

NCCS researchers develop method to rejuvenate ageing donor cells

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RESEARCHERS FROM National Centre for Cell Science (NCCS) have developed a method to revitalise ageing donor stem cells used for transplants. Bone marrow transplantation (BMT) or stem cell transplantation (SCT) is the only curative therapy for several malignant as well as non-malignant diseases. However, the efficacy of the clinical procedure depends on the quantity and quality of the stem cells present in the infused graft.

Dr Vaijayanti P Kale, scientist at NCCS, told *The Indian Express* that donor's age has been shown to be an important factor affecting the outcome of clinical transplantations, and therefore, physicians usually prefer younger donors. The hematopoietic stem cells (HSCs) taken from older donors for bone marrow transplants have lower efficiency and their use can be limited.

Kale and her team have now



The study was published recently in the journal, *Stem Cells*

devised a novel method to rejuvenate the HSCs from older donors and make them more effective. The study was published recently in the journal, *Stem Cells*. The team co-cultured the ageing HSCs and young mesenchymal stromal cells (MSCs) for 36 hours. This exposure helped rejuvenate stem cells and improve their functioning. When the stem cells are transplanted, it increases their engraftment capacity and improves the success rate of bone marrow transplantation.

Implications on regenerative therapy

According to Kale, although their work primarily deals with hematopoietic system, the results are important in regenerative therapies as well. MSCs are being used in various protocols for regeneration of several types of tissues. "Our data indicates two important points in the application of MSCs in regenerative medicine: (1) it is necessary to examine the signalling status of MSCs before their application in therapy, and; (2) it is possible to modulate this signalling status to our advantage and it can be formulated as per the requirement. We propose to take up research work on these lines," added Dr Kale.