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Mesenchymal stem cells in transplantation: Effect of immunosuppressive drugs

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Mesenchymal stem cells (MSCs) due to their immunosuppressive and regenerative properties offer a great potential for the application in the clinic, including the transplantation medicine. It was documented that co-transplantation of grafted tissue with MSCs attenuated rejection reaction. In the therapy of various pathological conditions, applied MSCs interact with different drugs, which can influence their action. And vice versa, MSCs can modulate the effect of such treatment. Our results demonstrated that the therapy combining immunosuppressive agents with MSCs favourably influenced immune balance, attenuated the adverse effects of immunosuppressive drugs and prolonged the survival of transplanted allogeneic cells. Mechanisms involved in the anti-inflammatory effect of the interactions between MSCs, immunosuppressive drugs and the immune system included switch in the macrophage phenotype, as well as changes in the subpopulations. As a result, the inflammation was attenuated and a regenerative environment promoted in the presence of MSCs. We also documented that MSCs isolated from different sources are differently affected by the immunosuppressive drug treatment. All these findings should be taken into accounts before preparing strategies combining the use of immunosuppressive drugs and MSCs or the administration of MSCs into an immunosuppressed organism.

Biography

The aim of research of Krulova is to characterize the molecular and cellular mechanisms of specific immunity which can be consequently applied in targeted immunoregulation for both the experimental work and the clinical practice. In recent years, her research has focused on the study of mesenchymal stem cells and Sertoli cells, their characterization, possibilities of differentiation, interaction with cells of the immune system and their use in transplant medicine.

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