Quantitative Analysis of Apoptotic and Dead Cells Using Annexin V and Phosphatidylserine Binding by Confocal Microscopy

조승훈, 황상연, 조도연, 이은규*
한양대학교 화학공학과
(eklee@hanyang.ac.kr*)

At present, cell-based drug screening assays have been attracted attention for various molecular interactions including induction of apoptosis. Apoptosis is the process of programmed cell death through a tightly controlled program that plays important roles in many normal processes, ranging from fetal development to adult tissue homeostasis. In this study, the affinity of specific binding between annexin V and liposome that consists of several molar ratio of phosphatidylserine (PS) and phosphatidylcholine (PC) in presence of Ca2+ was measured by surface plasmon resonance (SPR) analysis. Annexin V-FITC is used for quantification to confirm efficacy of anticancer agent. A variety of concentration of staurosporine (SSP) induced to be apoptotic cells with macrophage cell line (RAW 264.7 cell) and breast cancer cell line (MCF-7 cell). The apoptotic, necrotic and live cells was monitored using fluorescent probes such as annexin V-FITC and propidium iodide (PI) by confocal microscopy. The fluorescent imaging data based on confocal microscopy was analysed with fluorescence intensity for quantification of apoptotic cells.