APPLICATIONS OF GEL ELECTROPHORESIS

IN QUANTUM DOT CONJUGATES' SEPARATION AND PURIFICATION

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ABSTRACT

The objectives of this study were to build Quantum dot (QD) crosslinker complexes for antibody conjugation usage, to purify QD crosslinker complexes by gel electrophoresis and to check the biological functionalities of eluted QD crosslinker complexes recovered from gel electrophoresis by cell based microarray. Zero-length crosslinker 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide hydrochloride (EDC) was chosen to be the first crosslinkers, followed by the conjugation with secondary crosslinker protein A. The purpose of adding secondary crosslinkers was to make uniform QD crosslinker complexes. Due to the high affinity between protein A and the Fc region of antibodies, QD EDC protein A complexes were in uniform structures and all antigen binding sites faced outwardly. Gel electrophoresis is a method used for separating DNA, RNA or proteins in biological studies. In this study, gel electrophoresis was adopted to check the complete conjugation between QDs and protein A. In addition, it was successfully used as a separation method for purifying conjugated QDs. GeBa*flex* tubes were used to elute the conjugated QDs from the gel, these recovered QD EDC protein A complexes showed their biological functionalities in cell based microarray studies.