A novel protease activity assaying method through signal amplification with oligonucleotides on gold nanoparticles

김중현[1], 정봉현[2,3,*]
[1]한국생명공학연구원; [2]바이오나노센터 한국생명공학연구원;
[3]나노바이오공학, 과학기술연합 대학원 대학교
(chungbh@kribb.re.kr*)

A sensitive protease assaying method is key tool for elucidating protease function, and developing therapeutics because of implications in the pathogenesis of diverse disease such as viral and bacterial infections and cancer and neurodegenerative diseases. Also it has been reported that secreted amount of proteases are related to cancers. Activity of proteases is assayed by measuring amount of digested substrates. Due to feasibility for developing high throughput assaying formats, synthetic short peptides are preferred. For developing fast and sensitive protease assaying methods, also nanoparticles such as quantum dots, gold nanoparticles and magnetic nanoparticles have been utilized. The reported methods show relatively low detection limits. However still these techniques require long assaying times (more than 12 hours) for acquiring enough detecting signals. Therefore, I propose a more fast and sensitive way to assay activity of protease by incorporating a signal amplification method. More detail working principle and detection limit of our protease assaying method will be presented.