# pH-responsive coacervate-mediated pancreatic cancer specific lectin delivery for enhanced anticancer functionality

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Recently, various types of lectins have been utilized for therapeutic applications for possible cancer treatment. Among them, *aleuria aurentia* lectin (AAL) has a specific binding affinity towards pancreatic cancer cells (PANC-1 and MIA Paca-2) through certain cell-surface glycans, and subsequently induces apoptosis of cancer cells. Hence, we hypothesized that AAL would be potentially available as new pancreatic cancer therapeutics. In this study, coacervate (Coa), a complex of mPEGylated poly(ethylene arginylaspartate diglyceride), heparin, and cargo AAL, has been developed as exogenous AAL delivery system for cancer microenvironment. This Coa exhibits a burst AAL release profile at pH 6.5 (i.e., higher ionic strength) as compared with pH 7.4. In addition, AAL exhibited PANC-1 and MIA Paca-2 specific apoptotic activity without any affect to normal cells. Moreover, Coa-mediated AAL delivery system induced target cancer cell death than bolus AAL by maintaining bioactivity, bioavailability, and therapeutic dose of AAL. Therefore, these results demonstrated that (1) AAL could be used as a novel pancreatic cancer specific therapeutics and (2) Coa could be used as an AAL delivery system.