

Hydrophobic peptides for the sensitive capture of three different microplastics dispersed in the ocean

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Interest in environmental pollution has increased recently, and studies on microplastics existing in the ocean are actively being conducted. Microplastics are defined as plastics of 5mm or less. For the detection of microplastics, we selected a peptide that has a low production cost, high-efficiency screening using a phage display, and is easy to control sensitivity through sequence change.

Among the plastics distributed in the ocean, PS, PP, and PE were selected. These 3 types of plastics are hydrophobic, so hydrophobic peptide specific for each plastic was produced. Since plastics undergo oxidation, the binding affinity of peptides was confirmed in plastics that were not oxidized and plastics that were oxidized by plasma. In addition, it was confirmed whether there is a difference in binding affinity between DW and 3.5% NaCl. There was no difference in affinity for oxidized plastics. In the 3.5% NaCl solvent, it was confirmed that the binding rate was lower than that of the binding experiment in DW, but the binding was still possible.

In the future, it is expected to be used for peptide sensors that bind to plastics to increase the detection efficiency of microplastics.