

Construction of fenitrothion correcting Escherichia coli through the cell surface display of binding peptide

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Organophosphorus pesticides have been used extensively all over the world, especially in agriculture, for more than 60 years. Recently, it has been reported that applying chlorpyrifos, fenitrothion, and parathion leads to soil, groundwater, and surface water contamination, making organophosphorus pesticides a major public health concern. In this study, fenitrothion-adsorbing recombinant E. coli was constructed through the display of pesticide-binding peptide, using OmpC as an anchoring motif. To elevate the fenitrothion-binding capacity, a dimer of pesticide-binding peptide was also displayed and evaluated. The fenitrothion-binding conditions were optimized by testing the recombinant E. coli under different conditions of pH, temperature, IPTG concentration, and fenitrothion concentration.