

Details of the Project sanctioned under the Human Resource Development scheme of
Department of Health Research

1. **Project Title:** To standardize the process of collection, culture, cryopreservation and characterization of Mesenchymal stem cells (MSC) from different sources.

2. **Category of fellowship:**

International ICMR Fellowship under Human Resource Development scheme of Department of Health Research

3. **PI (Name & Address):** Dr. Ratti Ram Sharma,
Professor
Department of Transfusion Medicine, PGIMER
Chandigarh, India-160012
Email- rrsdoc@hotmail.com

4. **Qualifications:** MD Pathology

5. **Co.PI (Name & Address):**

1. Dr. Pankaj Malhotra
Professor
Department of Internal Medicine, PGIMER
Chandigarh, India-160012
Email- malhotrapankaj@yahoo.com

2. Prof. Neelam Marwaha
Professor & Head
Department of Transfusion Medicine, PGIMER
Chandigarh, India-160012
Email- neelam2918@yahoo.com

3. Prof. Sunil Kumar Arora
Department of Immunopathology
PGIMER, Chandigarh – 160012
Email : skarora_in@yahoo.com

4. Prof. Jasvinder Kalra
Department of Obstetrics & Gynecology,
PGIMER, Chandigarh, India-160012
Email- jasvin201a@gmail.com

1. **6. Duration of the project:** Two years (2015 to 2017)

1. Period which may be needed for collecting the data : One and a half year
2. Period that may be required for analyzing the data : six months

7. **Broad area of Research:** Innovation & Translational Research

7.1 Sub Area: Stem Cell Research

8. Summary of the Project: (Give in about 300 words)

Mesenchymal stem cells (MSC) are the focus of intensive research worldwide directed not only elucidating their nature and unique properties but also developing cell based therapies for diverse range of diseases. More than three decades have passed since the original formulation of the concept, but substantial ambiguities still remain regarding their nature, identity, function, and mode of isolation for experimental handling. Thus the present study is planned to look in to various aspects of MSC isolation from two different sources, culture, cryopreservation and characterization with the aim of better product yield. This project is a part of the ICMR fellowship awarded to the candidate to apply the knowledge and experience gained abroad in the parent institute.

9. Objectives of the Proposal:

- a. To study factors affecting MSC yield from different sources (bone marrow & cord blood)
- b. To standardize culture, cryopreservation & characterization techniques for better product yield

10. Innovations in the project: (Give in about 100 words)

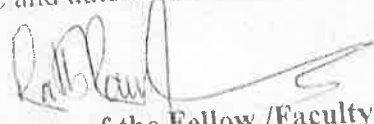
The project will provide us the understanding regarding various factors affecting the stem cell yield, so as to identify the best source and formulate appropriate processing and cryopreservation strategies for Mesenchymal stem cells. The project will look into various aspects of Mesenchymal stem cell culture and cryopreservation including their proliferation kinetics under different culture conditions and post thaw recovery after cryopreservation with different concentration of cryoprotectant solution. This will provide us an insight into the mechanism involved affecting their growth in culture and viability during the cryopreserved state. This information gathered from these experiments will help in standardization of culture and cryopreservation techniques of Mesenchymal stem cells in the institute.

11. Significance of the outcome of the project: (Give in about 150 words)

The standardized culture and cryopreservation protocols will help in obtaining good quality Mesenchymal stem cell preparation which can be put in clinical use after testing for the requisite quality control release criteria. This will further enhance the scope of stem cell research and application in various clinical settings in the institute.

12. Relevance in Public Health:

Presently, the field of stem cell research is being viewed as an area of the tremendous scope in translation research and clinical application in various disorders. Hence the present project may facilitate the clinical application of Mesenchymal stem cells in various clinical settings such as graft versus host disease after BMT, various degenerative and autoimmune disorders.


Signature of the Fellow /Faculty

Dr. R. R. Sharma

प्राचार्य
Professor
रक्तदान औपधि विभाग
Department of Transfusion Medicine
पी.जी.आई.एन.ए.आर., चण्डीगढ़
P.G.I.M.E.R., Chandigarh