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The Use of PANC-1 Spheroids for Testing Antitumor Drugs *In Vitro* and Creating a Tumor Model *In Vivo*

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Recently, spheroids have attracted widespread attention of researchers as 3D models for drug testing. One of the key features of spheroids is that they can be composed of one or several types of cells. There is a hypothesis that the use of heterospheroids from different types of cells in testing anticancer drugs can better reproduce the 3D architecture

of the tumor and, as a consequence, increase the predictiveness of the research. To verify this hypothesis, in this study, we tested the activity of eight anticancer drugs on homo-spheroids consisting of pancreatic cancer cells (PANC-1) and heterospheroids consisting of a triple co-culture of PANC-1, primary human fibroblasts and endothelial cells (HUVEC). It was found that the use of heterospheroids from several types of cells, which more accurately reflect the heterogeneous tumor microenvironment, does not lead to a noticeable change in the activity of the drugs. Also, we subcutaneously transplanted spheroids from PANC-1 to immunodeficient mice. Our data demonstrated that the obtained tumor model reproduce a more aggressive phenotype of human pancreatic cancer compared to cell transplantation in suspension.

Keywords: spheroids, antitumor drugs, antiproliferative activity, cytotoxicity, tumor model