Cellular Kininogenase Activity is Influenced by Proteoglycans

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Kininogens are plasma proteins related to inflammation, hemostasis and angiogenesis. Bradykinin is a potent hypotensive peptide which can be released from kininogens by kininogenases. Heparan sulfate proteoglycans are involved in cellular uptake of high molecular weight kininogen (HK) which can be hydrolyzed and release kinin after interaction with tumor cells (Melo et al., 2009). The aim of the present work is to analyze the HK processing after interaction with cells. The cells used in this work were CHO-K1 (wild type) and CHO-745 (xylosyl-transferase defective mutant). Two cell fractions, lysate and membrane, were prepared after sonication and centrifugation of confluent cells and the kininogenase activities in both pH 7.4 and 5.5 present in both fractions were analysed by immunoblotting technique. HK was partially hydrolyzed by CHO-K1 lysate in pH 7.4 and totally hydrolyzed in pH 5.5 and the pattern of HK cleavage was different comparing both assays. In contrary the membrane fraction of CHO-K1 totally cleaved HK in pH 7.4 and partially cleaved HK in pH 5.5. Both CHO-745 lysate and membrane fraction totally hydrolyzed HK showing the same pattern of cleavage in both pHs. In both cell lysates and membrane fractions from CHO-K1 and CHO-745 antipain was the best inhibitor of HK cleavage. These data suggest that CHO-K1 cells present distinct kininogenases and the proteoglycans may influence the kininogenases activities.

Keywords: epithelial cells, kininogen, proteoglycans, proteolysis.

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