

# **Shark cartilage extract interferes with cell adhesion and induces reorganization of focal adhesions in cultured endothelial cells**

陳金山

Chen;J.S.;Chang;C.M.;and Wang;S.M.

摘要

## **Abstract**

In this study, we examined the effects of shark cartilage extract on the attachment and spreading properties and the focal adhesion structure of cultured bovine pulmonary artery endothelial cells. Treatment with cartilage extract resulted in cell detachment from the substratum. Immunofluorescence staining of those treated cells that remained attached showed that, instead of being present in both central and peripheral focal adhesions as in control cells, both integrin  $\alpha(v)\beta(3)$  and vinculin were found only in peripheral focal adhesion and thinner actin filament bundles were seen. In addition to causing cell detachment, cartilage extract partially inhibited the initial adherence of the cells to the substratum in a dose-dependent manner. Integrin  $\alpha(v)\beta(3)$  and vinculin staining of these cells also showed a peripheral focal adhesion distribution pattern. Vitronectin induced cell spreading in the absence of serum, but was blocked by simultaneous incubation with cartilage extract, which was shown to inhibit both integrin  $\alpha(v)\beta(3)$  and vinculin recruitment to focal adhesion and the formation of stress fibers. Dot binding assays showed that these inhibitory effects on cell attachment and spreading were not due to direct binding of cartilage extract components to integrin  $\alpha(v)\beta(3)$  or vitronectin. Shark cartilage chondroitin sulfate had no inhibitory effect on either cell attachment or spreading of endothelial cells. These results show that the inhibitory effects of cartilage extract on cell attachment and spreading are mediated by modification of the organization of focal adhesion proteins. Copyright 2000 Wiley-Liss, Inc.