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Magnetic Capture Hybridization –Polymerase Chain Reaction (MCH-Pcr) for Detection of Salmonella Typhimurium Artificially Contaminated in Drinking Water and Food

Magnetic polymeric nanoparticle (MPNP) has been used widely as a solid support for biomolecules in biomedical applications. Because it is convenient to control by applying external magnetic field and easy to surface functionalize. In this work, magnetic capture hybridization –polymerase chain reaction (MCH-PCR) was developed for detection of *S. Typhimurium* contaminated in drinking water and raw chicken meat artificially. Carboxylated MPNP was covalently bound to oligonucleotide probe specific to *invA* gene of *S. Typhimurium*, which is one of the most causative agents of food poisoning syndrome in Thailand. The probes were designed and synthesized to possess amino modification and five different spacers at the 5' end of sequence to compare their sensitivity and specificity of the assay. The probe bound MPNP was allowed to hybridize with target DNA in MCH reaction and magnetically separated to use as a template in PCR amplification. The amplified products were separated in agarose gel, stained and visualized under UV light. The advantage of this method contributes to high specific of probe-DNA hybrids leading to specificity enhancement of PCR assay. In addition, the MPNP facilitate separation of the target DNA easily from the food matrix.

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