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The usage of three-dimensional nanostructurized biomaterials in experimental and clinical oncology

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The usage of biotransplants for substitution of tissue defects (in particular in reconstructive surgery in oncology) require both he suitable cell cultures and different biomaterials with definite and regulate properties.

The aim: The creation and biomedical examination of matrix properties (in vitro-the evaluation of cytotoxicity, adhesiveness, the dynamics of cell population, in vivo-biocompatibility) of variety nanostructurized materials: hydroxyapatite porous ceramics, cubic paks of SiO_2 nanospheres, carbon-polymere structures on the polyethylenterephtalat films.

Results: By means of MTT assay in vitro it was shown the low toxicity and good adhesive properties of some samples of these materials for human fibroblasts and in vivo-suitable biocompatibility. The optimal conditions of cultivation (cell density, attachment, growth, and others) of adhesive cell cultures with some of these materials for 3D-construction forming were worked out. Now the clinical examination of these nanostructurized materials is started.

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