comparison with intact group (329.85 ± 48.68 μm), but in the group with ADSCs therapy the thickness of the dermis was reduced in comparison with UV-group (242.73 ± 41.45 vs 301.31 ± 90.38 μm respectively).

Conclusion: UV rays are responsible for skin changes, such as epidermal and dermal thickening. We can suggest that adipose derivate stem cells therapy is promising for the treatment of injured skin. Further studies are required.

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P137-F | Specificity of microvesicles interactions with target cells

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Background: Microvesicles (MVs) are membrane spherical structures which are capable of carrying biologically active molecules. Extracellular vesicles' membrane receptors are expected to participate in recognition and specific binding with the surface proteins of target cells. Thereby, MVs can be used as vector system for targeted delivery of drugs. Cytochalasin B induced membrane vesicles (CIMVs) were used as a vector for nanoparticles, dye and chemotherapeutic drugs delivery. However, the specificity of CIMVs interaction with target cells has not been studied.

Materials and methods: CIMVs were obtained from PC3 cells. Four different cancer cell lines were taken as recipients: PC3, SH-SY5Y, HCT116, HeLa. The size of obtained CIMVs and specificity of fusion with recipient cells were evaluated by flow cytometry (BDFACS Aria III) and laser confocal microscopy (Carl Zeiss LSM 780). Results: We found that the majority of CIMVs obtained from PC3 cells has size less than 220 nm and up to 1340 nm (95% of CIMVs). We found that fusion efficiency of PC3 CIMVs with SH-SY5Y, PC3, and HCT116 cell lines wasn't significantly different (% of cells containing CIMVs membrane component was 59.46 ± 3.8%, 56.81 ± 0.41%, 58.95 ± 3.9% respectively). Proteinase K treatment decreased CIMVs integration in PC3 cells by 33.8 ± 6.3 %, SH-SY5Y cells by 54.8 ± 4.97%, HCT116 cells by 51.4 ± 1.76%, HeLa cells by 85.6 ± 4.2% compared to positive control (cells incubated with CIMVs at 37°C in full medium).

Conclusions: We found that there is no significant preferences in CIMVs fusion with target cells of the same type (homophilic membrane proteins interaction). Disruption of surface receptors had greatest impact on PC3 CIMVs penetration into target cells, implying that heterophilic interaction is more significant in the process of recognition and fusion of extracellular vesicles with target cells. The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

P138-F | Biodistribution of membrane vesicles in vivo

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Background: Extracellular vesicles (EVs) are important vehicles carrying growth factors, cytokines, chemokines, mRNA, miRNAs and siRNA which mediate intercellular communication. EVs contain the same bioactive molecules and surface receptors similar to donor cells. These properties suggest that membrane vesicles might be a perspective therapeutic instrument instead of mesenchymal stem cells (MSC), which have risk of tumor growth. Therefore, we investigated the biodistribution of allogeneic membrane vesicles in vivo after subcutaneous and intramuscular injection in mice.

Materials and methods: We obtained cytochalasin B-induced membrane vesicles (CIMVs) from adipose tissue-derived mouse stem cells (ADSCs) and stained with fluorescent membrane dye DiD (ThermoFisherScientific, USA). Allogeneic CIMVs were injected subcutaneously and intramuscularly in three mice at two different concentrations 1 mg/mL and 0.5 mg/mL. Fluorescence signal was detected in vivo using IVIS Spectrum (PerkinElmer, USA) (3 measurements per mouse).

Results: After subcutaneous administration the fluorescence intensity of 0.5 mg/mL CIMVs was 2.705 relative fluorescence units, fluorescence intensity of 1 mg/mL CIMVs – 5.534 relative fluorescence units (through 1 hour). We were able to detect CIMVs injected subcutaneously and intramuscularly after 1 hour, 48 hours and even 14 days. According to the 3D modeling, subcutaneous injection was localized under the skin surface, and intramuscular injection led to the CIMVs spreading and fluorescence signal was located at different focal lengths.

Conclusions: The fluorescence intensity of the 1 mg/mL CIMVs was twice greater than the 0.5 mg/ml CIMVs that confirms the specificity of the fluorescent signal. Subcutaneous and intramuscular administration of membrane vesicles derived from MSC may be useful for the therapy of diseases, such as skin damage, lower limb ischemia and