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The Use of Polypeptide Probes Selected From Artificial Peptide Libraries for the Recognition and Differentiation of DNA Sequences

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Abstract: In the novel approach suggested here, we examined the use of polypeptide probes selected from artificial peptide libraries for the identification of the differences in dsDNA sequences which are potential targets for the genetic diseases. As a model system two target DNAs which are the polymerase chain reaction (PCR) products of the two hage-display vector multiple cloning sites (MCS) differing at 18 base pair long has been used. In the production of the target sequences biotinylated primers were used in PCR. The polypeptide probes obtained from artificial peptide library by the selection of phage-display techniques. Identified clones bearing the candidate polypeptide probe specific to the target sequences was tested by phage-ELISA. For the comparison and selection assays, magnetic separation technique was used. One clone selected from artificial peptide library specifically recognized the 18 nucleotide difference, which encodes (His)6 , in between two model PCR products and showed no cross reaction determined by phage-ELISA. These findings may be interpreted to the usage of the polypeptides for the detection of the anomalies at specific target DNA sequences and be used for the manipulation of the gene expression in different disease models.

Key Words: Phage display, mutation detection, polypeptide probes.

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