

研究論文

表面プラズモン共鳴法による薬剤-タンパク質相互作用測定における
センサ表面へのタンパク質固定化状態の効果の検証

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Influence of protein immobilization methods on surface plasmon resonance
measurement of drug-protein interactionTakashi HASHIMOTO[†], Kazuhiko FUJIWARA^{††}, Hideaki ITO^{††} and Nobuaki OGAWA^{††}

An immobilization of serum albumin and warfarin-serum albumin interaction were studied by means of surface plasmon resonance measurement. Physical and chemical immobilizations of human serum albumin (HSA) and bovine serum albumin (BSA) onto sensor surface were examined to resolve how protein immobilization methods on sensor surface affect for protein-drug molecule interaction measurement. Spontaneous adsorptions of HSA and BSA onto gold surface were utilized for physical immobilization. Adsorptions of BSA and HSA were described by Langmuir-type adsorption, and the adsorptivity of BSA were higher than the one of HSA. 11-mercaptoundecanoic acid monolayer was employed as anchor for the chemical immobilization of HSA molecule. Chemically and physically immobilized HSA-warfarin interaction was examined and compared. Binding amount of warfarin to chemically immobilized HSA was larger than physically immobilized one. It is suggested that the chemical immobilization of protein molecule onto sensor surface is preferred for protein-drug molecule interaction measurements.

Key Words : protein immobilization, drug-protein interaction, surface plasmon resonance, serum albumin, warfarin