

Stem cells: concepts, applications and ethical implications



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ABSTRACT

Introduction. Stem cells are undifferentiated cells or cells with a low degree of differentiation, originating from the embryo or extraembryonic

tissues, which can differentiate into various types of tissues according to their plasticity, being promising in the therapy of various diseases. Objective. The objective of this study was to review the literature on the different types of stem cells, recent research on their use and current Brazilian legislation. Methodology. For this, a bibliographic survey was carried out in the VHL Health database using stem cells, legislation, biosafety, and applications as descriptors. Results. Stem cells have the potential to recompose damaged tissues and thus aid in the treatment of diseases such as cancer or degenerative diseases. There are three types of stem cells: totipotent, removed in the morula phase, capable of generating any cell in the body, pluripotent, obtained in the blastula phase and which have undergone the first differentiation, which can originate body tissues, and multipotent, of mesenchymal origin, present in the adult organism, with limited capacity for differentiation. In Brazil, the use of stem cells is allowed through the Biosafety Law 11.105, of March 24, 2005, which authorizes, for research and therapy purposes, the use of embryonic stem cells obtained from human embryos produced by in vitro fertilization, provided that the following conditions are met: that they are non-viable embryos; or that they are embryos that have been frozen for three years or more. This use has recently come under discussion due to Bill No. 5153, of 2020, in progress, which aims to make it a crime to use embryonic stem cells for any purpose. Conclusion. It is concluded that stem cells from cryopreserved embryos, if not used, become non-viable and can be discarded. Studies have shown that they can be used for the regeneration of injured tissues, having the potential to solve several diseases, and these two facts should be considered in any ethical discussion about them.

Keywords: Stem cells, Legislation Bioethics.