

Abstract

Mesenchymal stem cells (MSCs) are classified as multipotent stem cells. They possess the ability to differentiate into many cell types, promote angiogenesis, increase cell survival in damaged tissue and modulate the immune response. These functions of MSCs are used in the treatment of various injuries and some diseases. This work characterizes MSCs, with a focus on their energy metabolism, specifically on the switch in their metabolic phenotype between glycolysis and oxidative phosphorylation in different states of MSCs, during cell culture and after transplantation. Finally, two modulations of MSC metabolism are presented, including cultivation in a hypoxic environment and quiescence induced by serum deprivation, which increase cell survival under the ischemic conditions that MSCs enter after transplantation.

Key words: mesenchymal stem cells, metabolism, glycolysis, oxidative phosphorylation