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A Platform to Screen Targeting Molecules of Ligand-EGFR Interactions

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Abstract : Epidermal growth factor receptor (EGFR) is often constitutively stimulated in cancer owing to the binding of ligands such as epidermal growth factor (EGF), so it is necessary to investigate the interaction between EGFR and its targeting biomolecules which were over ligands binding. This study would focus on the binding affinity and adhesion force of two targeting products anti-EGFR monoclonal antibody (mAb) and peptide A to EGFR comparing with EGF. Surface plasmon resonance (SPR) was used to obtain the equilibrium dissociation constant to evaluate the binding affinity. Atomic force microscopy (AFM) was performed to detect adhesion force. The result showed that binding affinity of mAb to EGFR was higher than that of EGF to EGFR, and peptide A to EGFR was lowest. The adhesion force between EGFR and mAb that was higher than EGF and peptide A to EGFR was lowest. From the studies, we could conclude that mAb had better adhesion force and binding affinity to EGFR than that of EGF and peptide A. SPR and AFM could confirm the interaction between receptor and targeting ligand easily and carefully. It provide a platform to screen ligands for receptor targeting and drug delivery.

Keywords : adhesion force, binding affinity, epidermal growth factor receptor, target molecule
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