Evaluation of Activity and Spectroscopy Properties of Interaction of β-Trypsin and β-Cyclodextrin in Liquid State

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INTRODUCTION: Cyclodextrins are suitable delivery system because of their ability to modify the physical, chemical and biological properties of guest molecules. This labile interaction is done by formation of inclusion and/or association complexes. **OBJECTIVES:** Evaluation of the effect β-cyclodextrin (BCD) and its concentration on the activity and spectroscopic (structural) properties of β-trypsin isoform. **MATERIAL AND METHODS:** Activity: β-trypsin: BCD in range of 1:1; 1:3; 1:7 and 1:10 (w/w) in 50mmol.L^{-1} of Glycine buffer pH 3 was assayed using the *BAPNA* and reaction product p-nitroaniline was read at 410 nm. Spectroscopy: Ultra violet scan from 200 to 400 nm was performed for β-trypsin:BCD at 1:7 (w/w) in 50mmol.L^{-1} of Glycine buffer pH 3 and protein solution only. Adsorption of p-nitroaniline in BCD: absorption at 410 nm for p-nitroaniline at fixed concentration and absorption p-nitroaniline plus BCD buffered was performed and it was compared. **RESULTS AND DISCUSSION:** Our preliminary results demonstrate that activity increases as a function of cyclodextrin concentration up to 1:7 (w/w) protein: BCD, however, above this value activity decreases. Besides, results of test of adsorption of p-nitroaniline on to BCD demonstrate that is incosiderable the interaction between these two molecules. Tests carried out at temperatures below *Tm* and above, showed that the enzyme:BCD 1:7 (w/w) is not temperature dependent. The comparative profiles of absorption x wave-length for trypsin only and trypsin:BCD at 1:7 (w/w) showed in general a increase of maximum of absorption for scan spectroscopic profile of Enzyme and BDC complex. This results suggesting a change conformational stabilizer at system BDC+beta trypsin. Stabilizer factor can be: stabilization of solvation of shelf or direct interaction of BCD whit protein in supramolecular complexes. **Conclusion:** Our preliminary results suggest that BCD stabilize biological and structural properties of beta trypsin isoform, however the mechanism action yet not solved for our group.

KEY WORDS: β-trypsin, activity, β-Cyclodextrin.