FIBRONECTIN ADSORPTION AND CELL ADHESION

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The enzyme-linked immunosorbent assay (ELISA) method was employed to study the adsorption of human plasma fibronectin (FN) on non-sulfonated and sulfonated polymer surfaces. The ELISA signal resulting from the use of a polyclonal antiserum was recorded as a function of the FN concentration in solutions. The adsorption isotherms revealed the onset of plateaux in the range of 5-10 μg/ml, which was interpreted in terms of a self-assembled monolayer. We deduce that the observed differences in the ELISA level at which these saturations appear correspond to diverse conformations adopted by the FN molecule.

The second part of this project involved studying the early adhesion of L1210 cells to polymer surfaces pretreated with FN under static conditions. The number of cells adhering to the sulfonated surfaces coated with FN increased with the increase in interfacial surface tension, thus indicating the dependence of cell adhesion on the surface density of the sulfonic groups. Conversely, for FN adsorbed on non-sulfonated surfaces, the number of adhering cells was low and did not depend on the interfacial surface tension.

We demonstrated that α5β1-integrin blocking by a monoclonal antibody strongly inhibits the adhesion of cells to FN adsorbed on sulfonated surfaces. This result indicates the role of α5β1-integrin, which apparently mediates cell adhesion to FN adsorbed on our substrata. A similar mechanism does not seem to be operative for cell adhesion to FN adsorbed on non-sulfonated surfaces, where no α5β1-integrin-blocking effect was found.

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