Introduction:

In different variants of cell therapy with stem cells (SC) and their derivatives, both allogeneic (e.g., obtained from cord blood) and autologous materials are used. And though the last one is “own”, after its multiplication ex vivo for reaching sufficient amount for therapeutic effect, the cells obtained differ from the native cells and therefore are taken by the organism in somewhat other manner. The reaction of an organism on the introduction of allogeneic and natively autologous (but multiplied ex vivo) cells is realized both by direct cell and humoral interactions. Such reaction significantly determines success or failure of the treatment. On the other hand, many factors are involved into the organism response, and it is different in various individuals. To evaluate such response, its personalization is necessary.

Materials and Methods:

Due to restricted access to the biological material of an individual, we chose influence of blood plasma on cell growth as the most informative from the possible accessible variants. Model objects were rabbits. As the most difficult patients for cell therapy are aged groups, model objects were chosen from the population of healthy rabbits more than 4 years old. Blood serum was tested in 3 variants: native, heated at 56° C during 40 min and filtered through nitrocellulose membrane with pore diameter 0.22 mkm. The last variant actually represented adsorption: plasma volume for filtration was not more than 1 ml and nitrocellulose in non-specific absorber. The prepared plasma was added to DMEM to the final concentration 0.3 ? 5% with twofold dilutions. Controls were the same concentrations of fetal calf serum (FCS) and medium without any serum. Test culture for control and experimental samples was cell line RK-13 (rabbit kidney). Culturing was performed in standard conditions during 72-96 h. Evaluation was based on growth rate and character as well as on cell morphology.

Results:

These showings varied significantly both among different individuals and for the same animal in various time intervals. The diversities varied from complete cell death to proliferation, morphology changing, growth character and attachment to substrate. Growth with FCS was always standard in all experiments.
Discussion and Conclusions:

As plasma concentration in human organism is at least 20 fold higher in comparison with the experiments presented, even moderate differences in SC and their derivatives from the native cells can meet any reaction of the host during their introducing. Even personalization made not directly before introducing, is not always adequate.