

Janus nanoparticles functionalized with glycan-recognizing biomolecules for the capture of exosomes secreted from pancreatic cancer cells

최용현, 황장선, 이경우, 김다솜, 장재희, 권예진, 최종훈[†]
중앙대학교
(nanomed@cau.ac.kr[†])

Pancreatic cancer has the highest mortality rate among all major cancers and the 5-year survival rate is less than 4%. The biggest reason for the high mortality rate is that early diagnosis is difficult. In order to overcome this problem, cancer diagnosis and treatment through tumor-derived exosome detection has attracted attention recently. In this study, focusing on the hypothesis that exosome secreted by pancreatic cancer cells provides information on mother cancer cells, we developed a method to detect pancreatic cancer by detecting exosome. Antibodies are commonly used to bind to proteins on the cell surface and capture exosomes. However, surface proteins targeted by antibodies will change constantly due to proliferation of pancreatic cancer cells, and can be changed while circulating blood and body. Therefore, in this study, we screened lectin proteins that bind to glycans on the surface of pancreatic cancer cells and developed the exosome capture technology based on lectin-sugar binding capacity instead of antibodies. Exosomes secreted by pancreatic cancer cells have sugar chain signatures such as their mother cancer cells so they could be captured using lectin proteins.