Supporting Information

Simultaneous detection of three foodborne pathogens based on immunomagnetic nanoparticles and fluorescent quantum dots

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Optimization of the concentration and incubation time of nanoprobes

Figure S1 showed the optimization of the amount of immunomagnetic nano-probe and the reaction time. The concentration of all three target bacteria was 10^5 CFU/ml. As can be seen from Figure S1 (A), when 100 μl of immunomagnetic nanoprobe was taken, the difference between the fluorescent signal of the negative sample and the positive sample was the largest, and when the amount of the immunomagnetic nanoprobe was continuously increased, the difference was gradually reduced. The reason may be that high concentration of IMB has an aggregation effect, thereby reducing the specific binding sites with the three pathogens, so the fluorescence signal in the supernatant solution may increase. So the optimal amount of immunomagnetic nanoprobe was 100 μl. Figure S1 (B) was an optimization of the incubation time of magnetic nano-probes and three target bacteria. The reaction time was set at 40 min, 50 min, 60 min and 70 min respectively. It can be shown from the figure that when the reaction time was 50 min, the difference in fluorescence signal of the sample was the largest. So 50 min was chosen as the optimal reaction time.

Figure S2 was an optimization of the amount and reaction time of the immunofluorescence quantum dot probe. Figure S2 (A) was an optimization of the amount of three immunofluorescent quantum dot probes, which were selected 30 μl, 40 μl, 50 μl and 60 μl, respectively. When the three immunofluorescence quantum dot probes were 40 μl, the difference between the fluorescent signal of the negative sample and the positive sample was the largest, so 40 μl was determined as the optimal amount of three immunofluorescent quantum dots. Figure S2 (B) was an optimization of the reaction time of the immunofluorescence quantum dot probe. It can be observed from the figure that when the reaction time was 45 min, the difference between the fluorescent signal of the negative sample and the positive sample was the largest. So the immunofluorescence quantum the optimum reaction time for the spot probe was 45 min.

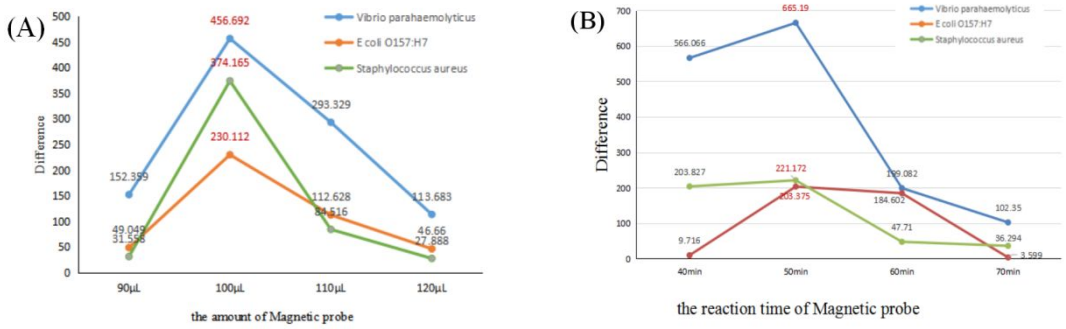

Figure S1. Line chart of the difference of negative fluorescence to positive fluorescence((A):Optimization of the amount of Magnetic probe; (B):Optimization of the reaction time of Magnetic probe）

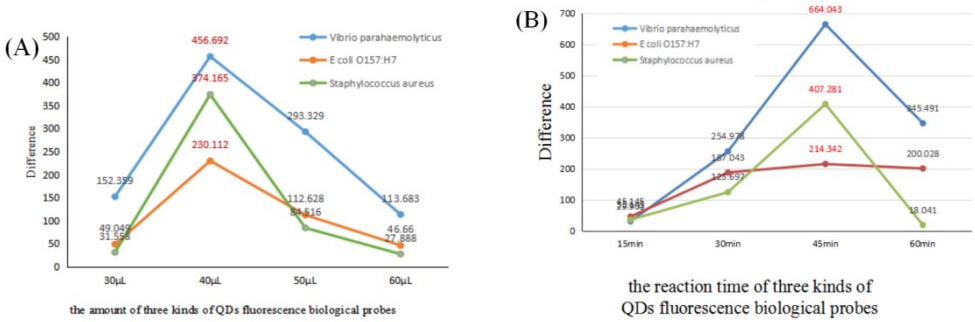

Figure S2. Line chart of the difference of negative fluorescence to positive fluorescence（ (A):Optimization of the amount of three kinds of QDs fluorescence biological probes; (B):Optimization of the reaction time of three kinds of QDs fluorescence biological probes）