Abstract

Background: Diabetes is a condition with insufficient insulin production or in the setting of insulin resistance with many origins including intestinal microbiota related molecular mechanism. IDE (insulin degrading enzyme) controls circulating insulin through a degradation-dependent clearance mechanism in multiple tissues. So, we studied the effect of cell free supernatant (CFS) and UV-Killed *lactobacillus casei* (*L. casei)* on IDE expression, its activity and insulin degradation in vitro.

Method: MTT assay was performed to investigate CFS and UV-Killed *L. casei* toxicities in caco2 cell line. IDE expression and its activity were determined by western blotting and fluoregenic assay using fluorogenic peptide Substrate V, respectively. The effect of this lactobacillus on insulin degradation was studied by Sandwich Elisa.

Result: CFS and UV-Killed *L. casei* leads to significantly lower expression of IDE in caco2 cell line. UV-Killed *L. casei* remarkably inhibited IDE activity but CFS did not. However they didn't have any effect on insulin degradation.

Conclusion: In conclusion, *L. casei* is effective on IDE expression and its activity but not on insulin degradation. Future studies are recommended to explore the effect of this probiotic on other substrates of IDE.