Type 2 diabetes and tooth loss are linked both epidemiologically, and pathophysiologically. Until recently, it was thought that serum proteins associated with diabetes travel via gingival crevices, emerging as contributors to whole saliva. Edentulous patients do not have teeth and therefore potentially have different salivary proteomes. We applied label-free differential protein expression analysis using multidimensional liquid chromatography/tandem mass spectrometry (2D-LC-MS/MS) to explore the proteomic profile of saliva samples collected from selected type 2 diabetic edentulous patients and non-diabetic controls. Ninety-six peptides corresponding to 52 proteins were differentially expressed between the diabetic edentulous patients and controls (p<0.05). Some diabetes-related inflammatory biomarkers, including glyceraldehyde-3-phosphate dehydrogenase and serum amyloid A, were upregulated in diabetic samples. Other biomarkers including amylase, palate, lung and nasal epithelium associated protein (PLUNC), and serotransferrin levels were decreased in diabetic samples. Unlike previous studies, salivary carbonic anhydrase 6 and alpha-2 macroglobulin levels demonstrated decreased expression in this diabetic group. Cluster analysis and principle component analysis demonstrated a differential pattern of protein biomarker expression between the two groups. The relatively lower expression level of two biomarkers, including PLUNC and amylase in the diabetic group compared to control subjects, was confirmed by Western analysis. The salivary proteomes in edentulous subjects with diabetes mimic those in serum, especially those related to inflammatory/lipid metabolism. This exploratory study, while requiring further validation with a larger population, provides proof-of-principle for the application of salivary proteomics for edentulous subjects with diabetes.

Biography

Michael Border has completed his bachelor’s with honors in Biochemistry from the University of Mount Union. He is currently a second year DDS candidate at The Ohio State University College of Dentistry. He has published a number of articles in reputable journals and serves as the associate editor of the newly introduced, Stem Cells in Oral Medicine.