Coacervate-mediated tumor cell lysate delivery for immune cell activation and cancer vaccination

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We developed a coacervate-mediated tumor cell lysate (TCL) delivery platform to strengthen the immune system through downstreaming vaccination against pancreatic cancer. Due to the limitation of a single antigen-based cancer vaccination, TCL from pancreatic carcinoma could show multi-epitope efficacy and induce effective activation of cytotoxic T lymphocytes and $CD4^+$ T helper cells. Since TCLs are unstable and easily degraded after entering the body, coacervate (Coa) was utilized to exogenous TCLs delivery for enhancing bioacitivity and stability. Coa is self-assembly micro-droplets, composed of a biodegradable and biocompatible mPEGylated poly(ethylene arginylaspartate diglyceride) cation and counterpart heparin anion in an aqueous environment via electrostatic interaction. Coa-mediated TCL delivery could exhibit improved immunogenicity and cellular uptake efficiency toward bone marrow dendritic cells (BMDCs). By facilitated antigen presentation of BMDCs, subsequent cytotoxic T cell activation and improved vaccination efficacy will be investigated. Therefore, our Coa system could be utilized as a mult-epitope targeting TCL delivery platform for effective immune cancer vaccination.