

Blood Products from Mesenchymal Stem Cells

Field of Application

The present invention relates to blood products and methods of producing blood products from human mesenchymal stem cells (hMSC). Fields of application are the production, preparation, or utilization of bone marrow or stem cells for allogenic or autologous transplantations by transplantation centers or specialized companies.

State of the Art

hMSC are oligopotent progenitor cells located in bone marrow, blood and other tissues that can differentiate into a variety of non-hematopoietic tissues. Their differentiation is dependent on the interplay of a variety of environmental influences such as growth factors and physical conditions. Examples of hMSC differentiation include a wide range of non-hematopoietic tissues, e.g. cardiac muscle and neuronal cells.

In contrast to hematopoietic stem cells, MSC may be massively expanded in vitro. Their main function was found to be supportive for hematopoietic cell expansion. Blood cell formation from MSC may provide a completely new approach for the use of MSC in regenerative or transplantation medicine. It is astonishing that a method for providing hMSC-derived blood products has not been established yet.

Technical Description

The present invention offers a method comprising appropriate cultivation conditions permitting in vitro differentiation of isolated, not SV40 transformed hMSC and production

of at least one type of blood products (fig. 1). Another aspect of the invention is a method of treatment of a patient in need of a blood product. Said method comprises delivering a therapeutic amount of at least one type of blood products produced by the cultivation method above.

Novelty/Benefit

- first experimental proof of hMSC differentiation not only into stroma but also into hemapoietic cells
- methods of hMSC differentiation and production of blood cells thereof
- improvement of both allogenic and autologous transplantation in terms of a personalized therapy

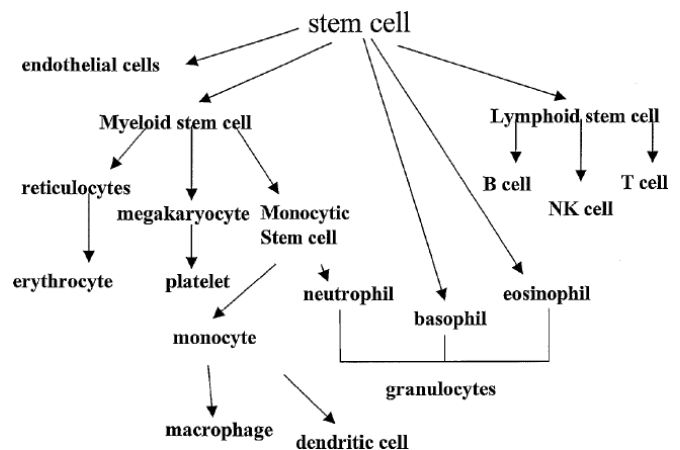


Fig. 1:
Differentiation of stem cells into various blood products.