REGENERATIVE MEDICINE: SUCCESSFUL CELL TRANSFER WITHOUT SIGNIFICANT IMMUNE REACTION VIA BIODEGRADABLE POLIMER FOR FURTHER APPLICATION

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Introduction. With the extension of human lifespan there is a growing concern for age related illnesses, including the cartilage and bone related illnesses. Thus, the investigation of biocompatible materials, replacements and implants is an important research area.
A large variety of photocurable and biodegradable materials have already been produced using Poly (propylene fumarate) (PPF). PPF is a versatile candidate for tissue engineering due to its (i) biodegradability, (ii) cytocompatibility, (iii) high Young's modulus and (iv) the unsaturated backbone of the polymer.
For biological applications, the biocompatibility, toxicology and immune reactivity of biomaterials are especially important characteristics. Thus, in our study we tested biocompatibility of our scaffolds with respect to the immune responses they might elicit in vivo.

Materials and Methods. Biocompatibility and toxicity of our biodegradable scaffolds seeded by K7M2 osteosarcoma cells were investigated in an *in vivo* mouse model. After 14 days, the scaffolds and dorsal skin were removed and serum samples were harvested for further analysis. Cytokine and chemokine protein levels in sera were also investigated.

Results. We could not observe any sign of inflammation on dorsal skin, neither inflammatory cytokines nor other signs of rejection, based on chemokine and cytokine profiling. Cell transfer into the animals via biopolimers was successful, because anaplastic tumors were seen in histological sections of the group implanted with K7M2 seeded scaffolds. In contrast, there was only a mild fibrotic reaction around the presumable location of the control group. We presume, that the three dimensional (3D) scaffolds were degraded biologically *in vivo* without significant residual pieces.

Conclusion. Based on our data and observations in experimental animals, physical and chemical properties of 3D scaffolds are quite suitable for in vivo applications, because they did not induce significant immunological reactions and successfully transferred the seeded osteosarcoma cells. We suggest that this method could be useful for the transfer of primary self-cells or tissues and may have promising further applications in tissue and organ engineering.
We could not detect relevant immune reactions or rejection of implanted scaffolds. The 3D biodegradable polymer transferred, however, the seeded cells successfully.

A fenti anyagból előadást szeretnék tartani. A téma elméleti jellegű.