

Development of an Open Sandwich Fluoroimmunoassay Based on FRET

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We have developed a sensitive, one-step, homogeneous open sandwich fluoroimmunoassay (OsFIA) based on fluorescence resonance energy transfer (FRET) and luminescent semiconductor quantum dots (QDs). In this FRET assay, estrogen receptor- β (ER- β) antigen was incubated with QD-labeled anti-ER- β monoclonal antibody and AF-labeled anti-ER polyclonal antibody for 30 minutes, followed by FRET measurement. The dye separation distance was estimated to be between 80-90 Å. The present method is rapid, simple and highly sensitive, and did not require the bound/ free reagent separation steps and solid-phase carriers. A concentration as low as 0.05 nM (2.65 ng/ml) receptor was detected with linearity. In addition, the assay was performed with commercial antibodies. This assay provides a convenient alternative to conventional, laborious sandwich immunoassays.