

Colorimetric detection of K-ras mutations using aggregation of PNA modified AuNPs by electrostatic attraction

김아름, 이강택*, 박승우¹
연세대학교 화학생명공학과; ¹연세대학교 의과대학
(klee@yonsei.ac.kr*)

We report a colorimetric detection of K-ras mutations using selective aggregation of PNA modified AuNPs by electrostatic attraction. First, AuNPs are modified each PNA probes that are complementary to wild and mutant type target sequences, which made surface charge of AuNPs be neutral due to neutrally charged PNA. When the complementary target DNA are added to AuNPs suspension, AuNPs represent a lower negative zeta potential than when the mismatched target DNA are added. In the second step, the hybridized AuNPs suspension add to positively charged AuNPs, which causes electrostatic attraction between the negatively charged PNA modified AuNPs and positively charged AuNPs. This result in substantial aggregation AuNPs, followed by color change in suspension from red to blue. However AuNPs did not exhibit significant aggregation, and remain suspension color containing mismatched target DNA. This result suggest that detection of K-ras mutations using this method makes clinical benefit be predicted as well as patient selection easy.

Aknowledgement :This work was supported by the Korea Research Foundation Grant (KRF-2009-0072530)