

Polydiacetylene complex beads based on DNA detection for the diagnosis of disease

김학진, 최 현, 이길선, 안동준*
고려대학교
(ahn@korea.ac.kr*)

The conjugated polydiacetylenes have been proved as convenient chemical and biological sensors due to their unique chromatic properties. Polydiacetylenes have color transition from blue to red upon external stimuli such as temperature, pH, solvents and ligand-receptor interaction. It has been known for blue-phase PDAs are nonfluorescent, while their red-phase counterparts fluoresce.

In this study, we detected the anthrax lethal factor DNA selectively by using nano-complex beads which composed of 10,12-pentacosadiynoic acid-aminobutyric acid (PCDA-ABA) and magnetic beads. Magnetic beads are magnetic iron oxide beads which treated with amine groups. PCDA-ABA reacted EDC/NHS solution for covalent coupling of amine groups of magnetic beads. Complex beads modified capture probe DNAs that are complementary to a sequence in the target DNA. PCDA-ABA vesicles of nano-complex beads can be used detect desired target DNA by red fluorescence. These nano-complex beads which combine polydiacetylene vesicles with magnetic particles will be extended to the various disease sensors in the future.