From the Glycosaminoglycans Interaction with Cystein Protease to the Foundation of Centro Interdisciplinar de Investigação Bioquímica, UMC.

Tersariol, I.L.S. and Almeida, P.C.

Centro Interdisciplinar de Investigação Bioquímica- UMC, Mogi das Cruzes, SP.

The congregation of the methodology in glycosaminoglycans (GAGs) structural analysis obtained from research group of Dr. Carl. P. Dietrich (UNIFESP-EPM) with the methodologies in proteases analysis developed in the laboratory of Dr. Juliano (UNIFESP-EPM) permited the investigation of possible interaction of Luiz GAGs with cysteine proteases. Heparin and heparan sulfate bind to papain and this interaction stabilizes the enzyme structure even at alkaline pH. Like papain. heparin and heparan sulfate bind the lysosomal cathepsin B specifically. The coupling of cathepsin B with heparin or heparan sulfate can potentiate the endopeptidase activity of the cathepsin B by increasing 5-fold the half-life $(t_{1/2})$ of the enzyme at pH 7.4. Also, heparan sulfate modulates kinin release by Trypanosoma cruzi through the activity of cruzipain. Moreover, heparan sulfate proteoglycans is also are related to insertion processes of cathepsin X at CHO cell surface and the internalization of cathepsin X is dependent on heparan sulfate proteoglycans, suggesting that heparan sulfate proteoglycans are involved in cellular trafficking of cathepsin X. In view of previous results, GAGs seem to be important physiological ligands and activity regulators of cysteine cathepsins at the cell surface and basement membrane. Besides of the scientific data generated, the interaction of GAGs with cysteine protease led us to the foundation of Centro Interdisciplinar de Investigação Bioquímica, UMC. (Supported by FAPESP, CAPES and CNPq)