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## Analytical Sciences

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[\[PDF \(2662K\)\]](#) [\[References\]](#)**Development of Signaling Echo Method for Cell-based Quantitative Efficacy Evaluation of Anti-cancer Drugs in Apoptosis without Drug Presence Using High-precision Surface Plasmon Resonance Sensing**[Hiroshi NISHIJIMA](#)<sup>1)</sup>, [Atsushi KOSAIHIRA](#)<sup>1)</sup>, [Junko SHIBATA](#)<sup>1)</sup> and [Toshihiro ONA](#)<sup>1)</sup>*1) Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University***(Received February 26, 2010)****(Accepted April 1, 2010)**

We propose a rapid and label-free quantitative evaluation of anti-cancer drug efficacy in apoptosis using live cancer cells cultured on a sensor chip. The resultant custom-made, high-precision surface plasmon resonance (SPR) sensor monitors the inner mitochondrial membrane's potential change ( $\Delta\Psi_m$ ). For trans-membrane anti-cancer drugs to be effective, continuous potential changes arising from the crossing of the membrane by the drug of interest prevent  $\Delta\Psi_m$  monitoring. Herein, we report on a novel signaling echo method that avoids this disturbance; the cancer cells are incubated with a specific anti-cancer drug, with subsequent removal of the drug before SPR measurements. The cell reaction without any drug was monitored as the differential SPR angle rate of change for 10 min from 30 min after a sensor chip was set on a prism. The cell reaction after 60 min pre-incubation with a drug was significantly related to the conventional cell viability after 48 h ( $P < 0.001$ ).

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