

Adsorptive removal of bisphenol A by peptide moiety fused with magnetic bead

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Bisphenol A (BPA) is one of the endocrine disrupting chemicals (EDCs). Thus, much interest has been given to the removal of BPA from food sources and living environment. Physical and chemical technologies have also been reported in the literature. For example, the adsorption onto conventional activated carbon was investigated, but the removal of BPA was not selective and so relatively large amount of sorbent was required to complete removal of BPA from interfering substances. Our group had searched for the peptide sequence with specific affinity to BPA and successfully screened the corresponding peptide sequence. In this study, the recombinant LacI protein fused with this peptide moiety was used for the removal of BPA. After cultivating recombinant E.coli harboring recombinant plasmid, the expressed LacI protein including peptide moiety with affinity to BPA was purified through several purification and concentration steps. Then, the purified peptide-fused-protein was covalently bonded with magnetic bead, which easily can be separated by magnets from water. Thus, this protein-based magnetic bead can be reusable. The adsorption capacity and efficiency of BPA was studied. The kinetic and isotherm adsorption characterization was also carried out.