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Menstrual fluid as stem cells in organ rejuvenation and regeneration

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Development in cellular techniques and processes has taken organ regeneration to new heights. In many medical conditions organ efficiency goes down to such a level that it needs a support mechanism which could help it rejuvenate or in some cases to recover fully. For such a purpose stem cell research is a great break through for the medical world especially for the clinical applications. Stem cells are wonder of science because of their property of differentiation into other different kind of cells. This allows the stem cells to mix up with any kind of cell line and motivate the growth of similar kind of tissues supporting the organ. Majorly stem cells are derived from bone marrow, which is practiced all over the world. But a very good substitute to this is extraction of stem cells with similar properties from the menstrual fluid of the human female. The collection techniques are very easy and hygienic along with which the extraction of stem cells generally referred as MenSCs (menstrual stem cells) is also a hassle free process. Once extracted, they can be used for different therapeutic uses such as curing neurological disorders, cardiac therapies, critical limb ischemia, renal therapies etc. This technique have shown great potential when tested on animal models and have a great potential to become the main line therapy for organ rejuvenation and regeneration

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Profiling of testicular proteome during the first wave of spermatogenesis in mouse

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Spermatogenesis is the process of formation of mature sperm following a series of cell division and differentiation steps. Different cell types appear in the seminiferous epithelium at specific time points. These cytological changes must be accompanied by changes in protein expression patterns. The aim of the present study was the comparative analysis of proteomic profiles of the soluble proteins expressed at three important stages of germ cell development: The 8 days old mouse testis (consisting of spermatogonial stem cells and undifferentiated germ cells at the verge of onset of meiosis); the 16 days old mouse testis (consisting of undifferentiated and differentiated germ cells) and 24 days old mouse testis (having full repertoire of germ cell lineage including spermatozoa produced at the completion of first wave of spermatogenesis). The proteins isolated at the above mentioned time points were subjected to mass spectrometry (LC-MS) analysis for protein identification and generation of proteome profile. The proteome data was subjected to bioinformatic analysis which includes: STRING analysis for functional protein association network determination; Panther analysis and DAVID analysis for determination of protein classes, signaling pathways, Biological functions etc., which exhibited changes with the progression of first wave of spermatogenesis. For validation of the proteome data, the expression levels of some of the proteins were analyzed by immunoblotting. Spermatogonial stem cell marker integrin beta-1 was found to be up-regulated in day 8. Ubiquitin was down-regulated in day 16 as compared to day 8 and day 24. The expression patterns of both proteins were confirmed by immunoblotting.

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