A NOVEL PEPTIDE EXPOSED ON THE SURFACE OF M13 BACTERIOPHAGE CAN BIND TO FIBRINOGEN AND INHIBITS FIBRIN MONOMERS POLYMERIZATION

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Fibrinogen and fibrin play important roles in blood clotting, fibrinolysis, cellular and matrix interactions, the inflammatory response, wound healing and neoplasia. To find new principles for inhibiting of fibrin monomers polymerization, we screened pentadecamer phage-displayed random peptide repertoires with fibrinogen as the target. After performing three rounds of bioppaning procedure, the most frequent isolated phage clones contained the following sequence TCGLSDLSFGLEYCR. The identified phage clone was tested for binding to fibrinogen and fibrin in ELISA assay. Further experiments revealed that a phage clone with TCGLSDLSFGLEYCR peptide sequence present on its surface inhibits fibrin monomers polymerization in a dose-dependent manner. Phage particles were preincubated with fibrinogen and then, fibrin monomers polymerization was induced by thrombin addition. The kinetics of fibrin monomers polymerization was spectrophotometrically monitored as a function of time.