

MESENCHYMAL STEM CELLS (MSCs) – A NEW APPROACH IN ANIMALS THERAPY

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Abstract: Stem cell-based therapy is a very useful treatment method in human medicine, especially in the case of degenerative diseases that cannot be controlled or treated with traditional tools. Lately, the same approach became very attractive for the treatment of similar disorders in different animal species. Mesenchymal stem cells (MSCs) can be obtained from multiple sources, but most of the time are isolated from the stroma of bone marrow or from the adipose tissue that provides a relatively abundant supply of MSC comparing to any other tissue type. Even the mechanisms of action are not completely understood, they have very interesting properties revealed in clinical studies, showing in most of cases their ability to improve patients conditions.

Key words: mesenchymal stem cells, therapy, animals

• Introduction

Mesenchymal stem cells (MSCs) are a special type of undifferentiating multipotent, nonhematopoietic progenitor cells gifted with the ability to differentiate into various cell types (osteocytes, neurons, adipocytes, chondrocytes, etc.) in function of the environment created in the cultivation process.

The purpose of this study was to highlight the importance of alternative therapy methods, especially when is the case of degenerative or chronic diseases in order to restore a normal function.

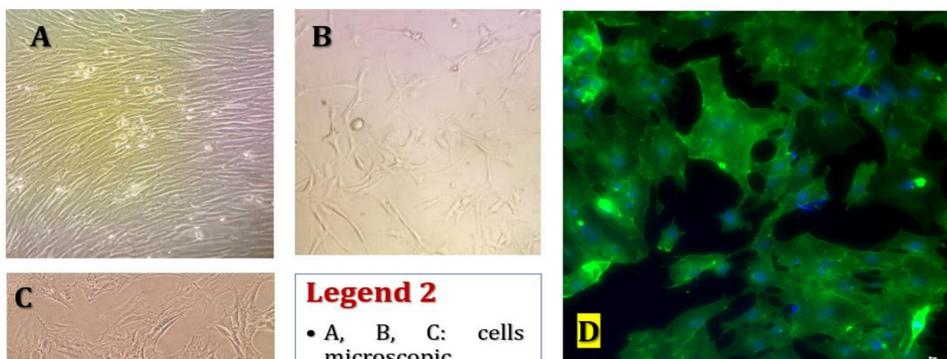
• Material and method

MSCs can be isolated from various sources (bone marrow – legend 1, legend 2, blood, dermis, amniotic fluid, subcutaneous adipose tissue, muscle, synovium, dental pulp, jawbone, feta/neonatal tissues and several other body organs)



Legend 1

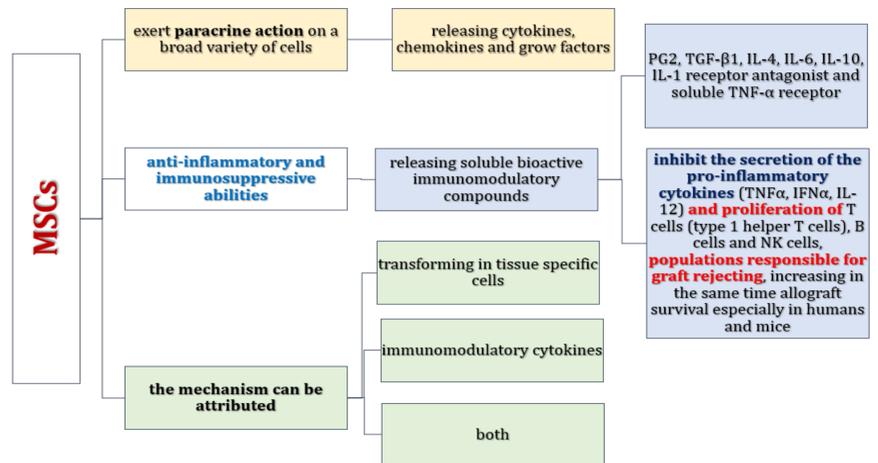
- A: washing the diaphyseal medullary canal with DMEM medium
- B: Bone marrow cell suspension
- C: flasks with MSCs culture
- D: cells microscopic aspect



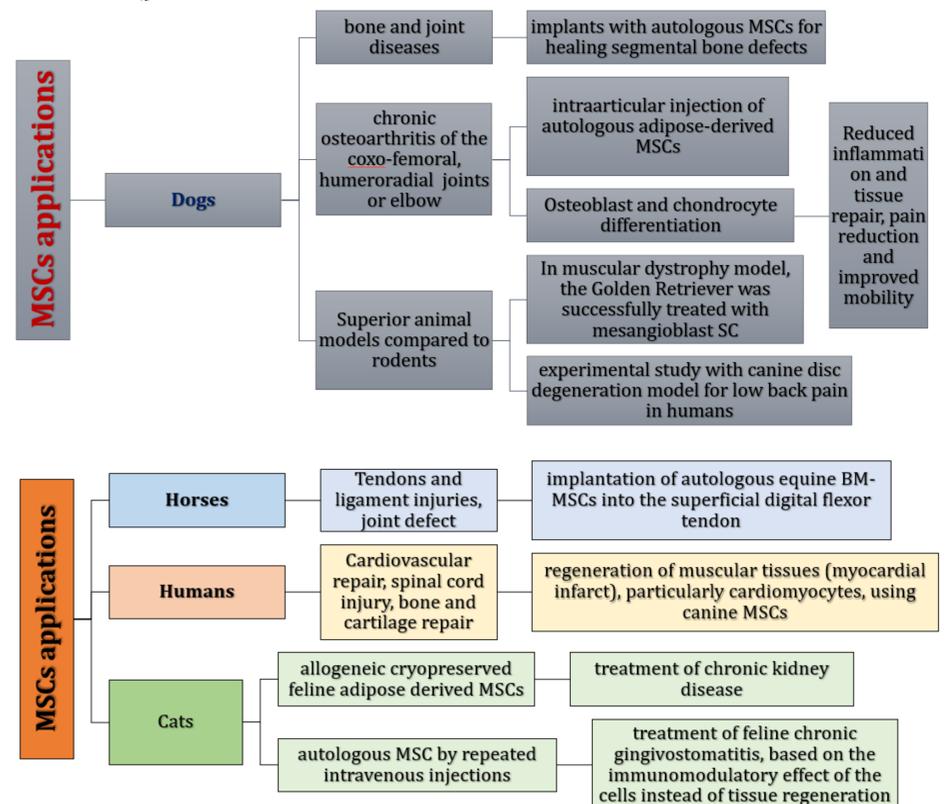
Legend 2

- A, B, C: cells microscopic aspect
- D: positive cells for CD90

• Results and discussions



Even the mechanisms are not completely understood, clinical studies already published in veterinary medicine area revealed in most of the cases that suffered autologous or allogeneic MSCs transplant, improvement of affected organ or structure function, pain management because of the anti-inflammatory effect.



• Conclusions

Similar to humans, in animals, because of the increased number of degenerative and inflammatory chronic disease cases, MSCs based therapy became a really good alternative for their management. Even the target structures are currently limited, the evolution of technologies to obtain cells with various tissue specificities can offer more opportunities for treatments.