

## Stem cell research

### 11 - MSCS EFFECT ON DARK AGOUTI RATS AFFECTED BY CHRONIC EAE

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#### Objective

Besides the immunomodulatory action, Mesenchymal Stem Cells (MSCs) are able to promote neuronal and glial survival both by releasing trophic factors and through cell to cell contact. For these features MSCs are a promising tool for the treatment of inflammatory and demyelinating diseases such as Multiple Sclerosis (MS).

Here we reported a pre-clinical study on Dark Agouti rats affected by a Relapsing-Remitting form of Experimental Autoimmune Encephalomyelitis (RR-EAE), one of the most suitable models for the study of RR-MS.

#### Methods

In order to assess the possible preventive or therapeutic effect, 10<sup>6</sup> MSCs were injected i.v. (intravenous) at day 7 or at day 14 post EAE induction (p.i.) and clinical score was evaluated daily.

#### Results

The preventive schedule of treatment (day 7 p.i.) had no effect on EAE clinical course but the therapeutic one (day 14 p.i.) was able to hamper the

relapsing phase from day 19 p.i. and till the end of the experiment (day 45 p.i.) with respect to EAE group.

At day 45 p.i., histological analysis performed on spinal cord of EAE rats revealed a substantial absence of inflammatory infiltration and the presence of demyelinated plaques, assessed by Luxol fast Blue staining and by immunohistochemistry for MBP (Myelin Basic Protein). Moreover the analysis performed on serial paraffin sections revealed that the therapeutic schedule with MSCs was able to significantly reduce the extension of demyelinated areas in the spinal cord white matter with respect to EAE and EAE+MSCs day 7 p.i. groups, thus confirming clinical score evaluations.

#### Conclusions

These results suggested that MSCs are able to ameliorate the clinical course of EAE animals by reducing the areas of demyelinated lesions.

We are now evaluating the possible mechanism of MSCs action by investigating *in vitro* some putative myelinating and immunomodulating properties of MSCs.

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