

155: IL-10 RNA heals Inflammatory Disorders

- ✓ **Use of interleukine 10 RNA transfected macrophages in anti-inflammatory therapies**
- ✓ **Benefits for patients with, rheumatoid arthritis, lupus, inflammatory bowel disease, and psoriatic arthritis and even myocarditis**

The Technology

This cell-based therapeutic is concerned with a composition comprising autograft macrophage overexpressing interleukine 10 (IL-10) from transfected IL-10 encoding RNA to be used as a medicament. The macrophage will be obtained from patient peritoneal sample. The macrophage is, preferably, obtained from the sample by affinity purification based on the CD11b marker protein present on the macrophages. However, the techniques for isolating macrophages referred to elsewhere herein can be also applied. The isolated macrophages are, subsequently, transfected with RNA encoding IL-10 in an amount resulting in the production of a therapeutically effective dose of IL-10 upon translation into IL-10 polypeptide. The transfected macrophages can then be formulated in a suitable composition and applied as a medicament.

Background

Inflammatory reactions represent a challenge for the treatment of various diseases and disorders with accompanying inflammation. Such diseases and disorders include, e.g, rheumatoid diseases such as rheumatoid arthritis or autoimmune diseases. Moreover, cardiac disease such as myocarditis are also accompanied by inflammatory reactions.

Immunosuppressive therapies are usually based on steroidal and non-steroidal antiphlogistics and, in more advanced stages, chemotherapeutics, antibodies such as Infliximab or, in particular severe cases, stem cell therapies. The current immunosuppressive therapies are unspecific and, thus, affect healthy cells and tissues as well. Adverse side effects of, e.g., steroid-based immunosuppressive therapies are metabolic syndrome, diabetes or osteoporosis. A local or specific therapeutic approach like IL-10 transfected macrophages will avoid these aforementioned drawbacks.

Advantages

- ✓ High concentration of IL-10 only were its needed
- ✓ Autograft Cells and RNA possible
- ✓ RNA to be transfected can be chemically synthesized
- ✓ micro-injection of the RNA
- ✓ Macrophages can be isolated from various different body tissues

Commercial Opportunity

- ✓ Personalized medicine
- ✓ Cell based therapy

Intellectual Property

Patent application PCT/EP2011/070027

Reference:

1. Senolt 2009, Autoimmun Rev 9: 102-107; Fautrel 2009, Arthritis Rheum 61: 425-434
2. Snowden 2008, Autoimmunity 41: 625-631; Ho 2009, Aliment Pharmacol Ther 29: 527-534

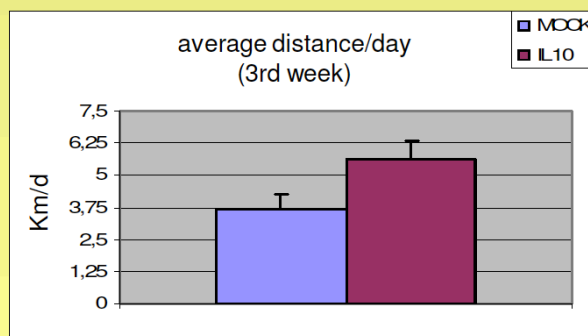
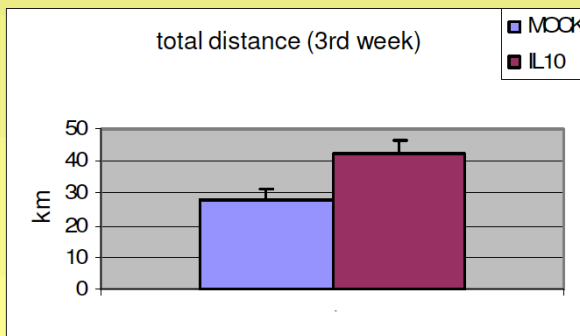
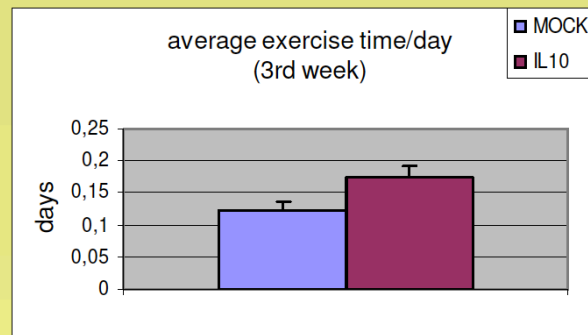
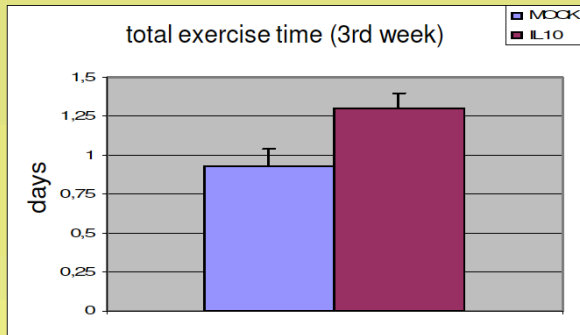
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Treadmill exercise testing



In essence, IL-10 overexpressing macrophages obtained by IL-10 RNA transfection could reduce inflammatory reactions in the myocarditis model (induced by immunization with troponin I) and improved the cardiac performance. Systemic side effects were not apparent in the experiments.