

**Mesenchymal stem cells-based therapies in companion animals: principles and applications**

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**Abstract**

Regenerative Medicine therapies aim to restore normal morphology and function of damaged tissues. Regenerative approaches are based on the use of stem cells, growth and differentiation factors, such as platelet-rich plasma, and biomaterials from natural or synthetic origin which can act as matrix or vehicle.

Mesenchymal stem cells could be obtained from adipose tissue, bone marrow, umbilical cord or dental tissues, among others. They can be differentiated into osteoblasts or chondroblasts, important for the treatment of musculoskeletal lesions, such as osteoarthritis, tendinitis or non-union fractures. Their regenerative, immunomodulatory, anti-inflammatory and antifibrotic effects are controlled by bioactive substances with autocrine and paracrine factors which constitute the cell secretoma. Cell-based immunotherapies are reported in different conditions such as inflammatory bowel disease, feline chronic gingivostomatitis, keratoconjunctivitis sicca, feline asthma or renal disease, as well as in neurological diseases like sequelae of distemper encephalitis or canine degenerative myelopathy. The synergy between medical and basic sciences and the demand for new therapeutic solutions will pave the way for the development of new Regenerative Medicine strategies.

**Biography**

João Requicha obtained the degree in veterinary medicine in 2007 by the University of Trás-os-Montes e Alto Douro (UTAD, Portugal) and a Master's degree in 2011. He has a PhD in veterinary sciences by the UTAD and the 3B's research group of the University of Minho in the field of tissue engineering and regenerative medicine and completed a post-graduation in veterinary dentistry and oral surgery at the University Complutense of Madrid. He is founder

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member of the Portuguese Society of veterinary and experimental dentistry and of the Portuguese Society of veterinary regenerative medicine. Currently, he is assistant professor at UTAD and work at the veterinary dentistry service of its veterinary teaching Hospital. The author's research interests include veterinary dentistry and regenerative medicine.

## **Publications**

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