transplantation; it can be a first step to clinical trial to provide another consolidation therapy to patients with acute leukaemia who don't have suitable donor for bone marrow transplant.

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