

THE EFFECTS OF TOBACCO TREATED PORPHYROMONAS GINGIVALIS ON HUMAN EPITHELIAL CELLS

Roziya H. Tursunova (Nouf Al-Shibani, L. Jack Windsor, and Richard L. Gregory, Department of Oral Biology), Indiana University School of Dentistry, Indiana University–Purdue University Indianapolis, Indianapolis, Indiana 46202

Bacteria and tobacco are risk factors for periodontal diseases. Bacteria-host interactions play a critical role in disease development and progression. The effects of tobacco-treated bacteria such as *Porphyromonas gingivalis* on epithelial cells have not yet been examined. Therefore, *P. gingivalis* were treated with different tobacco products (nicotine, cigarette smoke condensate (CSC), and dissolvable smokeless tobacco (DST) strips) to determine the effects that they have on epithelial cells. *P. gingivalis* were grown with or without the products for 24 hours at 37°C. The cells were separated from the supernatant, washed with 0.9% NaCl and incubated at 60°C to kill the bacteria. Protein assays were performed to determine the protein concentration in the cell pellets and supernatants. Lactate dehydrogenase (LDH) assays are being used to measure the cytotoxicity of the cells and supernatants on epithelial cells in a dose dependent manner. Non-toxic amounts of the cell pellets and supernatants will be used to treat epithelial cells for 72 hours and the media analyzed by cytokine/growth factor protein arrays. The protein assays showed that CSC and nicotine treated *P. gingivalis* cells had less protein than the others. The total protein in the supernatant for the CSC treated bacteria was less compared to others. The protein data suggests that CSC and nicotine affect protein expression in and by the *P. gingivalis* cells. Tobacco-treated bacteria are hypothesized to increase the expression of pro-inflammatory cytokines/growth factors by the epithelial cells, thereby contributing to the inflammation seen in periodontal diseases.

This research was funded by Indiana University-Purdue University Indianapolis, Multidisciplinary Undergraduate Research Institute (MURI).